Turtle Street Beach Resort, Curtis Island

EPBC Act Preliminary Documentation
Referral Number 2015/7585

HRP01179

Prepared for
QRE Pty Ltd

6 March 2017

Cardno
Shaping the Future

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1 Introduction

1.1 Background

QRE Pty Ltd ("the proponent") proposes to establish an eco-sensitive tourist resort at Black Head, Curtis Island on part of a landholding previously used for cattle grazing (the Monte Christo Station) (refer to **Figure 1** and **Figure 2**). The proposed Turtle Street Beach Resort includes 187 units in various configurations (total of 259 bedrooms), resort amenities (beach centre, pools and tennis courts) and a central facility with a reception, conference facilities, shop, bar and restaurant ("the project"). The site selection and design process which commenced prior to 2000 has resulted in a project which has been refined over time to respond to natural features and the findings arising from detailed surveys, such that the project now avoids impacts on areas of conservation significance.

Other aspects of the project (refer to **section 3** for further detail) include:

- Accommodation Facilities - The proposed Turtle Street Beach Resort incorporates 187 units in a variety of configurations (total of 259 bedrooms), resort amenities (beach centre, pools and tennis courts) and a central pavilion with a reception, conference facilities, shop, bar and restaurant;
- Energy - A standalone diesel energy system is proposed for the development and will provide a combined genset supply of 1.2 megawatts. QRE Pty Ltd has committed to a path of research and development of renewable energy sources which will most efficiently and effectively contribute to the resort's clean energy aspirations;
- Water Supply/Dam - the main water supply will be from a new dam located in the infrastructure and access corridor, with a smaller existing dam located in the resort node to serve as a backup supply for emergencies (e.g. fire management). The location and design of the proposed dam will ensure impacts on migratory birds are avoided because it is located in an area that is largely cleared of woody vegetation and is located upstream of tidal areas/potential wader bird habitat. Further it will incorporate appropriate wave and erosion protection as to avoid downstream erosion/sedimentation impacts. A small package water treatment plant is proposed to be located in the resort infrastructure area to treat the raw water from the dam to a potable standard;
- Stormwater - Best practice stormwater and drainage design will be implemented to ensure the natural hydrology is not adversely impacted by the proposed development. Conveyance of flows from new areas of development will be done in a way that is sympathetic to the existing drainage characteristics of the island and receiving environment. New drainage networks will also feature elements to remove sediments and nutrients prior to discharge. Work will be undertaken in accordance with the conditions of the Operational Works approval issued by Council and the Consent Order, including requirements to prepare and implement an Erosion and Sediment Control Plan;
- Sewage Treatment - The wastewater treatment plant will be designed, constructed, operated and maintained to produce a consistent Class A+ recycled water. The recycled water will be monitored to ensure the required water quality prior to irrigation;
- Waste - The waste management strategy for the project aims to minimise the total volume of waste produced and the volume of waste disposed to landfill to the mainland (Gladstone Refuse Centre) during construction and operation. All solid wastes that cannot be reused or recycled as described above, will be collected and stored in designated facilities on the Island, prior to transport and disposal on the mainland. Waste storage facilities throughout the site will be designed to prohibit access to wildlife and/or pest species;
- Access - access to the proposed resort will be via helicopter or plane on a new 1,100 metre airstrip and existing dedicated barge landing points located at Hobble Gully and South End. It is estimated that 35 - 40% of resort guests will arrive by plane or helicopter, with the balance arriving by boats with guests then transferred to the resort using resort vehicles from South End. The use of private vehicles will not be encouraged with only a small percentage of guests anticipated to bring their own vehicle. No vehicle access will be permitted to the foreshore within the resort precinct;

- Activities - Guests at a resort need to be offered a range of activities in order to ensure that the average stay (aimed at 4 days) is achieved, including Bars; Pools; Conference facilities; Day spa and Tennis courts. Any waterborne activities within the Great Barrier Reef Marine Park BRMPA will be subject to separate permits. Offsite resort generated activities will require Queensland Parks and Wildlife Service permits that will regulate these activities;
- Site Rehabilitation and Landscaping - landscape concept plans have been prepared for the proposed development that identify existing trees and additional areas for supplementary planting. All new trees, shrubs and grasses will be from local endemic species and a best practice weed management plan is proposed; and
- Site Responsive Design - the project has been designed to minimise impacts on the Great Barrier Reef World Heritage Area by ensuring appropriate setback distances to the shoreline and by ensuring that buildings are predominantly below the height of the existing mature trees on the site. The design, colour palette and construction materials of buildings and infrastructure will also complement the natural environment.

The proponent has a long history of environmental stewardship on the Island and has dedicated approximately 32,890 hectares of the original Monte Christo Station to the Queensland Government for National Park and Conservation Park, including a vegetation offset area of 18,950 hectares. A large portion of the 713 hectare site (approximately 517 hectares) is also subject to the provisions of a Nature Refuge Agreement endorsed by the proponent and the State Government. In addition to these measures, in 2015 the proponent also removed all cattle from the Island to assist in ecosystem restoration.

At a policy level the project is consistent with the Queensland Ecotourism Plan 2016 - 2020 and the Gladstone Regional Planning Scheme which includes the site in a Major Tourism Zone.

The proponent has obtained State and Local Government development approvals for the project and is now seeking approval under the provisions of the *Environmental Protection and Biodiversity Conservation Act 1999* ("EPBC Act") for the action.

1.2 Assessment Process

On 14 October 2015 the proponent was referred to the Commonwealth under the EPBC Act. On 16 August 2016 the proposed action was determined to be a controlled action under the EPBC Act requiring further assessment, with the relevant controlling provisions listed as:

- Listed threatened species and communities (sections 18 & 18A);
- Listed migratory species (sections 20 & 20A);
- World Heritage properties (sections 12 & 15A); and
- National Heritage places (sections 15B & 15C).

The Department of the Environment and Energy (DEE) advised that the proposed action will be assessed by preliminary documentation. On 16 September 2016 DEE provided the proponent with further information required to enable the department to assess the relevant impacts of the proposed action.

1.3 Purpose of the Preliminary Documentation Report

This report has been prepared by Cardno in conjunction with Logic Environmental and Dr Melody Puckridge to respond to the Department of the Environment and Energy's request for additional information dated 16 September 2016 (refer to **Appendix 1**). The following table provides cross references to where the requested information is addressed in this report.

Table 1. Document cross reference.

Preliminary Documentation Information Requirement	Section Addressed in this Report
1. Description of Matters of National Environmental Significance	Section 4
2. Potential Impacts	Section 4
3. Indirect Impacts	Section 5
4. Cumulative Impacts	Section 5
5. Consequential and Facilitated Impacts	Section 5
6. Proposed Avoidance, Management and Mitigation Measures	Section 6
7. Proposed Offsets	Section 7
8. Social and Economic	Section 8
9. Other Approvals and Conditions	Section 9

2 Description of the Site

2.1 Location

The site comprises 713 hectares of leasehold land (Lot 8 CP860464, Lot 11 CP860464 and an area of Esplanade of approximately 250m^2 for barge landing and access at Hobble Gully), with the resort itself concentrated on a small portion of this total site area, about 20 hectares. The site is surrounded by a National Park to both the north and south. The proposed resort is located within a small portion of the total area of the site which is zoned Major Tourism under the Gladstone Regional Council Planning Scheme 2015 (the 2015 planning scheme).

The site is located on the eastern side of Curtis Island with the resort node centred on a coastal headland known as Black Head. Curtis Island is located approximately 20 kilometres north of Gladstone and 40 kilometres south-east of Rockhampton. The Island is separated from the mainland by "The Narrows" which forms a protected north-south water course (refer to **Figure 1 – Regional Context**). Significant LNG facilities have been established to the south-west of the site (refer to **Figure 2 – Site Location**).

The site was originally part of the Monte Christo cattle station which comprised approximately 33,911 hectares of primarily leasehold land (refer to Attachment 1 of EPBC Act Referral – Turtle Street Resort Land Tenures). Lots 8 and 11 on CP860464 are part of the original Monte Christo property over which a tourism special lease exists. Part of the site is subject to Nature Refuge Conservation Agreement (refer to **Attachment 2** of the EPBC Act Referral - Curtis Island Nature Refuge Conservation Agreement).

2.2 Current state of the environment

The site is considered to be in moderate ecological condition with parts of the site having been previously cleared and been used for historic grazing purposes. The Fauna Survey and Habitat Assessment (refer to EPBC Act Referral) found that feral pigs, feral horses (brumbies), wild dogs, feral cats, foxes and stray stock are the main feral species impacting on conservation values on Curtis Island and these were all detected during the survey. The fox, feral cat, feral dog and in some situations the feral pig are all predatory and have an adverse effect on native fauna and may account for the apparent absence of small and medium size native fauna species over the site. The black rat is also present, with this species likely competing with native rodents.

2.3 Hydrology

The hydrology predominantly drains towards the west. Graham Creek is a large mangrove wetland that almost dissects Curtis Island from The Narrows. Two named and one unnamed gullies drain into Graham Creek. Hobble Gully, the most northern creek (where the water storage facility is proposed) is a steep-banked ephemeral creek for much of its length within the study area. Outside of the study area, it becomes a deep tidal mangrove lined creek. To the west of the main channel of Hobble Gully are a series of necklace pools that possibly may be spring fed and contain relatively permanent water. Logbridge Creek is the major drainage creek with steep banks and flows into Graham Creek further to the south. In 2003 approval was issued by the Department of Primary Industries to clear an area of mangroves (approximately 250m^2) to allow a barge landing area to be constructed (refer to Attachment 10 of EPBC Act Referral – Marine Plant Permit).

2.4 Soil and Vegetation characteristics

Geological investigations indicate that the geology at the resort site is dominated by "sandy loam topsoils (being approximately 300mm depth) overlying between 300 and 600mm of shallow gravelly residual sandy soils or duplex soils with lower silty clay subsoil underlain by hard weathered rock"(McWilliam Consulting Engineers, facsimile transmission 28.11.2002). The northern portions of the headland include exposed areas of greywacke and mudstone or thin soils derived from the metasediments of the Shoalwater Formation. Deeper soils prevail in the more protected parts of the site.

These soils give way to a mixture of sandy, rocky and muddy shores on the western edge of the resort site. In the southern flatter parts of the resort site there are deeper soils and exposed rock (refer to Attachment 4 – Landscape Concept Background). The property contains a relatively diverse range of vegetation types dependent upon topography and proximity to the coastline.

2.5 Outstanding natural features

The principal natural features of the original Monte Christo Station included a highly scenic stretch of shoreline on the island's east coast which includes rugged bluffs and headlands, scalloped bays and beaches, sand dune formations, and an extensive marine plain. The site of the proposed beach resort is located close to 'Black Head', a rock promontory with a maximum height of approximately 54 metres. Black Head forms the southern limit of Turtle Street Beach and is the commencement of a 7.5 kilometre stretch of high bluffs. The site contains the prominent features of Black Head and Turtle Street Beach, together with the sea cliffs and native vegetation.

2.6 Gradient

The topography in the resort is diverse. In its eastern part, the terrain comprises of hilly lands with narrow rounded crests on the ridges and spurs and with steep slopes within the range of 20% to 40% (1: 5 to 1:2.5). Although the majority of the site has slopes less than 25% (1 in 4) some steep gullies have been left undisturbed and it is proposed that they will remain as features of the landscaping. The exposed eastern rugged coastal fringe is outside the resort area, largely within an Esplanade, and will not be developed.

2.7 Indigenous heritage values

A cultural heritage assessment for the development was prepared by ARCHAEO to provide the project with compliance with its cultural heritage duty of care, pursuant to the *Aboriginal Cultural Heritage Act 2003*. The study area falls within the external boundary of the registered Native Title application of the Port Curtis Coral Coast (PCCC) native title claimants QC01/29. As no triggers exist that require QRE to undertake a Cultural Heritage Management Plan, pursuant to Part 7 of the Act, a decision was made to enter into an Agreement, in accordance with Section 23(3) of the Act.

The cultural heritage agreement includes a management schedule based on recommendations of the cultural heritage report. In the schedule are detailed directions on how management of cultural heritage in the project area should be undertaken as the project progresses.

3 Description of the Proposal

3.1 Overview

The proposed Turtle Street Beach Resort incorporates 187 units in a variety of configurations (total of 259 bedrooms), resort amenities (beach centre, pools and tennis courts) and a central pavilion with a reception, conference facilities, shop, bar and restaurant (refer to **Appendix 2 – Approved Plans 2016**). The proposed pavilion is a 2 storey architecturally interesting building that is positioned down the slope to reduce its apparent height and to provide a planting zone between the building and the access road.

The following table provides a summary of the type of unit and bedrooms proposed for the resort in accordance with the plans updated approved by the Court on 28 September 2016. The approval limits the proposed development to the density, height and resort building envelope in accordance with those shown on the plans listed in Condition 1 in accordance with the following limits:

- Maximum Gross Floor Area of Units - 18,745m^2
- Maximum Gross Floor Area of Facilities – 3,807m^2

The resort and infrastructure area cover a total of 20 hectares or 2.8% of Lots 8 and 11 (713 hectares) and represents 0.0006% of the original holding with only a very small area to be physically developed for tourism accommodation and recreation facilities with the majority of the lease area being left in its natural state.

The proposed action is consistent with the current Gladstone Regional Council Planning Scheme (commenced on 12/10/2015) which includes Lot 8 on CP860464 in the Major Tourism Zone.

Table 2. Room type and number.

Unit Type	Number
Studio Unit – Queen (Ground Floor)	30
Studio Unit – Queen (First Floor)	30
1 Bedroom Studio - King (Ground Floor)	20
1 Bedroom Studio - King (First Floor)	20
2 Bedroom Villa/Duplex 20 'Eagle' apartments 10 'Ocean' villas	30
2 Bedroom Destination Unit 'Eagle's Nest' villas	10
3 Bedroom Type A Villas 'Seascape' villas	16
'Pandanus' Pavilions (Studio)	9
'Livistona' Pavilions (Studio)	18
'Bridal' Pavilions (Studio)	4
Total	**187**

3.2 Proposed Population

The number of guests at the resort at any one time will likely be in the order of 328 persons. This is based on an average occupancy of 70%, which is consistent with recorded occupancy rates elsewhere in Queensland coastal island locations. Key assumptions include:

- 187 units/villas X 2.5 people per unit = 468 total guest population @ 100% occupancy; and
- 70% average occupancy = 328 total guests population on average.

3.3 Proposed Access

Access to the proposed resort will be via helicopter or plane and existing dedicated barge landing points located at Hobble Gully and South End. It is estimated that 35 - 40% of resort guests will arrive by plane or helicopter, with the balance arriving by boats with guests then transferred to the resort using resort vehicles from South End. The use of private vehicles will not be encouraged with only a small percentage of guests anticipated to bring their own vehicle (around 5%). No vehicle access is permitted to the foreshore within the resort precinct.

Any activities associated with the resort have the opportunity to be managed to a greater degree than is currently provided for visitors who make their own way to Curtis Island via the South End barge.

3.3.1 Vehicles and Resort Roads

Guest vehicles will not be allowed within the resort precinct and will be parked in the infrastructure area. QRE will, subject to obtaining necessary permits, be offering guided tours for guests to other parts of the island. QRE would expect less than 5% of visitors to bring their own vehicles to the Island and due to the nature of the resort and proposed activities it is not likely that guests will use their vehicles on a regular basis. Resort vehicles will primarily be involved in shuttling guests within the site, day to day resort operations (including servicing and maintenance) and around 3-4 vehicles will be available for site seeing/trips.

The road standard proposed for internal roads is that of a rural road with a design speed of 30 km per hour to provide access for golf buggies and service vehicles. The design encompasses internal roads of a maximum of 6.3m width and a minimum of 5.0m width constructed using gravels and insitu material stabilised with a polymer stabiliser to a depth of 150mm and sealed with a 10mm chip seal. The provision of an underground services corridor will be located in the road verge. Roads to the resort and the internal roads of the resort will be constructed using local materials.

3.3.2 Boating

During construction, it is anticipated that 1 barge per week will be required via Hobble Gully for a 12-month period and 2 barges per week for a 6 month period will be required to transport materials, machinery and other resources. When the resort is operational, the barge will operated on an as needed basis, approximately once a month.

The barge landing facility at Hobble Gully has been constructed in accordance with State approvals and will provide the opportunity to connect to Gladstone Harbour via regular barge and boat services. The barge landing provides access to the resort node at Black Head via some 11.5 km of gravel roadway constructed from redeveloped bush tracks that already exist across the island.

Once operational, staff will obtain access via the existing barge service located at South End. All resort passenger transport will utilise existing services provided by the Curtis Ferry Service to South End, the barge access at Hobble Gully as well an additional water taxi service. This is to be run through the same company as the ferry service and follow a similar route through Gladstone Harbour to South End. There will likely be an increase in the Curtis Ferry Service to accommodate availability of transport on Tuesday and Thursday, as these days are not currently operating.

3.3.3 Airstrip

To accommodate the needs of fly-in fly-out guests a 1,100 metre length airstrip is proposed near the resort. The proposed airstrip is an integral part of the resort infrastructure. The airstrip will be served primarily by charter services and private light aircraft from Gladstone and Rockhampton.

The location for the airstrip is in the south central portion of Lot 8 CP86046. This location is on an existing broad natural ridge and was chosen due to its beneficial topography and alignment. The location is sheltered from the blustery coastal winds, which will allow the strip to be useable in all but the most extreme weather conditions. The alignment also permits a lower level of earthworks and visual disturbance to the natural

features of the island. Being only 4km from the resort node its position also offers convenience. The airstrip land was cleared in 2006 and the airstrip is partially built.

3.3.4 Access to Foreshore

Access to the foreshore will be managed by implementation of the following measures consistent with the current conditions of development approval:

- providing a total of three pedestrian access points only to the foreshore from the resort;
- not providing for vehicle access to the foreshore; and
- utilising topography and landscaping to prevent access to the foreshore other than at the designated pedestrian access points.

3.4 Visual

The project has been designed to minimise visual impacts on the Great Barrier Reef World Heritage Area by ensuring appropriate setback distances to the shoreline and by ensuring that buildings are predominantly below the height of the existing mature trees on the site. The design, colour palette and construction materials of buildings and infrastructure will also complement the natural environment (refer to Attachment 3 of EPBC Act Referral – Development Approvals and Approved Plans).

3.5 Landscaping

Landscape concept plans have been prepared for the proposed development that identify existing trees and additional areas for supplementary planting (refer to Attachment 3 of EPBC Act Referral – Development Approvals and Approved Plans and Attachment 4 – Landscape Concept Background). All new trees, shrubs and grasses will be from local endemic species and a best practice weed management plan is proposed.

3.6 Activities

Guests at a resort need to be offered a range of activities in order to ensure that the average stay (aimed at 4 days) is achieved. Some guests will most likely not leave the confines of the resort precinct and the attractions provided within the precinct are designed to cater for this:

- Bars
- Pools
- Conference facilities
- Day spa
- Tennis courts

A proportion of guests will venture out of the resort precinct by vehicle during their stay. The options are to travel north, south or to take to the water. Any waterborne activities within the Great Barrier Reef Marine Park will be subject to separate permits. The majority of Curtis Island is now National Park, Conservation Park or Regional Park. These areas are managed by Queensland Parks and Wildlife Service (QPWS) part of the Department of National Parks, Sport and Racing. Commercial activity permits are required for any commercial activities. Examples of activities requiring a Commercial Activity Permit include:

- Guided tours
- Events
- Scenic flights

- Motorised activities.

Accordingly, off site resort generated activities will require QPWS permits that will regulate these activities.

As outlined in a letter of 31 May 2016 the proponent has removed aspects of marine tourism activities from the EPBC Act referral on the basis that these aspects of the application will be addressed at the time when the proposed extent of water activities have been resolved.

3.7 Energy

A standalone diesel energy system is proposed for the development and will provide a combined genset supply of 1.2 megawatts. QRE Pty Ltd has committed to a path of research and development of renewable energy sources which will most efficiently and effectively contribute to the resort's clean energy aspirations. This commitment sets the company, its officers and shareholders, the clear objective to reduce the resort's reliance on hard fuels by at least 20% by the year 2020. The objective shall be met through exhaustive consideration of all green energy sources, with a total contribution to the resort's energy needs of 24 megawatts. Turtle Street shall by 2020, utilise its own standalone solar PV arrays and solar hot water; with an inverter system and storage batteries. Continuing improvements in battery storage and solar panel technologies, together with reducing costs, may see a quicker and greater overall contribution from renewable sources.

3.8 Water Supply/Dam

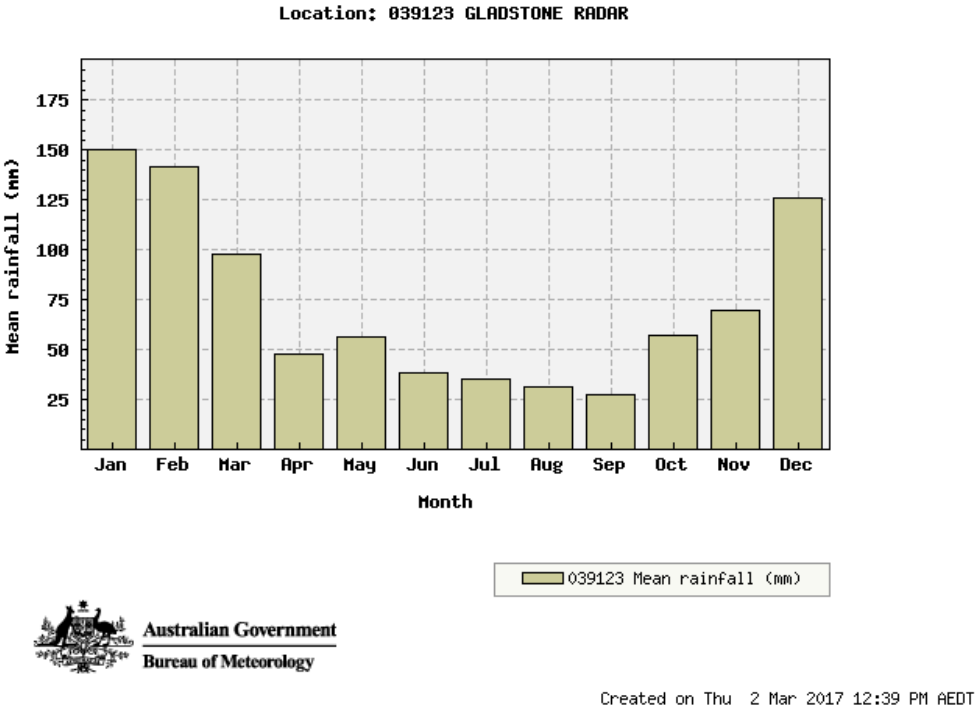
The main water supply will be from an earthen embankment dam with an impervious core located in the infrastructure and access corridor, with a smaller existing dam located in the resort node to serve as a backup supply for emergencies (e.g. fire management). The proposed Hobble Gully dam site is located upstream of areas subject to tidal inundation and in an area that has been largely cleared of woody vegetation. The proposed dam will incorporate wave and erosion protection and an under embankment drainage blanket for draw down control. The dam will be designed in accordance with the Australian National Committee on Large Dams (ANCOLD) Guidelines. Ultimately the dam will inundate an area of approximately 12ha, have a storage capacity of 194 ML, a maximum embankment height of RL8.65 metres AHD and a spillway level of RL7 metres AHD.

Rainfall and Environmental Flows

Upstream of the dam is an ephemeral freshwater watercourse and downstream of the dam wall is an estuarine environment. The upstream watercourse typically contains discontinuous ponds along sections of the creek bed, particularly in the location of the proposed dam, with continuous flows only occurring following higher rainfall events. The tidal influence extends close to the base of the proposed dam wall, meaning that that there is brackish conditions and no freshwater environment below the proposed dam wall. The environmental flows are presently ephemeral and as such are only present during a rainfall event when there is sufficient flows to generate run-off.

Rainfall rates since 1957 have been extracted from the Bureau of Meteorology data for the Gladstone Radar (refer to **Graph 1**). An analysis of the data indicates that majority of the rainfall occurs in the warmer months from October – March, with April – September being the dry season.

Graph 1. Gladstone Radar Mean Rainfall Data in mm from 1957 (Source: Bureau of Meteorology).



The Project Engineer has reviewed the climate data and the 2010 Bligh Tanner Report "Turtle Street Beach Resort: Integrated Water Management Design Report" and has calculated that the dam will be expected to be filled within one average wet season on the first occurrence. The catchment area of the dam is 1,119 hectares and will generate, once wet from the first rains, significant runoff to then fill annually, without the water demand of the development.

Construction will take place during the dry season (April – September) at a time where there are typically no downstream flows.

Based on the Bligh Tanner report under the maximum demand Base Case (Option 1) the dam can meet all resort water demands for 100% of the time and would be expected to remain over half full 99% of the time. This reflects the yield of the catchment, which is substantial, when compared to the relatively small storage volume of the dam. The catchment has a capacity of approximately nine times the total of the proposed storage. Accordingly, excess runoff during the wet season will overtop the dam spill way resulting in environmental flows into the estuarine environment.

Downstream receiving environments will benefit from these flows which form only a portion of the overall environmental flow contribution to Grahams Creek from its multiple tributaries.

A small package water treatment plant is proposed to be located in the resort infrastructure area to treat the raw water from the dam to a potable standard based on the report was prepared by Bligh Tanner Consulting Engineers titled "*Turtle Street Beach Resort: Integrated Water Management Design Report December 2010."*

The water treatment system to produce high quality potable water for the resort will include:

- Inlet screening;
- Media filtration with addition of a coagulant or flocculent to improve filter efficiency;
- Membrane ultra-filtration to achieve very high suspended solids reduction;
- Ozonation for colour removal and disinfection;

- Activated carbon filter to remove residual organics and colour;
- Residual chlorine dosing; and
- Controlled by a registered operator.

The water treatment plant and transfer main will be sized to meet the demands of the development based on 100 percent occupancy, however, the extraction rates will depend on the actual demands of the development and the extent of supplementation with recycled water.

Potable water supply demands will be significantly reduced with the mandatory implementation of AAA water saving devices and providing Class A+ recycled water for unrestricted non-potable use such as toilet flushing, cold water supply for washing machines, garden watering and hosing purposes. It is expected that the water demands would be reduced by 57% compared to traditional water supply solutions. Raw dam water and recycled water will be used to irrigate landscaped areas within the site.

3.9 Stormwater

Best practice stormwater and drainage design will be implemented to ensure the natural hydrology is not adversely impacted by the proposed development. Conveyance of flows from new areas of development will be done in a way that is sympathetic to the existing drainage characteristics of the island and receiving environment. New drainage networks will also feature elements to remove sediments and nutrients prior to discharge. Work will be undertaken in accordance with the Consent Permit (refer to **Appendix 2**) and conditions of the Operational Works approval issued by Council (refer to **Appendix 7**), including requirements to prepare and implement an Erosion and Sediment Control Plan.

3.10 Proposed Sewage Treatment Plant and Water Treatment Plant

Appendix 2 provides the location of the proposed sewerage treatment plant and water treatment plant. Both facilities are to be located at the infrastructure compound to the west of the resort node.

The wastewater treatment plant will be designed, constructed, operated and maintained to produce a consistent Class A+ recycled water. The recycled water will be monitored to ensure the required water quality prior to irrigation. The waste water treatment system will have the following features:

- A tertiary wastewater treatment plant will be constructed for treatment of wastewaters generated within the development and is to be licensed for operation in accordance with environmental regulations.
- Wastewater will be collected in a system of gravity mains and pumping stations to the central plant;
- Wastewater will be treated to a quality suitable for reuse for irrigation of the designated irrigation area as approved in the operational works permit plans and other landscaped areas throughout the resort node;
- The wastewater treatment plant will be sized for the peak population in the resort;
- Treatment processes provided will be capable of producing high quality recycled water suitable for use for irrigation;
- The plant will include:
    - Screening and grit removal to remove gross / heavy solids upstream of the plant;
    - A Biological secondary treatment process to break down organic matter and to reduce nutrient concentrations;
    - Extended aeration activated sludge;
    - Membrane bioreactor process;
    - Trickling filter process;
    - Filtration to reduce turbidity prior to disinfection;
    - Disinfection using UV irradiation or chlorination; and
    - Controlled by a registered operator.

3.11 Waste

The waste management strategy for the project aims to minimise the total volume of waste produced and the volume of waste disposed to landfill to the mainland (Gladstone Refuse Centre) during construction and operation by:

- Employing waste avoidance and reduction strategies throughout construction and operation to eliminate waste at the source;
- Maximising the reuse and recycling of waste materials produced on site;
- Ensuring the handling, storage and transportation of wastes during construction and operation does not adversely impact on the natural environment or communities on and off the Island;
- Continually improving the processes for managing wastes generated by conducting regular waste audits to evaluate waste streams; and
- Identifying practices and new ways to reduce, reuse or recycle wastes and to prevent environmental harm.

All solid wastes that cannot be reused or recycled as described above, will be collected and stored in designated facilities on the Island, prior to transport and disposal on the mainland.

Waste storage facilities throughout the site will be designed to prohibit access to wildlife and/or pest species.

4 Matters of National Environmental Significance

4.1 Introduction

This section provides a description of the relevant matters of national environmental significance that may be affected by the proposal (including at offsite locations). In accordance with the request for additional information, it also provides an assessment of the potential and likely impacts relevant to the MNES resulting from the construction and operational phases of the proposed action.

The following MNES for which further information was requested by the Commonwealth are:

- Listed threatened species and communities – Flatback Turtle and Dugong;
- Listed migratory species (sections 20 & 20A);
- World Heritage properties (sections 12 & 15A); and
- National Heritage places (sections 15B & 15C).

4.2 Flatback Turtle

4.2.1 Description

The flatback turtle (*Natator depressus*) is one of seven species of sea turtle worldwide and the only species endemic to the waters of Australia and Papua New Guinea. All nesting beaches of this species occur in Australia. It is listed as marine and migratory and vulnerable to extinction under the *Environment Protection and Biodiversity Conservation Act 1999* and the *Nature Conservation Act 1992* (Queensland). Species listed as vulnerable may become endangered if threats continue. Under the *Reef 2050 long-term sustainability plan*, sea turtles are considered as indicator species to protect the Outstanding Universal Value of the Great Barrier Reef (GBR) world heritage area with a commitment from both the Australian Government, and the Great Barrier Reef Marine Park Authority (GBRMPA), to identify, protect and manage key marine turtle nesting and foraging areas within the GBR world heritage area. The objective of this commitment is to have populations stable or increasing. The first five years of this plan has a specific focus on the flatback turtle.

Curtis Island and the Port Curtis region sustains habitat important for nesting, inter-nesting and likely foraging of the flatback turtle. The resort boundary abuts a narrow stretch of foreshore that runs for approximately 350 m adjacent to the resort boundary. This foreshore has no dunes and is backed by a 10 m wide esplanade populated by mature vegetation 6-10 m high that separates and screens it from the resort boundary. No suitable nesting habitat exists on this foreshore. However, Turtle Street Beach, which runs to the north from the resort boundary, is backed by dunes. Nesting on Turtle Street Beach is considered rare with a possible one or two nesting events here each season (C. Limpus pers. comm.). This is consistent with observations from the site's caretaker who for forty-four years did not observe turtles nesting at or adjacent to the Turtle Street Beach Resort site. Notwithstanding this, the development has been designed to incorporate measures to ensure that there is minimal impact on turtle populations in accordance with the 1996 Commonwealth approval (refer to **Appendix 3 – EPBC Act Referral - Attachment 7**) and conditions of lease. Similar requirements are contained in the current Town Planning Consent Permit.

4.2.2 Ecological requirements and habitats

The flatback turtle has a complex life history that spans several decades, habitats and ecological requirements. The National Recovery Plan for Sea Turtles of Australia defines five key habitats that are occupied through the lifecycle of a sea turtle: mating areas; nesting beach; inter-nesting habitat; feeding areas; and pelagic waters. For the flatback turtle, the pelagic developmental stage is confined to waters over the continental shelf rather than the open ocean.

Mating areas:

Females reach sexual maturity at around 15-20 years of age or older. Just prior to the breeding season, males and females will migrate to breeding grounds, which may be hundreds of kilometres from their feeding grounds. Males will then travel back to their feeding grounds, while females will return to lay on nesting beaches in the same area they originally hatched from decades before.

Nesting beach and inter-nesting habitat:

Nesting of the flatback turtle on Australia's east coast occurs on inshore islands of the southern GBR and adjacent mainland beaches anywhere from 19-27^{o}S (Limpus *et al.*, 2013). They prefer deep sandy beaches of low energy often fronted by sand/mud intertidal substrates. Major nesting aggregations for the east coast of Australia occur at Peak Island, Wild Duck Island and Avoid Island (Limpus, 2007). Curtis Island supports a medium density nesting site (40 – 100 individuals) at the beach at South End. Minor breeding aggregations occur at other sites on the mainland coast and adjacent continental islands north from Mon Repos to Herald Island near Townsville. This species will rarely nest on beaches fronted by intertidal coral reef flats. Over 70% of the flatback nesting lies within protected habitats of National Parks and Conservation Parks declared under the *Nature Conservation Act 1992* (Limpus, 2007).

The nesting season on Australia's east coast runs from late October to late January (see Table 4.2.1). During this period, females will lay multiple clutches of eggs at approximately 14 day intervals (Hamann *et al.*, 2015). It is likely that flatback turtles, like other species of sea turtle, do not feed during the breeding season (Limpus *et al.*, 2013).

For successful incubation, eggs must be laid in nesting habitats that offer 25-33^{o}C of well ventilated, high humidity substrate and not be subjected to flooding (Limpus, 2007). The sex of offspring is determined by the mid incubation temperate with high temperatures in the nest producing more females and low temperatures producing more males. Due to the energetic cost of breeding, females will breed on average every ~3 years (Hamann *et al.*, 2015) while males are likely to breed more often. Flatbacks will not necessarily always use exactly the same beach for each successive nesting event in a nesting season (Whittock *et al.*, 2014); however, the majority observed at South End on Curtis Island generally show very strong fidelity to that particular nesting beach (Limpus *et al.*, 2016), an observation that is typical of this species.

Hatchlings usually emerge at night, after approximately two months of incubation (Limpus *et al.*, 2013) and make their way down the beach towards the water. Ideally this will happen in as short a time as possible to avoid predation, exhaustion and exposure to the elements. In finding the sea, hatchlings follow three primary cues (Bartol & Musick, 2003);

1) movement toward brighter regions. Typically the ocean as lit by natural astral light sources (the moon/stars),
2) movement away from darker rear beach dune silhouette and when these cues are inconsistent;
3) movement in relation to elevation, such that they will run down towards water.

The importance of light in successful sea-finding of hatchlings means that artificial light that disrupts natural light horizons can influence both female nest site selection and the sea-finding behaviours of hatchlings.

Visual pigments in sea turtles are well adapted to the predominant blue light in the open ocean, and their spectral sensitivities are skewed toward shorter, blue-violet light wavelengths (Fritsches & Warrant, 2013). However, they have a broad visual spectrum stretching from UV to yellow-orange (Horch *et al.*, 2008; Fritsches, 2012). Studies on the visual spectrum of the Flatback turtle suggest a preference for light of short wavelengths (e.g. metal halide and fluorescent light), as is typical of sea turtles generally, and that they may not be able to discriminate well between wavelengths between 450 and 550nm (Pendoley, 2005). Therefore, light >550nm wavelengths are less disruptive to this species.

It is important to note that light has many properties that may influence hatching orientation including intensity, wavelength and directivity. Hatchlings will orient towards the brightest light. However, brightness relates to light intensity, wavelength and hatchling spectral sensitivity. A light will not be detected if it is outside the spectrum of what is visible to an animal and longer wavelengths, on the outer edge of the visual spectrum need to be more intense to illicit the same attraction. For example, red light must be almost 600 times more intense than blue light before a turtle hatchling will show equal preference (Pendoley, 2005).

The attraction to light sources persists once hatchlings enter the water (Thums *et al.*, 2016). This can then interfere with natural migration as well as increase the risk of predation. However, hatchlings also likely orient perpendicular to waves, so the influence of light pollution once they are in the water may be moderated by the ocean conditions available.

Pelagic habitat and feeding habitat:

Once in the water, sea turtles engage in a four day swimming frenzy to disperse from their nesting beaches (Limpus *et al.*, 2013). During this period, the hatchlings will survive off the internalised yolk reserves left over from their embryonic development in the egg (Limpus *et al.*, 2013). Post-hatchlings remain within pelagic waters of the continental-shelf making flatback turtles the only species without an oceanic phase. This period of their development may last several years allowing growth on a diet of pelagic zooplankton. Sub-adults then recruit to inshore waters and transition from a pelagic habitat to a bottom living, or demersal habitat and feed primarily on soft-bodied invertebrates, including soft corals and sea pens. Just prior to reaching sexual maturity, flatback turtles may shift habitat again to their adult foraging habitat. Marine turtles exhibit strong fidelity to these foraging habits throughout their life (Limpus, 2007). The majority of female flatback turtles from the east coast breeding population will migrate from widely dispersed foraging grounds anywhere from Torres Straight to Rodds Bay (Limpus *et al.*, 2013).

4.2.3 Extent and Quality of Habitat

Curtis Island and the Port Curtis region hosts a number of habitats relevant to the lifecycle of flatback turtles including nesting habitats, inter-nesting habitats, and possibly both sub-adult and adult foraging habitats.

Extent and Quality of Nesting Habitat

Curtis Island hosts an intermediate sized nesting population along the beach at South End (**Figure 3)**. This beach occupies a ~5 km stretch of coastline situated over 6 km south of Turtle Street Beach. Monitoring of nesting females on Curtis Island dates back to 1970 (Limpus, 2007). Nesting on the beach directly north of Turtle Street Beach Resort is considered rare with a possible one or two nesting events here each season.

Nesting habitat on Curtis Island has impacts from feral animals, light pollution and 4-wheel drive access to the nesting beach.

Extent and Quality of Nesting Habitat: Feral animals

Historically, the nesting success for flatback turtles on Curtis Island and the surrounding stretch of coastline along the mainland has been highly impacted by predation of feral animals including foxes, feral dogs and wild pigs, as well as goannas. It is estimated that 90-95% of clutches were lost to feral dog predation on Curtis Island during the 1970s and up to 1988 (Limpus, 2007). This ceased by 1993 following eradication of feral dogs; however, by the late 1990s, fox predation became a significant problem (Limpus, 2007). In 1999, 13,940 ha of the Monte Christo holding was surrendered to create the Curtis Island National Park (**see Appendix 3 EPBC Act Referral – Attachment 1 - Turtle Street Land Tenures Map**). A fox-baiting program was introduced on Curtis Island two years later, in 2001, which has since brought fox predation under control (Limpus, 2007). In 2014, a further 18,950 ha of the Monte Christo holding was dedicated to the Queensland Government for vegetation offset areas. There is continued management of feral animals on Curtis Island with eradication programs for dogs, pigs and foxes run by the Department of National Parks, Sport and Racing. This appears to have been successful. No fox tracks were recorded at the South End rookery at the last breeding season (2015/2016), however there was presence of at least one dog with evidence that a dog had predated on hatchlings from one of the nests and dug into another (Limpus *et al.*, 2016). It is not known whether this is a domestic animal from the town at South End or a feral animal. Horses and cattle were also observed walking over the dunes and stepping on nests (Limpus *et al.*, 2016).

Extent and Quality of Nesting Habitat: Light pollution

Light pollution is an increasing concern for the quality of flatback turtle nesting beaches along southern Queensland due to significant levels of industrial and urban development altering light horizons (Kamrowski *et al.*, 2012). Baseline surveys of artificial light profiles at South End Curtis Island in 2011 showed the predominant source of sky glow originated from the city and Port of Gladstone; however, a minimal amount of light was also detectible from the settlement at South End (Pendoley & Bell, 2014). Studies on the effects of these altered light horizons on the sea-finding behaviour in hatchling flatback turtles on behalf of the Gladstone Ports Corporation Ecosystem Research and Monitoring Program have found the following:

> During the 2013/2014 nesting season, assessment of altered sea-finding pathways in 23 clutches of emergent hatchlings at Curtis Island and 4 clutches at Facing Island did not show any evidence of disruption due to sources of artificial light (Pendoley & Bell, 2014).

> During the 2015/2016 nesting season, four of 138 clutches at South End on Curtis Island showed altered sea-finding behaviour in response to inland sky glow. This influenced either a portion or all of the hatchlings in each nest (Limpus *et al.*, 2016) as follows:

- *6 January 2016 - the tracks from 50 emerged hatchlings from one nest headed inland and westwards towards the "city lights". Three hatchlings were found dead among the inland dune vegetation the following morning.*
- *26 January 2016 - the majority of the tracks from 37 hatchlings that emerged from one nest led inland towards the "lights of Gladstone".*
- *28 January 2016 - tracks from at least 15 hatchlings of 52 that emerged from one nest led inland.*
- *28 January 2016 - tracks from an unquantified number of the 36 hatchlings that emerged from one nest led inland towards the sky glow associated with Port Curtis. Some hatchlings travelled at least 200 m within the dune system.*

The differences between the observations in these two seasons may be due to differences in the sample size observed, differences in cloud cover or the phase of the moon affecting ambient light and increasing the effects of artificial light horizons. Additionally, the location of nests in relation to the beach topography can complicate hatchling behaviour.

Extent and Quality of Nesting Habitat: Vehicle disturbance

Curtis Island allows 4-wheel driving along its main coastline. Vehicles can damage marine turtle nests and nesting habitat by compacting sand and crushing nests as well as hatchlings and even adults. Hatchlings can also get stuck in tire ruts. Quad bike and/or ATVs tracks were observed passing over nests, including those that had been marked with fox exclusion devices during the latest nesting season on Curtis Island's South End beach (Limpus *et al.*, 2016).

Extent and Quality of Inter-nesting Habitat:

Under the Gladstone Ports Ecological Research and Monitoring Program (GPERMP) (Hamann *et al.*, 2015) the inter-nesting habitats of flatback turtles nesting on Curtis Island were assessed. Between 14 – 18 November 2014, 11 female flatback turtles from the South End nesting beach were intercepted on their return to the ocean, after successfully nesting, and fitted with a satellite tag for monitoring. Observations from this study were as follows:

> All 11 turtles spent time within the Gladstone Port.

> One turtle moved quickly through the area enroute to Rodds Bay. The remaining ten occupied habitat within and adjacent to the main passage between Curtis and Facing Islands.

> Seven turtles spent half of their time in the middle harbour region.

> The inter-nesting habitat of flatback turtles has a high degree of overlap with sections of the main shipping channel located east of Barney Point.

> A comparison of the depth profiles of the turtles tagged with the bathymetric landscape of the area showed the majority of time was spent on the bottom rather than in surface waters by these animals and in waters <2 m deep.

Extent and Quality of Inter-nesting Habitat: Port development and Vessel movements

In 2007, boat strike was nominated for listing as a key threatening process for all marine turtles in Australia under the *Environment Protection and Biodiversity Conservation Act 1999*. Sea turtles are particularly prone to boat strike as they frequently surface to breathe. The Department of Environment and Heritage Protection (EHP) maintains StrandNet, a database of marine wildlife strandings and deaths. A comparison of boat strikes reported for all sea turtle species from 1998 to 2002 across Queensland suggests flatback turtles are much less prone to boat strike than other sea turtle species with no reported incidences in this four-year period.

Gladstone port sustains high levels of vessel traffic including cargo ships, passenger ferries, small watercraft and tourist vessels. A large proportion of the shipping activities relate to the LNG plant operations. The Quoin Island Turtle Rehabilitation Centre began operating in Gladstone Harbour in March 2012. Since this time, they have had a single confirmed vessel strike for a flatback turtle. This was a sub-adult turtle collected from inside Gladstone harbour in November of 2012 (Quoin Island Turtle Log). In the same year, annual vessel movements from ships associated with the LNG facilities totalled 284,022. Vessel movements from these ships have since halved to 141,058 in 2015.

4.2.4 Population that may be affected

The complex life history of sea turtles makes it very difficult to accurately determine vital parameters such as age to maturity, survival, sex ratios, and population size (including males). There are no current estimates for the population size of the flatback turtle. However, monitoring of nesting beaches and tag recaptures from animals at both nesting beaches and in the marine environment provides some insights into the population dynamics of this species.

The flatback turtle nests almost on a continuum from Exmouth Gulf in Western Australia to south-east Queensland. These nesting grounds, or rookeries, have been defined into four separate stocks on the basis of mitochondrial DNA (Wallace *et al.*, 2010). This method traces only the female lineage. Flatback turtles nesting along the east coast of Australia form the east coast breeding stock.

Adult flatback turtles may have their foraging and nesting habitats separated by long distances of hundreds to even thousands of kilometres. Corresponding feeding grounds for the east Australian breeding stock are expected to occur largely in the same east Australian region and adjacent waters of the Great Barrier Reef (Limpus *et al.*, 1983).

The migration pathways of females nesting on Curtis Island were observed from satellite tags. Satellite tracks showed all animals dispersed to foraging habitats northwards from 170 km north, near the Shoalwater Bay region, up to 1223 km north to far north Queensland (Hamann *et al.*, 2015). It is likely that flatback turtles foraging in the waters around Port Curtis, will have nesting grounds elsewhere on the east coast.

Curtis Island, along with Peak Island, Wild Duck Island and the Woongarra coast have been monitored as indicators of the population dynamics of the eastern Australian stock (Limpus, 2007). The nesting population on Curtis Island is a medium sized population (i.e. between 10 to 100 individuals) and has remained stable since monitoring began in 1970 (Limpus *et al.*, 2013). During monitoring, either a two-week census is taken at the height of the nesting season between late November and early December or the whole season is observed. The latest nesting season on Curtis Island, based on a census period, counted 44 individual flatback turtles nesting at South End, 37 of these were remigrant turtles that had been previously tagged at these nesting grounds (Limpus *et al.*, 2016). Flatback turtles show very strong fidelity to nesting grounds. However, satellite tag data from the 11 turtles captured here during the 2014/2015 nesting season indicated that two turtles may have laid a clutch of eggs on Facing Island and one turtle may have laid two clutches in Rodds Bay in the same nesting season (Hamann *et al.*, 2015). Nesting on the beach adjacent to Turtle Street Beach Resort is considered rare with a possible one or two nesting events here each season (C. Limpus pers. comm.).

4.2.5 Potential Impacts (construction and operation)

Development has the potential to impact flatback turtles during both construction and operation either directly or indirectly. It is expected that the potential impacts to the flatback turtle from both construction and operation are known, predictable and can be prevented or minimised through design and existing well-established management measures. To assess the potential of these impacts, it is important to consider the nature and type of impact and its proximity to flatback turtles and their habitats. Curtis Island and the Port Curtis region contain nesting and inter-nesting habitats of the flatback turtle. It is also likely there are juvenile and/or adult foraging habitats in the port Curtis area. Factors to consider with the development proposal are:

- The resort site and its infrastructure will cover a total area of 20 hectares. The resort has a setback design from the adjacent foreshore. A 10 m esplanade populated with mature vegetation, 6-10 m in height, separates the resort from the adjacent foreshore and Turtle Street Beach, running north from the resort boundary;
- There are no dunes or suitable nesting habitat on the foreshore directly adjacent to the resort;
- Turtle Street Beach, an approximately 1.5km stretch of coastline, runs north from the resort boundary. This is backed by Curtis Island National Park and does not support any predictable nesting with only one to two possible nesting events per season along its entire length;
- The main nesting beach on Curtis Island is situated greater than 6 km to the south of the resort node; and
- Flatback turtles nesting on Curtis Island spend a large proportion of their inter-nesting period in areas that overlap with major shipping channels of the Port Curtis region. Despite this, vessel strike is extremely rare for flatback turtles.

The *National Recovery Plan for Marine Turtles in Australia* was adopted in July 2003. The Recovery Plan provides for research and management actions necessary to stop the decline and support the recovery of marine turtles so that their chances of long-term survival in nature are maximised. Within this recovery plan, key threats were identified. However, a more recent study based on a panel of experts identified threats relevant to sea turtles of east Australia (Klein *et al.*, 2016). These are addressed below and relate to the following:

- Coastal/port development
- Light pollution (from industrial and urban development and activities)
- Land based run off
- Clutch predation (e.g., by foxes and other feral animals)
- Nest destruction (e.g., vehicle traffic on beaches)
- Boat strike
- Fishing (e.g., bycatch in nets)
- Marine debris (from land-based and at-sea sources)
- Climate change

Potential Impacts: Coastal/port development:

The Port Curtis region sustains a highly industrialized coastal port with impacts to the habitats of marine turtles including dredging, land reclamation, shipping and other vessel traffic as well as light pollution. The construction and operation of the resort will utilize parts of the Port Curtis region for transport of materials, equipment, construction personnel, staff and guests (detailed below under boat strike). The impacts of these vessel movements are considered minimal given the high levels of vessel traffic in the Port Curtis region and the very rare occurrence of vessel strike on flatback turtles. The development will not reduce the sea turtle nesting habitat that may be of intermittent use for flatback turtles on Turtle Street Beach to the north of the resort. The resort footprint does not adjoin any nesting habitat as the narrow foreshore running the length of the resort boundary does not have any dunes; however, all buildings and associated structures have been

setback to accommodate a vegetated esplanade around the resort site with 6-10m of mature vegetation that reduces the visibility of the site from the surrounding water and beach to the north. Additionally, there is no vehicular access to the foreshore or adjacent beach through the resort site (see **Appendix 2 – Approved Plans and Consent Permit**). Further, a lighting plan is in place to manage light pollution. This is discussed in more detail below.

Potential Impacts: Light pollution

The proposed Turtle Street Beach Resort includes 187 units and 259 bedrooms, resort amenities (beach centre, pools and tennis courts) and a central facility with a reception, conference facilities, shop, bar and restaurant. The design is such that the dwellings, including those adjacent to the foreshore, are set back within a landscape that has 50-70% tree coverage when viewing from the beach to the north of the resort **(see Appendix 3 EPBC Act Referral – Attachment 4**). Screening with vegetation is one strategy that limits light spillage. However, without an appropriate lighting design for the resort, that takes into consideration both indoor and outdoor light sources, the development may interfere with the potential for females choosing this beach or the sea-finding behaviour of hatchlings. In addition, without appropriate cut-off designs, there is the potential to add to the cumulative light pollution impacting nesting beaches elsewhere on Curtis Island.

The proposed development will adopt a lighting design sensitive to sea turtle requirements, so as not to contribute to the overall sky glow for the area or disrupt the potential for nesting on the adjacent foreshore to the resort site (refer to Section 4.2.6 and **see Appendix 3 EPBC Act Referral – Attachment 15**).

The lighting measures will ensure no impacts to flatback turtles to the south of the resort. The nearest turtle nesting habitat to the south of the resort lies >6 km away and is not in direct line of sight from the resort buildings (refer to **Figure 3**). Notwithstanding this, the lighting design, which considers both indoor and outdoor light sources, is aimed at the possibility of turtles nesting within a 1.5 km radius, a much closer proximity than the nesting beach at South End.

During construction, no works are expected to take place after dark, minimising the need for lights on the site. However, where lights are necessary for security or for the few personnel that may stay onsite during periods of the construction, use of lights will be in accordance with the conditions of approval and follow the same guidelines for the lighting design of the resort. These will include lights that have low illuminance, are low mounted and have full cut off optics above 90 degrees (refer to **section 4.2.6** for a more comprehensive overview).

Potential Impacts: Land based run off

Water treatment and sewerage treatment plants will be located to the west of the resort (refer **Appendix 2 – Approved Plans and Consent Permit)** provides details of the location. There are provisions in the 2012 Development Approvals that prohibit unauthorized contaminated waste from being directly or indirectly released into the surrounding environment including into any waters or stormwaters.

Potential Impacts: Clutch Predation

We anticipate that the proposed development will have no negative impact on clutch predation by domestic or feral animals. The entry of dogs to the site will only be for a sight impaired person. No pets will be kept on the resort site and management strategies are in place to limit or reduce the proliferation of pest species including effective waste management and pest eradication strategies, such as trapping or baiting as needed. Further to this, the long history of feral animal predation on clutches on Curtis Island has been brought under more effective control through the eradication programs managed by Queensland Parks and Wildlife Service. Over the years, approximately 32,890 hectares of the original Monte Christo holding has been surrendered for National Park, Conservation Park, and including 18,950 hectares as a Vegetation Offset Area. This area is now under the management of the Department of National Parks, Sport and Racing which have feral animal control programs in place.

Potential Impacts: Nest Destruction

Increased tourist activities on nesting beaches can have potential impacts on marine turtle hatchling success through destruction of nests. There will be no vehicle access to the foreshore from the resort site and pedestrian access will be restricted to three entry points such that nesting sites on the beach to the north of the resort, should they occur, will not be impacted. In addition, visitors will be discouraged from bringing their own vehicles. Any activities such as sea turtle tours to the nesting beach at South End associated with the resort will be subject to separate permitting. However, it is worth noting that organized tours allow for a stricter code of practice around nesting beaches with tour operators and resort staff able to control the activities of visitors to nesting sites more effectively than for the general public.

Potential Impacts: Boat Strike

The Port Curtis region sustains high levels of vessel movements and any short or long-term increase in vessel traffic associated with the construction and operation of the resort is expected to have minimal impact on flatback turtles. During the 18-month construction period, a single barge will transport materials and equipment to the site via Hobble Gully on a weekly basis for a 12-month period and twice a week for a 6 month period. Once the resort is operational, a barge will continue to service the resort once a month for removal of waste to the Gladstone Refuse Centre and for other services as needed. Operation of this barge and any other vessel servicing the site via Hobble Gully will be subject to a 'no-wash' and a 5-knot speed restriction. Refer to **section 4.3.6** for details of this.

During construction and operation, construction personnel, resort staff and guests arriving from Gladstone will access Curtis Island on the Curtis Island Ferry Services and associated water taxis via South End. These will utilize existing traffic routes through the harbour.

Potential Impacts: Fishing

All associated marine tourism activities will be addressed at the time when the proposed extent of water activities has been resolved. However, some visitors to the resort may take up fishing activities either independently or with local tourist operators which could result in consequential impacts of the development. Recreational fishing has the possibility of impacting flatback turtles through snaring on bait hooks and entanglement in fishing line. These incidences are considered extremely rare for flatback turtles across the whole of Queensland. The main threat of fishing to flatback turtles relates to commercial netting, particularly gill nets and not recreational fishing. Any proposals for recreational fishing as an activity of the resort's operations will be subject to separate permitting requirements from the Great Barrier Reef Marine Park Authority. As stipulated in **Section 3.6** it is expected that any recreational fishing directly or indirectly associated with the resort will not have a significant impact on the flatback turtle population here.

Potential Impacts: Marine debris

Turtle Street Beach Resort is to be marketed as an ecofriendly development and will be run accordingly, with best practice information to guests on 'treading lightly'. Any impacts to this threatening process can be avoided with the waste management practices in place during both construction and operation of the resort (refer to **Section 3.11**).

Specific criteria are listed under the EPBC act to determine if a potential impact will be significant. The flatback turtle is listed as both migratory and vulnerable under the EPBC. Therefore, the development must address the following:

EPBC Criteria: Migratory Species

An action is likely to have a significant impact on a migratory species if there is a real chance or possibility that it will:

- **substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species**

No areas on or adjacent to the site are considered to be 'important habitat' for flatback turtles under the definitions stipulated in the *Matters of National Environmental Significance Significant Impact Guidelines v1.1*. Very low density nesting, in the order of possibly one to two turtle nesting events per season, may intermittently occur on the beach to the north of Turtle Street Beach Resort, and any impact to the flatback turtle population

from the resort footprint is not significant. Notwithstanding this, measures have been taken to avoid any potential impact from the construction and operation of the resort on the nesting opportunities that may take place here or elsewhere on Curtis Island including 'turtle friendly' lighting design and guidelines for construction, restricted access to the foreshore and development that is setback behind a 10 m esplanade populated by a screening of mature vegetation 6 to 10 m in height.

- **result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species**

Appropriate pest and waste management protocols will prohibit the proliferation or spread of pest species within and around the resort site.

- **seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species**

The proposal will not significantly impact the breeding cycle of the flatback turtle. Effective design and management strategies associated with the proposal are in place to ensure this including 'turtle friendly' lighting design, a development setback from the foreshore allowing a screening of mature vegetation in front of the resort and access restricted to three pedestrian only access points onto the adjacent beach. Protocols are also in place restricting vessel speeds through Graham Creek to manage any adverse effects to inter-nesting or foraging flatback turtles that may occur here.

EPBC Criteria: Vulnerable Species

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- **lead to a long-term decrease in the size of an important population of a species**

The site does not support any predictable numbers of nesting flatback turtles with a possible one to two nesting events taking place on the foreshore adjacent to the site during the breeding season. These events are considered rare and unpredictable and do not constitute an 'important population' under the guidelines. Notwithstanding this, the design and management of activities associated with the development will limit any foreseeable impact to nesting turtles adjacent to the site or elsewhere on Curtis Island.

- **reduce the area of occupancy of an important population**

The resort footprint does not directly overlap with any potential flatback turtle habitat. Any light spillage into the surrounding environment will be managed with appropriate designs and protocols in place.

- **fragment an existing important population into two or more populations**

The resort footprint does not directly overlap with any potential flatback turtle habitat. Any light spillage into the surrounding environment will be managed with appropriate designs and protocols in place.

- **adversely affect habitat critical to the survival of a species**

There is no critical habitat for flatback turtles on or adjacent to the development footprint and measures are in place to ensure the development will not result in the loss of any potential habitat for flatback turtles.

- **disrupt the breeding cycle of an important population**

The proposal will not disrupt the breeding cycle of the flatback turtle. Effective design and management strategies associated with the proposal are in place to ensure use of 'turtle friendly' lighting during construction and operation, restricted access to the foreshore and appropriate codes of conduct by guests, staff and other personnel.

- **modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline**

The development proposal does not directly result in any loss of potential habitat for the flatback turtle. Indirect impacts are not anticipated with appropriate control measures in place (e.g. lighting design, erosion management).

- **result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat**

Appropriate pest and waste management protocols will prohibit the proliferation or spread of pest species within and around the resort site.

- **introduce disease that may cause the species to decline**

The development and activities related to its construction and operation will not introduce or facilitate the spread of disease in the flatback turtle.

- **interfere substantially with the recovery of the species.**

The development will not result in the loss of potential habitat for flatback turtles or impact on the key threatening processes for this species.

4.2.6 Proposed Avoidance, Management and Mitigation Measures

Lighting Design

All development has been setback from the foreshore with mature vegetation 6 to 10 m in height filtering views of the resort from the water and lighting has been designed by Greenleaf (refer to **see Appendix 3 EPBC Act Referral – Attachment 15**) to ensure that it meets the recommendations of the 1996 Commonwealth approval (**Appendix 3 EPBC Act Referral – Attachment 7**), which states:

> *"The proponent shall consult with QDEH (National Parks and Wildlife Service) to develop measures to ensure that there is minimal impact on turtle populations."*

As well as condition 12 of the town planning consent permit (**Appendix 2**):

> *"The lessee must at all times take the necessary precautions to ensure that all lights on or above the leased land are shielded to prevent glare or reflection which may interfere with safe navigation of surrounding waterways or with reasonable enjoyment of neighbouring properties or nesting sites for turtles":*

The proposed lighting design by Greenleaf to achieve the above conditions includes:

- Lights will be low mounted;
- Low wattage lamps are to be used to avoid visibility from the beach/ocean;
- Lowest illumination level possible while still meeting Australian Standard AS1158;
- Lamps and light fittings to be directional with full cut of optics to avoid light spill; and
- Orientation of all lights away from the beach/ocean.

When designing these conditions, the contractor consulted Gladstone Regional Council for guidelines on illuminance levels and was forwarded the following conditions:

1. During construction any security lighting shall be so designed to ensure that nuisance is not caused to adjoining areas by the spillage of light.
2. Technical parameters, design, installation, operation and maintenance of outdoor lighting are to comply with the requirements of *AS4282 – Control of the Obtrusive Effects of Outdoor Lighting* in order to restrict spill onto the beach area. The vertical illumination resulting from direct, reflected or other incidental light coming from a site is not to exceed 8 lux when measured at any point 1.5m outside of the boundary of the property at any level from ground level up.

The contractor reduced the prescribed maximum vertical illumination of 8 Lux 1.5m outside the boundary of the property to a maximum average illuminance of 3 Lux.

These designs were intended to ensure there is an appropriate measure to reduce the cumulative impact of sky glow to the surrounding region. However, on review of the proposed criteria, amendments can be made

to establish best practice for lighting design at Turtle Street Beach Resort to also ensure no impact to potential nesting on the beach to the north of the resort.

The Green Building Council of Australia (GBCA) is an independent body that issues accreditation points to buildings that minimise direct and indirect light pollution according to specific criteria. These have been developed to incorporate Australian legislative requirements, the initiatives of the International Dark Sky Association (which seeks to preserve the night sky from sky glow) and to reduce impact on wildlife. Accreditation criteria are as follows:

1) Lighting design must comply with AS 4282 'Control of the Obtrusive Effects of Outdoor Lighting'

   and:

2) A reduction in lighting pollution that demonstrates either of the following:
   a. Relative to its particular mounting orientation, no external luminaire has an Upward Light Output Ratio that exceeds 5%;

   or;

   b. Direct illuminance from external luminaries produces a maximum initial point illuminance value no greater than 0.5 Lux to the site boundary and no greater than 0.1 Lux to 4.5 metres beyond the site into the night sky, when modelled using a calculation plane set at the highest point of the building.

There are provisions to exclude emergency lighting from these criteria.

Meeting the criteria of 2.b, that has a site boundary illuminance cut off at 0.5 Lux and no greater than 0.1 Lux 4.5 m beyond the site is an order of magnitude less than the 8 Lux guidelines given by the Gladstone Regional Council or that originally stipulated in the Greenleaf lighting design of 3 Lux (**see Appendix 3 - EPBC Act Referral – Attachment 15**).

For comparison, full moon conditions have an illuminance value of 0.108 - 1.0 lux. Implementing similar guidelines to the design of both indoor and outdoor lighting of the resort and its facilities will drastically reduce the potential for any direct, indirect or cumulative impacts of light pollution on the nesting success of flatback turtles on Curtis Island.

In achieving best practice, the following 'turtle friendly' principles can be incorporated into the lighting design in addition to those already stipulated by the Greenleaf lighting contractors (**see Appendix 3 - EPBC Act Referral – Attachment 15**):

- Place lights in shielded, downward directed turtle friendly fixtures;
- Use vegetation for filtering;
- Use low wattage/low intensity lamps and/or dimmer lights that have a maximum illuminance pre-set;
- Use timers, motion-sensors and wall card slots where appropriate to reduce unnecessary light;
- Light fittings to be asymmetrical where needed, to direct any light away from the beachfront;
- Design interior lighting such that light falls substantially within the building and not through the window;
- Apply window tint at a 15% light transmittance level or close opaque curtains or blinds after dark to reduce interior light spillage;
- Eliminate short wavelength light;
- Use light of specific wavelengths (red or amber LED bulbs are less disruptive to nesting sea turtles and hatchlings). Low-pressure sodium lamps with low illuminance can be considered. Sea turtles are less attracted to long wavelength light, however reducing the overall intensity of the light is of primary importance;
- Consider use of red light for emergency signage or security lighting, particularly when close to or visible from the beach;
- Use low mounted lights;
- Lights with a full cut off so that no light extends above 90 degrees; and

- Avoid decorative or uplights during the nesting & hatchling season.

Watercraft management

Watercraft management that mitigates any potential impact of boat strike on flatback turtles will follow those in place for dugongs (refer to **section 4.3.6**).

Code of Conduct on Turtle Nesting Beaches

The GBRMPA lists guidelines for appropriate conduct when encountering nesting and hatchling turtles available at: http://www.gbrmpa.gov.au/visit-the-reef/responsible-reef-practices/around-turtles.

This information can be made available to staff, guests and contractors through different media such as brochures, presentations and/or training sessions to manage any interactions with nesting females, their nests or hatchlings.

When viewing turtle nesting

Do not approach a turtle emerging from the water or moving up the beach
On sighting a turtle emerging from the water, keep still and turn off all lights until laying begins
Do not alter the environment in any way
Limit the use of light by turning torches off whenever possible and viewing with ambient light. Turtles may get confused by artificial light and may not finish nesting
Use low wattage torches (less than three-volt, two-cell) with red cellophane or a filter over the bulb
Never shine lights directly onto turtles – angle the light towards the sand at the side of the turtle
Stay well clear (at least two metres) of turtles nesting, covering their nest and moving up or down the beach – never stand in their pathway or make them alter their course
Keep still and quiet – sudden movements will disturb turtles
Remain behind turtles as they dig and lay their eggs – do not stand in front or where they can see you
Restrict use of flash photography to a minimum and only take flash photos during the egg laying phase. Always take these photos from behind the turtle
Turn off all lights and do not use flash photography when the turtle is returning to the sea
Remove lights and back away from the turtles if they appear stressed
Watch where you step to avoid crushing eggs or hatchlings. Do not disturb or dig up nests.

When viewing hatching

Stay well clear (at least two metres) of nests where hatchlings are emerging
Limit the use of light and never shine lights directly onto hatchlings. Hatchlings may become confused by artificial light and may not make it to the ocean
Use low wattage torches (less than three-volt, two-cell) with red cellophane or a filter over the bulb
Do not shine torches out to sea when hatchlings are in the water – this may cause the hatchlings to return to shore
Allow hatchlings to dig themselves out of the nest and run to the sea without disturbance or assistance
Do not touch or handle hatchlings
Never interfere with natural events (for example, rescuing hatchlings from seabirds or predatory fish).

4.3 Dugong

4.3.1 Description

The dugong (*Dugong dugong*) is nationally listed as marine and migratory under the *Environment Protection and Biodiversity Conservation Act 1999* and as vulnerable in Queensland (*Nature Conservation Act 1992*). As a species of conservation concern it is also targeted as one of the indicators of biodiversity health under the *Reef 2050 long-term Sustainability Plan* which has a commitment to:

- *Continue to protect and manage key habitats for dugong.*
- *Implement further actions to reduce human-related causes of dugong mortality such as vessel strike and net entanglement.*

The distribution of this species spans coastal waters of the Indo-West Pacific from East Africa to Vanuatu with some of the highest population numbers found in the tropical and subtropical waters of Australia, particularly in the Torres Strait region (Marsh *et al.*, 2002).

Dugongs are long-lived (up to approximately 70 years) with a low reproductive rate, producing one calf every 2.4 to 7 years. They have a long generation time (between 6 to 17 years), and a high investment in each offspring with a gestation period of 13-15 months, followed by a 14-18 month period before they are weaned (Marsh *et al.*, 2002).

4.3.2 Ecological requirements and habitats

Dugongs feed almost exclusively on seagrasses, a group of marine flowering plant found in shallow water environments. They will exploit a range of seagrass species, but show particular preferences for those high in nutrients. To this end, dugongs are highly dependent upon and restricted to areas of seagrass habitat for foraging.

The quality of seagrass habitats is dependent upon suitable light, sediment, salinity and temperature ranges as well as an appropriate level of nutrients. They are also highly susceptible to natural and human disturbances. Factors that influence water quality such as increased runoff from urban and agricultural developments, expansion of ports and shipping as well as storm, flood and cyclones can put major pressure on seagrass meadows.

While dugongs are classified as migratory, their movement patterns are highly variable between individuals with some moving within and between seagrass patches at the same time others are exhibiting large-scale movements of distances >500 km (Sheppard *et al.*, 2006). These variations cannot be predicted on the basis of life history or sex; however, there is some indication that males move between regions more frequently than females (Cope *et al.*, 2015). There is also evidence that dugongs, particularly in the southern parts of their range, will shift location according to seasonal changes in water temperature, preferring waters >20^{o}C. Changes in seagrass coverage will also initiate movements of dugongs.

4.3.3 Extent and Quality of Habitat

Seagrass meadows in the Gladstone area and south to Rodds bay are considered to be of regional significance to dugongs as they are the only known major seagrass habitats between Shoalwater Bay and Hervey Bay; where high numbers of dugongs exist (Thomas et al. 2010). As such, this area is likely to provide an important connecting habitat along the southern Queensland coast (Sobtzick et al. 2013). Approximately 50 km of coastline extending from the bottom of Curtis Island to Rodds Bay has been established as the Rodds Bay Dugong Sanctuary under the *Fisheries Act 1994* (refer to **Figure 3**) and/or http://www.gbrmpa.gov.au/zoning-permits-and-plans/special-management-areas). This is a Zone B (restricted use) Dugong Protected Area (DPA). These protected areas are designated as a two-tiered management system to conserve a network of

dugong habitat. Zone A covers areas of the most significant dugong habitat in the southern GBR, while Zone B represents less significant, but still important habitat.

Port Curtis is the second largest commercial port in QLD with high levels of vessel traffic, land reclamation and dredging to develop and maintain shipping channels. Seagrass monitoring in Port Curtis dates back to 2002. Monitoring is conducted during November each year, when seagrasses are at their maximum extent. Three metrics are assessed; biomass, area of coverage and species composition. To complement this work, permanent transect sites have been established since 2009 as part of the Western Basin Dredging and Disposal Project (WBDDP). These sites are monitored quarterly to look at seasonal changes in addition to annual changes.

Key findings from the monitoring between 2009 - to 2015 (Davies *et al.*, 2015; Davies *et al.*, 2016):

- Gladstone has received higher than average rainfall and two of the most extreme flood events here on record through this monitoring period.
- Significant declines in seagrass abundance occurred at all sites - most notably following the 2009/2010 flooding event.
- Sites on the outer harbour have recovered substantially
- Sites on the inner harbour have yet to recover to pre-flood levels
- It is difficult to ascertain the influence of dredging on the recovery of seagrasses as the activity coincided very closely with the flooding event in 2010. However, light monitoring suggests water conditions were sufficient to allow meadows to recover from the flood event.
- The November 2014 monitoring observed substantial recovery at the 'out of Port' reference sites.
- In 2015, the overall condition of seagrasses for Port Curtis and Rodds Bay were classified as poor due to the average seagrass meadow biomass falling below the long-term average. This is attributed to the significant declines in 2009/2010 as a result of natural disturbances. The port development and dredging of shipping channels may be partly responsible for the slow recovery.

Turtle Street Beach Resort is situated 11 km to the north of the Rodds Bay Dugong Sanctuary. There is a barge landing access point to the site at the top of Hobble Gully via Graham Creek. Surveys mapping seagrass cover along Graham Creek in September 2012 found seagrass at only 4 of 42 sampling stations at 5 sites, showing very little presence here (Babcock *et al.*, 2015). However, monitoring in November 2015 extended seagrass mapping through the length of Graham's Creek and Hobble Gully, reporting an increase in seagrass meadows to isolated patches that are classified as 'light in cover' (Davies *et al.*, 2016). These consist of mixed species compositions that include *Zostera muelleri* subsp. *capricorni*, *Halophila ovalis* and *H. decipiens*. No long-term monitoring meadows exist here (Davies *et al.*, 2016).

4.3.4 Population that may be affected

Defining populations of dugongs along the Queensland coastline remains difficult. Genetic studies suggests there may be two discreet populations separating between Moreton Bay and Harvey Bay (Seddon *et al.*, 2014); however, widespread movement patterns along the coastline indicate there is contemporary connectivity right across this region (Zeh *et al.*, 2016). Centres that sustain high numbers of dugongs in southeast Queensland exist in Shoalwater bay, Harvey Bay and Moreton Bay.

Intermittent monitoring of dugong numbers across Rodds Bay Dugong Sanctuary are conducted by aerial surveys during November-December, when seagrass is at maximum extent. Population estimates for intermittent studies are as follows (Marsh, 2001):

- In 1989 – 301 ± 95 dugongs were estimated (Marsh, 1989)
- In 1992 – 91 ± 60 dugongs were estimated (Marsh *et al.,* 1996)
- In 1994 – 104 ± 56 dugongs were estimated (Marsh *et al.*, 1994)
- In 1999 – 55 ± 37 dugongs were estimated (Marsh & Lawler, 2001)

- In 2005 – 183 ± 66 dugongs were estimated (Marsh & Lawler, 2006)

The Gladstone region of the Rodds Bay Dugong Sanctuary sustains a 'relatively small' dugong population (Rasheed *et al.*, 2016). Dugong monitoring was not included in the Gladstone Gas Industry Social and Environmental Research Alliance (GISERA) marine research program, a collaboration between industry, CSIRO and the Australian Government, in part because dugongs are considered rare in Gladstone harbour (Babcock *et al.*, 2015). Dugong feeding trails (DFTs) have been recorded throughout The Narrows, Fisherman's Landing, Wiggins Island, Pelican Banks, Facing Island, South Trees and Rodds Bay (Davies *et al.*, 2016). Satellite tagging of three individuals from Pelican Banks at the southern end of Curtis Island in 2014 and 2015 showed two of the tracked dugongs stayed in the Gladstone/Port Curtis region (Cleguer *et al.*, 2015) while one travelled up to Shoalwater bay (a distance of approximately 200 km away) and remained there for the duration of time it was tracked; 90 days (Cleguer *et al.*, 2015). There were some differences in the areas used by each of the dugongs that remained, however both spent large portions of their time at Pelican Banks at the southern end of Curtis Island. This is consistent with the extensive coverage of seagrass here. Neither animal appeared to have left the Rodds Bay Dugong Sanctuary Zone during the time they were tracked.

4.3.5 Potential Impacts (construction and operation)

Impacts to dugongs are well documented for southern Queensland (Marsh *et al.*, 2002) and relate to:

- Boat strike;
- Habitat loss and degradation – as a result of fishing, agricultural runoff, dredging, urban pollution and extreme weather events including cyclones;
- Fishing pressure – particularly gill and mesh nets; and
- Hunting – in the form of subsistence hunting.

The influence of subsistence hunting on dugongs is not a relevant consideration for the Turtle Street Beach Resort, however we address each of the other potential impacts in relation to considerations for the construction and operation of the proposed development. It is considered that potential impacts associated with the resort are well known, predictable and can be minimised through existing and well-established management measures.

Considerations for construction and operation

- The construction phase of the resort development is expected to take a period of 18 months.
- During construction, a barge will transport cargo to and from the site via the Hobble Gully access point.
- The barge landing site at Hobble Gully is already constructed and there will be no dredging associated with the use or maintenance of this landing site.
- Personnel associated with construction will access the island via the Curtis Ferry Services. The Curtis Ferry Services runs a regular service through Gladstone Harbour to South End at Curtis Island (see **Figure 3**). This has the capacity for up to 150 passengers and 16 standard vehicles.
- Current ferry services operate twice a day on Wednesday, Friday, Saturday and Sunday, a single service on Monday and no service on Tuesday or Thursday.
- Additional water taxi services are expected to run through the Curtis Ferry Services also operating between Gladstone and South End on Curtis Island.

Potential Impacts: Boat strike

Watercraft can pose a risk to dugongs through boat strike and displacement of migratory pathways. Increased vessel activity is expected during the construction and operation of the resort through Gladstone harbour and along Graham creek and Hobble Gully. Factors that are important to assessing the risk to dugongs from boat traffic include vessel speed and location of dugong habitat in relation to vessel routes. We expect the impact of vessels on dugongs used during both construction and operation of the development to be minimal and appropriately managed based on the following:

- During construction, we anticipate 1 barge per week for a 12-month period and 2 barges per week for a 6-month period to transport materials, machinery and other resources;

- When the resort is operational, it is expected that 1 barge service will continue to run a month to service the needs of the resort;
- All passenger transport will utilize existing services provided by the Curtis Ferry Service as well an additional water taxi service. We expect this to be run through the same company as the ferry service and follow a similar route through Gladstone Harbour to South End;
- There will likely be an increase in the Curtis Ferry Service to accommodate availability of transport on Tuesday and Thursday, as these days are not currently operating;
- Gladstone harbour is one of the largest export ports in Queensland with regards to vessel traffic and traffic routes are well established here;
- Vessel traffic associated with the LNG plant has almost halved since 2012 from 287,390 vessel movements annually to 145,025 vessel movements in 2015 (statistics supplied by Maritime Safety Queensland). Any increased traffic associated with the construction and operation of the Turtle Street Beach Resort is expected to be a small fraction of even its current load. Current weekly average vessel movements are approximately 580;
- We note that these comparison figures relate only to the LNG related vessel traffic and that overall traffic in the harbour is much higher; which would further dwarf any increased use associated with either the construction or operational phases of this development;
- During operation, approximately 35-40% of resort guests will be arriving via plane or helicopter, reducing pressure on watercraft services;
- Vessels used during construction and operation will adhere to all regulations for watercraft when navigating waterways. Additionally, there is a 'no wash' zone in place between Barney's Point and the top of Graham Creek that regulates vessel speed in this area. These same restrictions will be maintained through Graham Creek and Hobble Gully for all vessels accessing the site via this point to a maximum speed of 5 knots;
- The majority of dugongs in the Rodds Bay Dugong Sanctuary are observed near Rodds Bay >35 km south of Curtis Island;
- Graham Creek and Hobble Gully do not sustain high levels of seagrass habitat making it unlikely that dugongs frequent these waterways on any regular basis;
- Port Curtis is a highly industrialised port that sustains dredging, high traffic shipping lanes and land reclamation;
- Dugongs inhabiting the area will be habituated to boat traffic and associated disturbances as a result of the long established use and activities of this port;
- The area between Barneys Point and fishermans landing sustains some of the highest shipping traffic in the harbour - daily averages of 778 shipping movements across this area in 2012; Maritime Safety Queensland. This has dropped to an average of 84 vessel movements. This area overlaps with habitat used by dugongs; and
- A single boat strike incident to a dugong occurred in the port in June 2011 (Meager & Limpus, 2012) when vessel activity was at a peak in the harbour. No further boat strikes have occurred based on available information.

Potential impacts: Habitat loss and degradation:

Seagrass requires good water quality and activities that increase turbidity or smother seagrass meadows can have detrimental impacts. Activities such as dredging, increasing land runoff, nutrient loading or water pollution are examples that can impact on and exacerbate the recovery time for seagrass habitats. Additionally, boat traffic can increase turbidity and suspend sediment on banks through boat wash.

Any activities related to the development or operation of the site will not adversely affect dugongs or their habitat in the Port Curtis region with the implementation of appropriate management protocols based on the following:

- Port Curtis is a highly industrialised port that sustains dredging, high traffic shipping lanes and land reclamation;
- The landing site at Hobble Gully is already constructed and there will be no dredging associated with the use or maintenance of this access point;

- The barge accessing the Hobble Gully landing via Graham Creek will maintain a 'no wash' speed restriction that will manage any potential suspension of sediment;
- All passenger vessels will operate through standard shipping lanes;
- The main seagrass meadows in the Port Curtis region are located within the harbour with the nearest meadow over 11 km from the boundaries of the development site (located in The Narrows);
- There are small patches of seagrass through Graham Creak and Hobble Gully leading to the barge landing in Hobble Gully;
- Sediment runoff during construction could increase sediment loading. If uncontrolled, such impacts are likely to be temporary and reversible. Potential impacts generated from sediment are unlikely to manifest if adequately addressed through implementation of a Construction Environmental Management Plan;
- Nutrient loading will be managed under existing management protocols. Water treatment and sewerage treatment plants will be located to the west of the resort (refer to **Appendix 2 – Approved Plans and Consent Permit**). There are provisions in the 2012 Development Approvals that prohibit unauthorized contaminated waste from being directly or indirectly released into the surrounding environment including into any waters or stormwaters (refer to **section 3.9**); and
- Agricultural run-off can increase nutrient loading and exacerbate the recovery of seagrass meadows to natural events such as flooding or cyclones. The proponent has surrendered a substantial area of land (32,890 ha) to become the first Conservation Park in Queensland as well as surrendered grazing rights over the Conservation Park lease area and Vegetation offset area. All cattle were removed from the island as of 10 October 2015 ceasing cattle station operations that have operated here for over 150 years.

Potential impacts: Fishing pressure

All associated marine tourism activities will be addressed at the time when the proposed extent of water activities has been resolved. These will be subject to separate permitting restrictions under the GBRMPA as stipulated in **section 3.6**. However, it is worth noting that some visitors to the resort may take up fishing activities independently or with local tourist operators, which could act as a consequential impact of the development. Nevertheless, fishing pressure on dugongs relates primarily to the impacts of gill and mesh nets, particularly from commercial vessels. While an increase in tourism to the area may increase recreational fishing activities, recreational fishing is, in of itself, not a key concern for dugongs.

Specific criteria are listed under the EPBC act to determine if a potential impact will be significant. The dugong is listed as marine and migratory under the EPBC. Therefore, the development must address the following:

EPBC Criteria: Migratory Species

An action is likely to have a significant impact on a migratory species if there is a real chance or possibility that it will:

- **substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species**

The proposed development will not likely impact any 'important habitat' for dugongs based on the definition stipulated in the *Matters of National Environmental Significance Significant Impact Guidelines v1.1*. Small patches of seagrass that are 'light in cover' occur along Graham Creek and Hobble Gully and any substantial meadows do not occur in waters adjacent to the site. Effective management is in place to regulate vessels and wastewater treatment (refer **section 3.10**) and all cattle grazing has ceased by the proponent.

- **result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species**

Watercrafts that will service the construction and operation of the development will regularly operate in the port and are not likely to contribute to the introduction, proliferation or spread of invasive species into the port through ballast or other means.

- **seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species**

The activities associated with the construction and operation of the development are not expected to disrupt the lifecycle of dugongs in Port Curtis provided management protocols are appropriately implemented as outlined in **section 4.3.6**.

4.3.6 Proposed Avoidance, Management and Mitigation Measures

Recommendations for environmental protection set out by the Minister for the Environment on 6th February 1996 for boat impacts and impacts to dugong (**see Appendix 3 EPBC Act Referral – Attachment 7**) state:

> *The proponent shall in association with QDEH and the Gladstone Port Authority, monitor the impact of resort Vessels on Graham Creek and Hobble Cully with respect to wake erosion, increased turbidity and impacts on seagrasses and fringing mangroves.*
>
> and
>
> *The proponent shall identify, in consultation with QDEH, any areas used by Dugong for breeding calving or feeding in the operational areas of Hobble Gully and Graham Creek. Any areas identified should be subject to a restriction on boat speed to less than 5 knots per hour.*

We expect any potential impact to dugongs and their habitat as a result of the construction or operation of the Turtle Street Beach Resort to be avoided and managed as follows:

All vessels operating during the construction or operation phase of the development will abide by the Port of Gladstone published speed restrictions and exclusion zones set out by all relevant authorities at all times.

Vessels, such as the barge, accessing the site via Graham Creek and Hobble Gully will maintain the 'no wash' speed restrictions set between Barney's point and Graham Creek to a maximum of 5 knot speeds. These restrictions mitigate the potential for the suspension of sediment into the water. They also impose a 'go slow' speed restriction that is used to manage incidences of boat strike in areas with high densities of dugongs and other air breathing marine vertebrates such as sea turtles.

We note that Hobble Gully and Graham Creek has minimal seagrass coverage and dugong presence through this area is expected to be rare.

4.4 Listed threatened or migratory bird species

4.4.1 Overview EPBC Act and threatened, migratory, and marine species

Migratory bird species are listed under the EPBC Act where the Commonwealth is a signatory to bilateral and international migratory bird agreements for conservation purposes of migratory bird species. Such bilateral agreements include Japan-Australia Migratory Bird Agreement, China-Australia Migratory Bird Agreement, and Republic of Korea-Australia Migratory Bird Agreement. Other international agreements that Australia is a signatory to include Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention), Ramsar Convention on Wetlands, and Agreement on the Conservation of Albatrosses and Petrels. The EPBC Act seeks to conserve migratory marine, wetland, and terrestrial bird species as a matter of national environmental significance (MNES). These are described as follows:

- Migratory marine birds are oceangoing species that travel between multiple nations and through areas outside of national jurisdictions (Lascelles et al. 2014);
- Migratory wetland birds, or shorebirds, aggregate in large groups on coastal wetlands along migration routes. Migratory wetland birds face threats due to coastal development and population growth along the Australian migration route and sites across Asia. Protection of habitats for migratory wetland birds is a key objective of bilateral migratory bird agreements; and
- Migratory terrestrial bird species covered by bilateral agreements migrate to areas of suitable habitat for the purposes of overwintering and breeding.

The EPBC Act seeks to conserve and recover threatened species populations as a MNES. Threatened species are listed under the EPBC Act, with eligibility for listing based on scientific assessment of populations against a set of criteria which categorises the species as:

- Extinct;
- Extinct in the wild;
- Critically endangered;
- Endangered;
- Vulnerable; or
- Conservation dependent.

4.4.2 Background

The EPBC Act Protected Matters Search Tool (Department of Environment and Energy, 2015) was interrogated for a 10km buffer from the approximate centre of the aircraft runway. The search retrieved data for lands between the east and west coastlines of Curtis Island, integrating the entirety of the site, and surrounding habitats. The EPBC Act Protected Matters Search Tool identified 37 listed migratory bird species and 13 listed threatened bird species as having potential to occur within the site including those presented in **Table 3.**

Table 3. EPBC Act listed threatened and migratory bird species recorded in PMST.

EPBC listed species	Migratory wetland	Migratory marine	Migratory terrestrial	EPBC Threatened status
Actitis hypoleucos Common Sandpiper	✓			
Apus pacificus Fork-tailed Swift		✓		
Arenaria interpres Ruddy Turnstone	✓			

EPBC listed species	Migratory wetland	Migratory marine	Migratory terrestrial	EPBC Threatened status
Botaurus poiciloptilus Australasian Bittern				**E**
Calidris acuminata Sharp-tailed Sandpiper	✓			
Calidris canutus Red Knot	✓			**E**
Calidris ferruginea Curlew Sandpiper	✓			**CE**
Calidris ruficollis Red-necked Stint	✓			
Calidris tenuirostris Great Knot	✓			
Charadrius bicinctus Double-banded Plover	✓			
Charadrius leschenaultii Greater Sand Plover	✓			
Charadrius mongolus Lesser Sand Plover	✓			
Cyclopsitta diophthalma coxeni Coxen's Fig-Parrot				**E**
Erythrotriorchis radiatus Red Goshawk				**V**
Fregetta grallaria White-bellied Storm-Petrel				**V**
Gallinago hardwickii Latham's Snipe	✓			
Gallinago megala Swinhoe's Snipe	✓			
Gallinago stenura Pin-tailed Snipe	✓			
Geophaps scripta Squatter Pigeon (southern)				**V**
Heteroscelus brevipes Grey-tailed Tattler	✓			
Hirundapus caudacutus White-throated Needletail			✓	
Hirundo rustica Barn Swallow			✓	
Limosa lapponica Bar-tailed Godwit	✓			
Macronectes giganteus Southern Giant Petrel		✓		**E**
Monarcha melanopsis Black-faced Monarch			✓	
Monarcha trivirgatus Spectacled Monarch			✓	
Myiagra cyanoleuca Satin Flycatcher			✓	
Neochmia ruficauda Star Finch				**E**
Numenius madagascariensis Eastern Curlew	✓			**E**
Numenius minutus Little Whimbrel	✓			
Numenius phaeopus Whimbrel	✓			
Pandion haliaetus Osprey	✓			

EPBC listed species	Migratory wetland	Migratory marine	Migratory terrestrial	EPBC Threatened status
Phoebetria fusca Sooty Albatross		✓		
Pluvialis fulva Pacific Golden Plover	✓			
Pluvialis squatarola Grey Plover	✓			
Pterodroma neglecta Kermadec Petrel				V
Puffinus carneipes Flesh-footed Shearwater		✓		V
Rhipidura rufifrons Rufous Fantail			✓	
Sterna albifrons Little Tern		✓		
Thalassarche impavida Campbell Albatross		✓		V
Tringa stagnatilis Marsh Sandpiper	✓			
Turnix melanogaster Black-breasted Button-quail				V
Xenus cinereus Terek Sandpiper	✓			

V= vulnerable, E= endangered, and CE= critically endangered.

Note: While the Rainbow Bee-eater (Merops ornatus), Cattle Egret (Ardea ibis) and Great Egret (A. alba) were returned in the original search its migratory status was rescinded on 9 June, 2016

The results of the EPBC Act database searches is presented in **Appendix 4**.

The Queensland Government maintains a state-wide database of wildlife records. This database can be queried for individual location within a specified buffer or for individual protected area estate. The database is regularly updated integrating various studies including those prepared by consultants under terms of Queensland Parks and Wildlife Service Scientific Purposes permits. Investigations conducted in association with the construction of the three Liquid Natural Gas (LNG) processing plants and export terminals in the southwest of Curtis Island are likely to have been incorporated in the Wildnet database. That is, the Wildnet database is likely to have benefited from the inclusion of multiple contemporary fauna investigations.

To identify EPBC Act scheduled species recorded from Curtis Island in the Wildnet database, searches were conducted for:

- Curtis Island National Park;
- Curtis Island Regional Park;
- Curtis Island State Forest; and
- Within a 10km buffer from a central coordinate (-23.6905, 151.2347) at the approximate location of the proposed aircraft runway

These search areas are mapped in **Figure 4.**

Appendix 5 presents the Wildnet database search results. The following scheduled species were recorded in the 10km search area:

- *Calidris canutus* Red Knot – Migratory marine and Endangered
- *Calidris ferruginea* Curlew Sandpiper – Migratory marine and Critically Endangered
- *Calidris tenuirostris* Great Knot – Migratory marine and Critically Endangered
- *Charadrius leschenaultii* Greater Sand Plover – Migratory marine and Vulnerable
- *Charadrius mongolus* Lesser Sand Plover – Migratory marine and Endangered

- *Limosa lapponica* Bar-tailed Godwit – Migratory marine and Vulnerable
- *Numenius madagascariensis* Eastern Curlew – Migratory marine and Critically Endangered

The referral documentation included an assessment of the likely presence of EPBC Act Scheduled species based on a review of previous ecological assessments (Chenoweth EPLA, 2002; Native Foresters, 2015) and extracts from the Atlas of Living Australia (Atlas of Living Australia, 2016). This assessment has been revised integrating the results from the Wildnet database assessment, shorebird investigations conducted by the Gladstone Ports Authority (GHD, 2011; Sandpiper Ecological Surveys, 2011a, 2011b, 2011c, 2012a, 2012b; and Wildlife Unlimited, 2012, 2013, 2014, 2015, 2016) and further site investigations (Logic Environmental, 2016 - refer to **Appendix 6**).

The assessment presented in **Appendix 3** concluded that several species are unlikely to occur within the development footprint because:

- they have not been recorded any of the databases, regional studies or site based surveys; and/or
- suitable habitat is absent from the development footprint or immediate surrounds (e.g. habitat for pelagic species).

While the Black-breasted Button-quail (*Turnix melanogaster*) has not been historically recorded there are numerous patches of suitable habitat on Curtis Island that are unlikely to have been the subject of targeted searches for this cryptic species.

This assessment has resulted in a refined list of species for which habitat could be directly or indirectly impacted by the development proposal. **Table 4** presents the species that may utilise habitats within or adjacent to the development footprint.

Table 4. EPBC Act listed threatened and migratory bird species for which habitat could be directly or indirectly impacted by the development proposal.

EPBC listed species	Migratory wetland	Migratory marine	Migratory terrestrial	EPBC Threatened status
Actitis hypoleucos Common Sandpiper	✓			
Arenaria interpres Ruddy Turnstone	✓			
Calidris acuminata Sharp-tailed Sandpiper	✓			
Calidris canutus Red Knot	✓			**E**
Calidris ferruginea Curlew Sandpiper	✓			**CE**
Calidris ruficollis Red-necked Stint	✓			
Calidris tenuirostris Great Knot	✓			
Charadrius bicinctus Double-banded Plover	✓			
Charadrius leschenaultii Greater Sand Plover	✓			
Charadrius mongolus Lesser Sand Plover	✓			
Gallinago hardwickii Latham's Snipe	✓			
Heteroscelus brevipes Grey-tailed Tattler	✓			
Hirundapus caudacutus White-throated Needletail			✓	

EPBC listed species	Migratory wetland	Migratory marine	Migratory terrestrial	EPBC Threatened status
Limosa lapponica Bar-tailed Godwit	✓			
Monarcha melanopsis Black-faced Monarch			✓	
Monarcha trivirgatus Spectacled Monarch			✓	
Myiagra cyanoleuca Satin Flycatcher			✓	
Numenius madagascariensis Eastern Curlew	✓			**E**
Numenius minutus Little Whimbrel	✓			
Numenius phaeopus Whimbrel	✓			
Pandion haliaetus Osprey		✓		
Pluvialis fulva Pacific Golden Plover	✓			
Pluvialis squatarola Grey Plover	✓			
Rhipidura rufifrons Rufous Fantail			✓	
Sterna albifrons Little Tern		✓		
Tringa nebularia Common Greenshank		✓		
Tringa stagnatilis Marsh Sandpiper	✓			
Turnix melanogaster Black-breasted Button-quail				**V**
Xenus cinereus Terek Sandpiper	✓			

V= vulnerable, E= endangered, and CE= critically endangered.

The habitat, population, potential impacts and mitigation measures are addressed separately for individual threatened species, marine migratory and terrestrial migratory species, whereas migratory wetland species have been addressed collectively.

Threatened species that have the potential to occur more broadly in the Port Curtis district, but are unlikely to be directly or indirectly impacted by the development proposal are discussed below:

Yellow chat (Capricorn subspecies) *Epthianura crocea macgregori*

The Wildlife Online database search of Curtis Island Regional Park returned 6 records for the EPBC Act listed Yellow Chat (Critically Endangered). Wildlife Online database search returned no records of Yellow Chat within a radius of 10km from a central point of the proposed aircraft runway.

In 1992 a small sub-population of less than 50 birds was found in the north-east part of Curtis Island, Torilla Plain, to the east of the Fitzroy Delta. Subsequent surveys have indicated a rapid decline in the Curtis Island populations (Department of the Environment, 2016). It has been considered possible that alleviation of the 2003-2007 drought could allow a recovery of local populations (Department of the Environment, 2016). Extensive surveying of Curtis Island in 2007 returned no observations of the Yellow Chat, and current data suggest that it could now be extinct from Curtis Island (Department of the Environment, 2016).

The two important habitat components identified in the Yellow chat (Capricorn subspecies) *Epthianura crocea macgregori recovery plan* (Houston and Melzer, 2008) include:

- areas of moderate to tall rush/sedge or grass vegetation (0.4 to 2m tall) along drainage lines and depressions providing shelter and nesting habitat; and
- foraging habitat comprising these shelter areas and nearby more open vegetation types, particularly more sparse grasslands and samphire.

The habitat requirements for the Yellow Chat do not occur within a proximate distance to the proposed site, nor does the proposed site feature these habitats requirements within the development footprint. From the information available, it can be determined that it is unlikely the Yellow Chat will be impacted by the proposed development.

Red Goshawk *Erythrotriorchis radiatus*

The Red Goshawk (Vulnerable) was not identified in field surveys and Wildlife Online database results of both Curtis Island reserves and a 10km search buffer from the site. Czechura *et al*. (2011) conducted a review of past surveys and credible observations to determine the distribution of Red Goshawk. The review indicates a Queensland population estimate of up to 135-140 pairs, with 10-30 pairs existing in the south-east region, in which the site exists. Of the total records reviewed, only four breeding sites are known to be located in:

- Border Ranges
- Lockyer Valley
- Conondale Range/Mary Valley
- Great Sandy Coast

Of the known records of individuals in the review, the nearest to the proposed development occurs in the locality of Miriam Vale, approximately 80km south east of the site. As the home range of Red Goshawk may be up to 200km^2 in open and gallery forests (Threatened Species Scientific Committee, 2015), the distance of this record from the site and the lack of continuous habitat, it is unlikely that this species record would utilise Curtis Island or the site.

4.4.3 Ecological requirements and habitats of species

The migratory wetland species, or shorebirds, have specific habitat requirements that are broadly similar between species. These birds arrive from temperate regions of the Northern Hemisphere on Australia's east coast to overwinter in warmer tropical and subtropical regions. Migratory shorebirds arrive at overwintering sites through the East Asia-Australasian Flyway, with some species covering 25,000km per year (DEHP, 2016).

Overwintering migratory shorebirds require habitat for both foraging and roosting, of which they exhibit a high-degree of site fidelity. Foraging habitats include intertidal flats, headlands, sand beaches and estuarine wetlands. Forage sites are occupied by shorebirds at low tide, during night or day, where they feed on molluscs, worms, crustaceans and other macroinvertebrates. Shorebirds are vulnerable to disturbance during foraging, where multiple disturbances may decrease their ability to replenish energy reserves for extended return flights to Northern Hemisphere breeding grounds. Disturbances include chasing by domestic off-leash dogs, disruptions by pedestrians, vehicles, lighting, and predation by wild dogs and foxes. During high tide, shorebirds retreat to nearby sheltered roosting sites to rest, groom, and interact while waiting to return to forage grounds upon the receding tide. At the time of roosting, shorebirds are vulnerable to disturbance from both human impacts and predation. Roosting sites can be located in dune systems, mangroves, palustrine wetlands, or vegetated areas of the littoral zone.

Marine migratory birds, or seabirds, are species that largely inhabit marine environments, from the open ocean to coastal areas. Feeding occurs in the coastal and pelagic waters on krill, fish, squid, crustaceans, and carrion. Roosting occurs on a range of habitats, including rocky headlands, grassy and tussock slopes of remote

offshore islands. Threats to seabirds include longline fishing and trawling entanglement, and predation at breeding and roost sites.

4.4.4 Regional Knowledge of migratory wetland species

The region of Port Curtis and Curtis Island surrounds is not deemed to be an "Internationally Important Site" for migratory shorebirds (Bamford, 2008). A site is deemed an Internationally Important Site if it regularly supports 1% of the individuals in a population of a species or subspecies of waterbird, under Criterion 6 of the Ramsar Convention. Under the Department of the Environment *Industry guidelines for avoiding, assessing and mitigating impacts on EPBC Act listed migratory shorebird species* (Department of the Environment, 2015), the survey area of the GPERMP encompassing the Fitzroy Delta south to Hummock Hill and the entirety of Curtis Island, can be determined as "nationally important habitat", as recent seasonal surveying (Wildlife Unlimited, 2016) has satisfied the criteria of important habitat criteria (Department of the Environment, 2015). The following components of the criteria are satisfied as the area supports:

- At least 0.1% of the flyway population of a single migratory shorebird species (Whimbrel 1.99%, Bar-tailed Godwit 1.02%, Eastern Curlew 2.45%, Terek Sandpiper 1.2%, Grey-tailed Tattler 2.76%, Great Knot 0.38%, Red-necked Stint 0.71%, Grey Plover 0.12%, Lesser Sand Plover 0.33%, Greater Sand Plover 1%, surveyed February, 2016 with East Asia-Australasian Flyway population estimates from Wetlands International, 2015) or;
- At least 2,000 migratory shorebirds (11,574 listed migratory birds, surveyed February, 2016); or
- At least 15 migratory shorebird species (20 listed migratory bird species, surveyed February, 2016)

The Gladstone Ports Ecological Research and Monitoring Program (GPERMP) has resulted in the collection of a significant body of knowledge of shorebirds and their habitat in the Port Curtis region. Surveys have been undertaken seasonally to detect for fluctuations in migratory populations and for reporting purposes to Ecosystem Research and Monitoring Program Advisory Panel. These replicated field surveys have been conducted across known intertidal forage and roosting sites of the Curtis Coast to fulfil GERMP requirements in:

- 2011 – January, February, March, August (GHD, 2011;Sandpiper Ecological Surveys, 2011a; 2011b; 2011c)
- 2012 – January, February, March, August (Sandpiper Ecological Surveys, 2012a; 2012b; Wildlife Unlimited, 2012)
- 2013 – February (Wildlife Unlimited, 2013)
- 2014 – February (Wildlife Unlimited, 2014)
- 2015 – February (Wildlife Unlimited, 2015)
- 2016 – February (Wildlife Unlimited, 2016)

The 2011 studies effectively delineated the known roosts and foraging habitat within the Port Curtis region that have been reassessed in subsequent assessments from 2012 to 2016. Roost sites and foraging habitat of the Port Curtis region derived from these studies are replicated in **Figure 5**.

The GHD (2011) survey concluded that the east shoreline of Curtis Island, between Cape Capricorn and South End, is unlikely to support large populations of migratory shorebirds. This is due to the habitat consisting of small beaches with narrow shorelines, separated by sections of continuous cliffs. This habitat survey was completed by a slow coastline traversal by boat searching for known habitat features such as rock platforms, broad sandy beaches, small creeks, inlets, sandbars, and spits. Advice on landform was given by the vessel operator who had traversed the coastline by foot on several occasions. The continuation of seasonal surveys since the investigation into site suitability of the east shoreline indicates no change in habitat suitability or newly established shorebird populations of the east shoreline of Curtis Island. This area is delineated in **Figure 5** as 'low-grade migratory shorebird habitat'.

4.4.5 Extent and Quality of Habitat

Migratory wetland species

A number of surveys have been conducted across the Curtis Coast, and on the proposed development site to identify threatened and migratory bird species. Survey minimum requirements set out in *Industry guidelines for avoiding, assessing and mitigating impacts on EPBC Act listed migratory shorebird species* (Department of the Environment, 2015). The guidelines set out specific minimum parameters for survey timing, effort, and repetitions such as, *"one survey in December, two surveys in January, and one survey in February*," and "*four surveys for foraging shorebirds, including two surveys at spring low tide and two surveys at neap low tide*."

The proposed resort development abuts a rocky headland and sandy beaches on the east coast of Curtis Island, and estuarine environments in the west. No shorebird roosts have been identified proximate to the resort footprint. Previous regional studies (GHD, 2011) have identified that the east coast is "unlikely to support large populations of migratory shorebirds."

Areas shown in **Figure 5** are known roosting and foraging sites of shorebirds. Two roosts have been mapped on the northern and southern banks at the mouth of Grahams Creek identified as "Graham's Creek Barge Wreck" and "Laird Point" in **Figure 5**. The roosts are located approximately 6.8km downstream of the proposed barge landing on Hobble Gully and approximately 8km from the proposed runway. Annual 'summer' surveys were conducted on 5 consecutive days during the two hours either side of a spring high tide, and within two hours of low tide on the outgoing tide (Wildlife Unlimited, 2013, 2014, 2015 and 2016). These were conducted with two field observers simultaneously. The 'summer' Wildlife Unlimited (2013, 2014, 2015 and 2016) studies identified the roosts containing the greatest abundance of shorebirds within the Port Curtis area. While some roosts exceed >1,000 individuals during a survey event, the roosts at "Graham's Creek Barge Wreck" and "Laird Point" do not contain any more than 100 individuals.

Figure 5 also illustrates proximate foraging habitat at the mouth of Grahams Creek approximately 7km downstream of the proposed barge landing on Hobble Gully, approximately 8km from the proposed runway and 12km from the proposed dam on Hobble Gully. The (GHD, 2011) study, identifies the likely movement pathways of shorebirds between roosts and local foraging sites, which have been replicated in **Figure 5** herein.

Site specific surveys have been conducted by the proponent for areas within and proximate to the proposed development footprint. Native Foresters (Native Foresters, 2015) was engaged by QRE Pty Ltd to undertake a 'winter' survey of fauna habitats across the site from 15-20 June, 2015 (**see Appendix 3 EPBC Act Referral – Attachment 16**). The survey methodology in the Native Foresters report used two observers conducting active and passive searches for birds, using a minimum survey time of "*opportunistic counts over the survey*." The 'winter' surveys were conducted in the areas labelled 'A' – 'D' in **Figure 6**, with two sites located west of the proposed aircraft runway and two near the resort node. In their reporting Native Foresters note that the study as being generally consistent with *Terrestrial Vertebrate Fauna Survey Guidelines for Queensland.* While the survey did not specifically target roosts or foraging areas for shorebirds it did note that mangrove areas adjacent to the disturbance footprint are in "*good ecological condition but narrow extent, only 10 metres wide*". The study recorded the presence of one marine migratory species Osprey (*Pandion haliaetus*) and did not record any other migratory or threatened species.

A subsequent 'summer' survey was conducted by Logic Environmental (Logic Environmental, 2016) specifically to survey for the presence of listed threatened and listed migratory bird species, including the Eastern Curlew and the Curlew Sandpiper. The report is contained as **Appendix 6** to this response document. The report states that the survey was conducted/prepared in general accordance with the documents; 'Survey Guidelines for Australia's Threatened Birds (DoE)' and the 'Background Paper to EPBC Act Policy Statement 3.21 - Significant Impact Guidelines for 36 Migratory Shorebird Species'. The survey was conducted by two observers, two hours either side of both high and low tide for a period of 30 mins at each site. These surveys were repeated across 6 days from 2-19 of February, 2016. The shorebird surveys were conducted across 7 sites in the areas numbered in **Figure 6**. Habitats assessed included intertidal habitats immediately adjacent to the proposed development footprint. The single survey event coincided with the period when the highest diversity of shorebirds are present in the Port Curtis region (Wildlife Unlimited, 2015). That is, the study was conducted at a time when the likelihood of encountering multiple species was at its highest. The study recorded the presence of one species of migratory wetland bird, Bar-tailed Godwit (*Limosa lapponica*), was

observed at the northern reach of Hobble Gully, but did not record any other migratory or threatened species. The overall suitability of habitats for shorebirds assessed by Logic Environmental was described as 'good'. This included a range of habitats outside of the disturbance footprint including tidal flats, mangroves and a sandy beach. The study included counts of birds observed at each survey location that returned no more than two individuals at any one site[1].

While no roosts or foraging sites have been identified in areas proximate to the disturbance footprint in regional investigations, the location supports tidal areas that are likely to be utilised by shorebirds as a foraging resource from time to time. These areas include mangroves and saltpans (incorporating saltwater couch and samphire flats) that equate with Queensland Herbarium (Queensland Herbarium, 2015) regional ecosystems 12.1.3 and 12.1.2, respectively. **Figure 7** illustrates when these communities occur in areas proximate to the disturbance footprint. While these communities cover a broad area, much of the area is dominated by dense mangrove cover that is not favoured by shorebirds – these are evident as the darker areas within mapped vegetation on **Figure 7**. Similarly the narrow tidal channels in the upper parts of Grahams Creek and Hobble Gully represent suboptimal habitat owing to the proximity of mangroves and speed of tidal flows. Tidal flats within these areas are on occasion likely to be utilised by shorebirds, but site based studies and regional investigations have not identified these areas as an important resource. The development proposal does not directly impact Mangrove and Saltpan vegetation delineated in **Figure 7**.

Migratory terrestrial species

Habitat for terrestrial migratory birds occurs across Curtis Island. While areas within the disturbance footprint (**Figure 7**) also represents potential habitat, these area have been historically cleared and support only regrowth vegetation and/or areas devoid of woody vegetation.

Migratory marine species

The Common Greenshank (*Tringa nebularia*) will forage in similar habitats to those of the Migratory wetland species and will frequently roost in similar habitats.

The Little Tern (*Sterna albifrons*) is likely to use estuarine areas and beaches proximate to the resort footprint for roosting and feeding. No studies have been conducted to determine whether the species breeds on Curtis Island, but potential breeding habitat may be associated with broad beaches to the north of the development footprint.

The Osprey (Pandion haliaetus) will feed in marine and estuarine environments adjacent to the development footprint. There are no known nests within or adjacent to the development footprint.

Threatened species

While the Curlew Sandpiper (*Calidris ferruginea*), Red-necked Stint (*C. ruficollis*) and the Eastern Curlew (*Numenius madagascariensis*) they are also scheduled as Migratory wetland species and as such have their habitat requirements been considered above.

Targeted searches have not been conducted for the Black Breasted Button Quail (*Turnix melanogaster*) in accordance with the *Survey guidelines for Australia's threatened birds - Guidelines for detecting birds listed as threatened under the Environment Protection and Biodiversity Conservation Act 1999*. The guidelines note that the species "*Prefers drier, low, closed forests, particularly semi-evergreen vine thicket, low microphyll vine forest, araucarian microphyll vine forest and araucarian notophyll vine forest*". Curtis Island supports two regional ecosystems that equate with vine thicket / forest communities including:

- Regional ecosystem 12.2.2 "Microphyll/notophyll vine forest on beach ridges"; and
- Regional ecosystem 12.11.4 "Semi-evergreen vine thicket on metamorphics +/- interbedded volcanics"

These areas of potential Black Breasted Button Quail habitat are delineated in **Figure 8**. The proposed development footprint does not directly intersect these areas, but is directly adjacent to small patches of this habitat (<1ha) at the resort node on Black Head.

[1] The study did not include counts for Survey site 7. Discussions with the author indicated that no birds were recorded at this location.

4.4.6 Population that may be affected

Seasonally repeated shorebird surveys in accordance with the GPERMP show that the nearest migratory shorebird survey site is the Graham Creek Barge Wreck, a known artificial roost site located at the mouth of Graham Creek. The Graham Creek roost site has been included in the seasonal survey of in the GPERMP since January, 2011. The species records do not outline the specific population data for the Graham Creek roost site, as the data is grouped within the Curtis Coast survey area data. At Laird Point, on the south of the Graham Creek, large populations of shorebirds have periodically been recorded in GPERMP surveys, although recent surveys have indicated a decline in the number of shorebirds utilising this area.

As noted in **section 4.4.5,** the roosts and foraging areas at the mouth of Grahams Creek are separated by distances of 6 – 12km from the proposed disturbance footprint and will therefore not be directly impacted by the proposal.

The Native Foresters (Native Foresters, 2015) and Logic Environmental Studies (Logic Environmental, 2016) investigations did not record any foraging sites, roosting sites or notable populations of migratory species and did not identify any threatened species of bird. That is, there have been no populations that have been recorded either within or immediately adjacent to the proposed development footprint that will be directly or indirectly impacted.

For example, the location and design of the proposed dam will also ensure impacts on migratory birds are avoided because it:

- is located in an area that is largely cleared of vegetation and avoids direct impacts on tidal areas/potential wader bird habitat;
- will incorporate appropriate wave and erosion protection so as to avoid downstream erosion / sedimentation impacts on areas of potential wader bird habitat; and
- is relatively small and therefore allows for the continuation of environmental flows.

The dam is likely to provide additional habitat features for some species of wetland bird, but is unlikely to provide supplementary habitat for waders given its depth and freshwater condition.

4.4.7 Potential Impacts (construction and operation)

The development proposal has the potential to impact threatened and migratory bird species both directly and indirectly during its construction and operation. It is considered that potential impacts associated with the resort construction and operation are well known, predictable and can be prevented or minimised through design and prescribed management measures.

Direct impacts are associated with habitat destruction that will result in the permanent loss of vegetation. The development footprint only supports areas of existing clearing, young regrowth and scattered remnant trees within the resort node. Consequently, no substantive clearing is proposed as part of the development proposal. As such, there will be no significant direct construction impacts on roosting, nesting and feeding/foraging habitat.

Indirect impacts generated during construction potentially include sediment runoff, introduction of pests/weeds and construction noise. Indirect impacts generated during operation of the development proposal include:

- introduction of pests/weeds;
- increase in pest species through inadequate waste management;
- disturbance generated by beach access;
- changes in environmental flows;
- disturbance generated by barge access via Graham Creek and Hobble Gully; and
- plane strike.

Potential impacts are discussed in further detail in the following.

Construction sediment

Significant sediment runoff has the potential to detrimentally impact shorebird foraging habitat adjacent to and downstream of the development footprint. If uncontrolled, such impacts are likely to be temporary and reversible. Potential impacts generated from sediment are unlikely to manifest if adequately addressed through implementation of a Construction Environmental Management Plan.

Construction noise

Noise generated by construction will be short-term and reversible and is unlikely to affect sensitive receptors such as known migratory wetland roosts that are located 6-8km from the development footprint.

Pest introductions and spread

Pests including exotic animals and weeds have the potential to impact upon the ecology of surrounding land, limiting its capacity as forage and roosting sites for migratory and threatened birds.

The operation of the resort may present these impacts as cumulative impacts in the short and long-term. Inappropriate vehicle hygiene could result in the introduction of weeds and/or the spread of existing exotic plants on the island. Exotic species could also be introduced through inadequate controls on landscapes. If controls are inadequate there is potential for impacts to be irreversible (e.g. weed species could become 'naturalised').

Curtis Island is known to support existing populations of pest animals including the red fox (*Vulpes vulpes*), dos (*Canis lupus familiaris*), house mouse (*Mus musculus*) and the black rat (*Rattus rattus*) (Native Foresters, 2015 and Department of Science, Information Technology and Innovation, 2016). These species have the potential to proliferate in and around the resort and impact nesting birds if adequate control measures are not adopted. In particular poor waste management practices will facilitate the proliferation of these species.

Barge access

Use of the Hobble Gully barge landing throughout construction and operational phases has the potential to impact on known roosting shorebird sites at the mouth of Grahams Creek. There is the potential for disturbance arising from causing engine noise and vessel wash over the long-term, but such changes are reversible. The mouth of Grahams Creek is approximately 650m wide, thereby allowing approximately 300m separation between roost sites and passing barge traffic (assuming barges navigate via the centre of the waterway). Barge movements are infrequent and are anticipated to be between one and two barges per week during construction and no more than once per month once the resort is operational. Given the separation distance, frequency of movements and relatively small size of each roost (i.e. <100 birds per roost), impacts are not considered to be significant.

The width of Grahams Creek gradually narrows as barge traffic approach the landing site in Hobble Gully. At the barge landing Hobble Gully is approximately 100m in width, thereby allowing approximately 50m of separation from the narrow banks that shorebirds are likely to visit on occasion for foraging. Given the absence of roosts, the lower quality foraging habitat and the overall width of Hobble Gully and Grahams Creek, impacts are not considered to be significant.

Changes in Environmental Flows

As noted in Section 3.8, the proposed dam on Hobble Gully will remove some freshwater flows entering receiving brackish and estuarine environments. These environments rely, in part, on inputs from terrestrial systems (e.g. detritus, vegetation, sediments) as part of the overall food web that support migratory birds. The proposed dam site is located approximately 12km upstream of preferred foraging environments. The proposed dam will only result in the removal of a relatively small amount of water entering Hobble Gully with most water likely to overtop the spillway during wet seasons (as discussed in Section 3.8). Also, flows arising from Hobble Gully only represent a relatively small portion of the overall flows entering Grahams Creek from the wider catchment.

Impacts on migratory birds arising from the proposed dam / altered hydrological regime are not considered to be significant.

Plane strike

The proposed runway is anticipated to receive low number of aircraft movements, with 8 plane movements and 4 helicopter movements anticipated on an average day. Such movements will be permanent. Planes have the potential to intercept birds on landing and take-off from the proposed runway. The risk of strike increases where planes are travelling within the flight path of high concentrations of birds. The proposed runway runs in an approximately northwest – southeast direction. Toward the northwest, wetland areas are not encountered until the Narrows located approximately 10km away at which point aircraft will be travelling at altitudes significantly higher than the airspace within 300 metres of the ground where birds are most frequently encountered (DSDIP, 2014). The south-eastern approach abuts the upper extent of the Grahams Creek estuary. The Logic Environmental shorebird study (Logic Environmental, 2016) did not record any activity in this area which is consistent with the area supporting suboptimal shorebird habitat (i.e. systems dominated by mangrove cover and supporting narrow waterways). While there is a risk that scheduled migratory species are encountered by aircraft on the south-eastern approach to the proposed runway, the risk is considered low owing to the suboptimal habitat.

An assessment of the significance of impacts on migratory and threatened bird species has been conducted against the *Matters of National Environmental Significance Significant Impact Guidelines v1.1*. A standalone assessment has been undertaken for the threatened Black-breasted Button Quail. Migratory wetland species have been assessed as a group with specific reference to known or potential habitat for shorebirds.

4.4.7.1 Black-breasted Button Quail

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- **lead to a long-term decrease in the size of an important population of a species**

  To adequately assess this criterion it is first necessary to understand whether the Study area contains an 'important population' of the species. An assessment of 'important population of a species' follows (Commonwealth of Australia, 2013):

  An 'important population' is a population that is necessary for a species' long-term survival and recovery. This may include populations identified as such in recovery plans, and/or that are:

  - *a. key source populations either for breeding or dispersal*
  - *b. populations that are necessary for maintaining genetic diversity, and/or*
  - *c. populations that are near the limit of the species range.*

  > The site does not support any known populations of Black-breasted Button Quail deemed to be an 'important population' in the above criteria. Habitat requirements for this species include softwood scrubs, vine scrub regrowth; mature hoop pine *Araucaria cunninghamii* plantations, especially where there is lantana (*Lantana camara*); dry sclerophyll forest adjacent to rainforest; and Acacia and Austromyrtus scrubs on sandy coastal soils (Threatened Species Scientific Committee, 2015b). While Curtis Island may form part of the range of individuals or pairs and features habitat requirements broadly characteristic of Black-breasted Button Quail, no records of Black-breasted Button Quail from wildlife databases or field surveys have been identified.

- **reduce the area of occupancy of an important population**

  > While Curtis Island may form part of the range of individuals or pairs and features habitat requirements broadly characteristic of Black-breasted Button Quail, no records of Black-breasted Button Quail from wildlife databases or field surveys have been identified. The development proposal does not directly result in the loss of potential Black-breasted Button Quail habitat.

- **fragment an existing important population into two or more populations**

  > The site does not support any populations of Black-breasted Button Quail deemed to be an 'important population' in the above criteria. While Curtis Island may form part of the range of individuals or pairs, no records of Black-breasted Button Quail attained from wildlife databases or

field surveys have been identified. The development proposal does not directly result in the loss of potential Black-breasted Button Quail habitat.

- **adversely affect habitat critical to the survival of a species**
  - The development proposal does not directly result in the loss of potential Black-breasted Button Quail habitat. Indirect impacts are not anticipated provided adequate control measures (e.g. erosion management) are implemented.
- **disrupt the breeding cycle of an important population**
  - The site does not support any populations of Black-breasted Button Quail deemed to be an 'important population' in the above criteria. While Curtis Island may form part of the range of individuals or pairs, no records of Black-breasted Button Quail attained from wildlife databases or field surveys have been identified.
- **modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline**
  - The development proposal does not directly result in the loss of potential Black-breasted Button Quail habitat. Indirect impacts are not anticipated provided adequate control measures (e.g. erosion management) are implemented.
- **result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat**
  - The risk of pest animals and weeds invading and/or proliferating during construction and long-term operational phases will be managed.
- **introduce disease that may cause the species to decline, or**
  - No known diseases are recognised as threatening process to Black-breasted Button Quails.
- **interfere substantially with the recovery of the species.**
  - The site does not support any populations of Black-breasted Button Quail deemed to be an 'important population' in the above criteria. While Curtis Island may form part of the range of individuals or pairs, no records of Black-breasted Button Quail attained from wildlife databases or field surveys have been identified. The development proposal does not directly result in the loss of potential Black-breasted Button Quail habitat.

4.4.7.2 Migratory wetland species

The Department of the Environment publication Industry guidelines for avoiding, assessing and mitigating impacts on EPBC Act listed migratory shorebird species notes that, "*actions that do not result in habitat loss for migratory shorebirds may not have a significant impact and may not need to be referred under the EPBC Act*". It is relevant to note that the development proposal will not result in the clearing (i.e. direct impact) of migratory shorebird habitat.

It is considered likely that migratory shorebird species identified in **Table 4** may use areas proximate to the proposed development site for the purposes of foraging, roosting, and flying over or migration. Specifically this includes the Common Sandpiper (*Actitis hypoleucos*), Ruddy Turnstone (*Arenaria interpres*), Sharp-Tailed Sandpiper (*Calidris acuminata*), Red Knot (*C. canutus*), Curlew Sandpiper (*C. ferruginea*), Red-Necked Stint (*C. ruficollis*), Great Knot (*C. tenuirostris*), Double-Banded Plover (*Charadrius bicinctus*), Greater Sand Plover (*C. leschenaultii*), Lesser Sand Plover (*C. mongolus*), Latham's Snipe (*Gallinago hardwickii*), Grey-Tailed Tattler (*Heteroscelus brevipes*), Bar-Tailed Godwit (*Limosa lapponica*), Eastern Curlew (*Numenius madagascariensis*), Little Whimbrel (*N. minutus*), Whimbrel (*N. phaeopus*), Pacific Golden Plover (*Pluvialis fulva*), Grey Plover (*P. squatarola*), Common Greenshank (*Tringa nebularia*), Marsh Sandpiper (*T. stagnatalis*) and Terek Sandpiper (*Xenus cinereus*). These species have been assessed collectively below.

An action is likely to have a significant impact on a migratory species if there is a real chance or possibility that it will:

- **substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species**

  To adequately assess this criterion it is first necessary to understand whether the Study area contains 'important habitat' for shorebirds. An assessment follows (Commonwealth of Australia, 2013):

  An area of 'important habitat' for a migratory species is:

  a. habitat utilised by a migratory species occasionally or periodically within a region that supports an ecologically significant proportion of the population of the species, and/or

  b. habitat that is of critical importance to the species at particular life-cycle stages, and/or

  c. habitat utilised by a migratory species which is at the limit of the species range, and/or

  d. habitat within an area where the species is declining.

  No areas in on or adjacent to the site are deemed to be important habitats. The Study Area does not provide migratory shorebirds with the habitat characteristics suitable for foraging and roosting, although migratory shorebirds may travel across the site for the purposes of migration. Any works associated with the proposed development are unlikely to substantially modify, destroy or isolate areas of important habitat.

- **result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species**

  The proposal is not likely to result in establishment of additional invasive species. In particular, implementation of pest and weed management protocols will ensure that invasive plant and animal species are not introduced or aided in dispersal in association with project activities. Appropriate waste management practices will ensure that vermin populations will not directly impact the shorebird populations across Curtis Island.

- **seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species.**

  Listed migratory species cover a broad range of species with different life cycles and population sizes. Therefore, what is an 'ecologically significant proportion' of the population varies with the species (each circumstance will need to be evaluated). Some factors that should be considered include the species' population status, genetic distinctiveness and species specific behavioural patterns (for example, site fidelity and dispersal rates).

  'Population', in relation to migratory species, means the entire population or any geographically separate part of the population of any species or lower taxon of wild animals, a significant proportion of whose members cyclically and predictably cross one or more national jurisdictional boundaries including Australia.

  No factors that would have a significant impact the breeding cycle of potential migratory species' have been identified in association with the proposal.

4.4.7.3 Other Migratory Species

It is considered possible that the White-throated Needletail, Black-faced Monarch, Spectacled Monarch, Rufous Fantail, Osprey, and Satin Flycatcher use the site for fly over, feeding or migration. There are no known habitats or important feeding resources for these species within the development footprint, but all may use areas adjacent to the development footprint.

An action is likely to have a significant impact on a migratory species if there is a real chance or possibility that it will:

- **substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species**

  The resort footprint is located within an extensive tract of remnant vegetation. The management of this vegetation will be subject to the terms of a nature refuge agreement (**see Appendix 3 EPBC Act Referral – Attachment 2**). The deed acknowledges the important connectivity functionality of the land for species such as the Osprey and that land management practices to protect natural values including those for fire, hydrology and nutrients are adopted in accordance with the terms of the agreement. As such, any migratory species that use the Study Area are unlikely to experience adverse impacts of habitat loss or modification as large areas of suitable habitat persist in the local landscape.

- **result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species**

  The proposal is not likely to result in establishment of additional invasive species. In particular, implementation of pest and weed management protocols will ensure that invasive plant and animal species are not introduced or aided in dispersal in association with project activities.

- **seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species.**

  No factors that would have a significant impact the breeding cycle of potential migratory species' have been identified in association with the proposal. Specifically:

  > The White-throated Needletail forages almost exclusively in the air and as such may forage over a variety of habitats including those present in the Study Area. These birds may cover large distances over a day and hence may pass over the Study Area by virtue of its high mobility.

  > The Black-faced Monarch is widespread and able to move long distances. It has been noted that no change in distribution has occurred since 1977. A large proportion of the Australian population leave the continent during winter. Important habitat includes rainforest and wet sclerophyll (Department of the Environment, 2015). Due to their high mobility, this species may pass through the Study Site habitats adjoining the Study Site.

  > The Spectacled Monarch is widespread and able to move long distances. Important habitat includes dense vegetation, mainly in rainforest but also in moist forest or wet sclerophyll and occasionally in other dense vegetation such as mangroves, drier forest and woodlands. Significant tracts of vegetation are retained and managed around the proposed development and as such it is highly unlikely the species will be impacted.

  > The Satin Flycatcher is widespread and move long distances. Important habitat is eucalypt forest and woodlands including tall wet sclerophyll forest, preferring open, grassy woodland types, and often in gullies or along water courses. During migration, habitat preferences expand, with the species recorded in most wooded habitats except rainforests. When breeding, preference is of high elevation environments. Wintering birds in northern Queensland will use rainforest and gallery forests interfaces. Birds have been recorded wintering in mangroves and paperbark swamps. Significant tracts of vegetation are retained and managed around the proposed development and as such it is highly unlikely the species will be impacted.

  > The Rufous Fantail is widespread and moves long distances. Important habitat include moist, dense environments, including mangroves, rainforest, riparian forests and thickets, and wet eucalypt forests

with a dense understorey. When migrating, Rufous Fantails utilise a wider variety of habitats including dry sclerophyll woodlands and shrublands. It is noted that Rufous Fantail breeds at elevation greater than 600m above sea level. Significant tracts of vegetation are retained and managed around the proposed development and as such it is highly unlikely the species will be impacted.

- The Barn Swallow is widespread and moves long distances. It is occurs in areas of agricultural pastures, open native vegetation, and above unobstructed water bodies. Significant tracts of vegetation are retained and managed around the proposed development and as such it is highly unlikely the species will be impacted.
- Ospreys are generally found on or near the coast, at mangroves swamps, wetlands, rivers, and estuaries. They feed at sea or in tidal waters. Nesting occurs in large, often dead, trees, and tall artificial structures. No known nesting sites will be directly or indirectly impacted by the development proposal.

Because the Study Area represents a minor fraction of the potential habitat utilised by these species, the project area will not seriously disrupt the lifecycle of an ecologically significant proportion of their populations.

4.4.8 Proposed Avoidance, Management and Mitigation Measures

The proponent is already committed to avoiding, managing and mitigating potential impacts on the ecology of Curtis Island. The development footprint is fixed and limited to an area that is clear of integral native vegetation. The design therefore avoids clearing impacts on migratory wetland species and the threatened Black-breasted Button Quail habitat.

A conservation agreement between QRE Pty Ltd and Queensland Parks and Wildlife Service established the Curtis Island Nature Refuge over parts of the proposed development site in 2004 (**see Appendix 3 EPBC Act Referral – Attachment 2**). The declaration of this agreement was to set out terms to protect significant conservation values according to 'agreed management conditions.' The agreement outlines conditions for the allowable entry of certain animals, allowable activities, and sets out management objectives for the declared area.

Management conditions contained within the agreement relevant to mitigating or managing the impacts on migratory and threatened bird species (noting provisions relating to entry of dogs for stock management are no longer relevant) include:

- Only allowing the entry of dogs under the control of the lessee or persons authorised by the lessee for a sight impaired person.
- Allowing low key recreational use by authorised residents, visitors or staff including walking, cycling, use of vehicles on established tracks, horse riding, fishing in the dam, and nature based activities.
- Recreational use of vehicles is on formed roads only, maintaining a maximum vehicle speed limit of 60km/h along constructed roadways.
- Allowing mustering of stock and feral animals.
- Allowing the erection of interpretive signs relating to the appreciation of natural values.
- Allowing low key tourism activities consistent with protection and appreciation of the natural values of the nature refuge.
- Native plants including trees, shrubs and grasses are not interfered with, destroyed or removed.
- Trees, shrubs and grasses which are planted are indigenous to the nature refuge and derived from local seed stock of the Curtis Coast region.
- No unreasonable acts or inactions occur which may adversely and substantially affect any indigenous flora, or fauna within their related habitats.
- Reasonable measures are taken to prevent the entry of non-indigenous fauna, including domestic and feral animals.
- Materials are not stored unnecessarily or dumped.

- Timber is not removed.

The conservation agreement does not specifically address some aspects relevant to the migratory and threatened bird species, such as invasive plant species and watercraft use adjacent to the nature refuge. However, other commitments and/or existing approvals attained by the proponent integrate measures to address these potential impacts including:

- A landscape concept plan (Chenoweth EPLA, 2010 and UPLAN, 2010) that utilises species that are known to be native to Curtis Island (refer to **Appendix 2 – Approved Plans and Consent Permit 2016**).
- A Vegetation Management Plan (Logic Environmental, 2015) that integrates weed management practices (refer to **Appendix 3 EPBC Act Referral – Attachment 13**).
- Watercraft management practices relating to the conservation of marine turtles and dugong (refer to **sections 4.2** and **4.3** respectively).

The project design further limits potential impacts on migratory shorebird bird species by limiting foreshore access to a total of three pedestrian access points from the proposed resort, providing no vehicle access to the foreshore, and utilising topography and landscaping to prevent access to the foreshore other than by means of designated pedestrian access points. These measures will ensure human disturbances of any migratory shorebirds that may utilise the foreshore for roosting or foraging are minimised or avoided.

It is noted that the Department of the Environment publication Industry guidelines for avoiding, assessing and mitigating impacts on EPBC Act listed migratory shorebird species publication also outlines measures to avoid or mitigate the impacts resulting from disturbance, including the use of buffer zones at known roost and forage sites, with recommended widths of 165m to 255m. Provided the navigational channel of Grahams Creek aligns with the centre of the waterway, this setback is readily achieved for barges passing the known roosting sites of the Graham Creek barge wreck and Laird Point.

The GBRMPA publication *Guidelines for Managing Visitation to Seabird Breeding Islands 1997* provide useful control/mitigation measures for resorts which can be implemented by the project and form part of dedicated Migratory/Shorebird Management Plan:

> ***"Control/Mitigation Measures for Resorts***
> *The measures which might be taken to avoid or mitigate the impacts of resort construction on seabird breeding include:*
> - *preparation of education/awareness programs for workers on the site;*
> - *inclusion of environmental protection clauses and codes of behaviour in contracts of contractors and subcontractors on the site;*
> - *marking the boundaries beyond which personnel and machinery may not move;*
> - *requiring maximum noise reduction on equipment operated on the site;*
> - *prohibiting the use of explosives;*
> - *planning with architects and site managers the location and nature of lighting used on the site;*
> - *including satisfactory arrangements for spoil disposal in construction plans;*
> - *requiring inspection and, if necessary, steam cleaning of equipment and materials brought onto the site; and*
> - *requiring catering waste to be stored in covered bins and ultimately to be buried, incinerated or removed from the site.*
>
> *Appropriate measures during resort operation include:*
> - *use of signs, brochures, videos and other awareness tools to make guests aware of appropriate codes of behaviour;*
> - *developing appropriate codes of behaviour for staff;*
> - *requiring catering waste to be stored in covered bins and ultimately to be buried, incinerated or removed from the site;*
> - *development of a list of acceptable plants for use in landscaping and rehabilitation; and*
> - *prohibition enforced through employment contracts on the private introduction of plants or animals to the island."*

4.5 World Heritage Properties

4.5.1 Description

Curtis Island is located within the Great Barrier Reef World Heritage Area. The Great Barrier Reef's diversity reflects the maturity of the ecosystem which has evolved over many thousands of years (Department of the Environment, 2015). Within the Great Barrier Reef (GBR) there are some 2,500 individual reefs of varying sizes and shapes, and over 900 islands, ranging from small sandy cays and larger vegetated cays, to large rugged continental islands rising, in one instance, over 1,100 metres above sea level. Collectively these landscapes and seascapes provide some of the most spectacular maritime scenery in the world. The latitudinal and cross-shelf diversity, combined with diversity through the depths of the water column, encompasses a globally unique array of ecological communities, habitats and species. This diversity of species and habitats, and their interconnectivity, make the GBR one of the richest and most complex natural ecosystems on earth (Department of the Environment, 2014).

The Great Barrier Reef was inscribed on the World Heritage List in 1981 based on the following criteria:

- *Criterion (vii): The GBR is of superlative natural beauty above and below the water, and provides some of the most spectacular scenery on earth. It is one of a few living structures visible from space, appearing as a complex string of reefal structures along Australia's northeast coast.*
- *Criterion (viii): The GBR, extending 2,000 kilometres along Queensland's coast, is a globally outstanding example of an ecosystem that has evolved over millennia. The area has been exposed and flooded by at least four glacial and interglacial cycles, and over the past 15,000 years reefs have grown on the continental shelf.*
- *Criterion (ix): The globally significant diversity of reef and island morphologies reflects ongoing geomorphic, oceanographic and environmental processes. The complex cross-shelf, longshore and vertical connectivity is influenced by dynamic oceanic currents and ongoing ecological processes such as upwellings, larval dispersal and migration.*
- *Criterion (x): The enormous size and diversity of the GBR means it is one of the richest and most complex natural ecosystems on earth, and one of the most significant for biodiversity conservation. The amazing diversity supports tens of thousands of marine and terrestrial species, many of which are of global conservation significance.*

These criteria are used in the following sections as the basis for assessing the project's impact on this Matter of National Environmental Significance, noting that the current referral does not include any development or infrastructure within the Great Barrier Reef Marine Park. While the initial referral included marine tourism activities such as boating, marine tourism activities were removed from the referral by letter dated 31 May 2016 on the basis that a separate GBRMPA permit will be made at the time when the proposed extent of water activities have been resolved. The removal of this aspect from the referral does not have any impact on matters of national environmental significance compared to that included in the original proposal.

4.5.2 Potential Impacts

In accordance with the Commonwealth's *Significant impact guidelines* an action is likely to have a significant impact on the environment of the Great Barrier Reef Marine Park if there is a real chance or possibility that the action will:

- ***modify, destroy, fragment, isolate or disturb an important, substantial, sensitive or vulnerable area of habitat or ecosystem component such that an adverse impact on marine ecosystem health, functioning or integrity in the Great Barrier Reef Marine Park results;***

  The project has been sited and designed to ensure that it does not result in an adverse impact on terrestrial or marine ecosystem health as demonstrated by the following:

- the site is not located adjacent to a beach commonly used for turtle nesting, notwithstanding this a lighting plan is proposed to mitigate potential impacts and no development is proposed on the foreshore areas;
- there are only small patches of seagrass through Graham Creek and Hobble Gully leading to the barge landing in Hobble Gully and dugong presence through this area is expected to be rare. Notwithstanding this, restrictions will be imposed on boating speed to manage incidence of boat strike;
- no development is proposed within the marine environment;
- no dredging is proposed in Hobble Gully;
- the proposed development is limited to an area that is clear of integral native vegetation, which therefore avoids clearing impacts on migratory wetland species and key threatened species. Further, a Fauna Management Plan and Vegetation Management Plan has been prepared by Logic Environmental (2015) to ensure the successful management of the site's vegetation during the construction and operation of the proposed development (refer to **Appendix 3 EPBC Act Referral – Attachment 13**);
- the proposal will not have an adverse impact on water quality or coastal or marine processes; and
- while the proposed dam has the potential to affect estuarine and receiving waters in downstream environments the location and design of the proposed dam will ensure that environmental flows will be maintained such that there will not be an adverse impact on migratory species and threatened species such as turtles and dugongs (refer to Sections 3.8, 4.4.6 and 4.4.7).

Figure 7 – Potential Migratory Bird Habitat shows that the location of mangrove and salt pan vegetation (potential migratory bird habitat) is located to the south and clear of the proposed dam footprint. Our Ecologist has identified that there is no suitable habitat for migratory species within close proximity downstream of the proposed dam wall. This is illustrated by reference to **Figure 5 – Foraging Habitat and Roost Sites**. The closest foraging sites are located at the mouth of Grahams Creek some 12 kilometres south-west of the dam site. Also, the catchment of the dam itself forms only part of the land catchment that drains into Grahams Creek.

The estuarine area immediately south of the proposed dam is not a location used by dugongs or turtles. Refer to **Figure 3** and sections 4.2 and 4.3 of this document.

The proposed dam design will not have a significant impact on any other value associated with the GBRWHA due to its location and design.

- ***have a substantial adverse effect on a population of a species or cetacean including its life cycle (for example, breeding, feeding, migration behaviour, life expectancy) and spatial distribution;***
  - The project will not have a substantial adverse effect on a population of a species or cetacean, as demonstrated by **sections 4.2 - 4.4** of this report.
- ***result in a substantial change in air quality or water quality (including temperature) which may adversely impact on biodiversity, ecological health or integrity or social amenity or human health;***

The proposal will not result in a substantial change to air or water quality. Measures will be implemented as part of the proposed Wastewater Treatment Plant to ensure odours do not cause nuisance to resort guests or staff. These measures may include odour treatment units and enclosure of processes likely to emit odours. Additionally, all waste management areas will be contained to ensure no impact on air quality.

Conveyance of water flows from new areas of development will be done in a way that is sympathetic to the existing drainage characteristics of the island and receiving environment. New drainage networks will also feature elements to remove sediments and nutrients prior to discharge. Such works will be undertaken in accordance with the conditions of the Operational Works approval issued by Council and the Planning and Environment Court Consent Order.

- ***result in a known or potential pest species being introduced or becoming established in the Great Barrier Reef Marine Park;***

  The proposal will not result in a known or potential flora and fauna pest species being established in the Great Barrier Reef Marine Park. Weed control measures prior to clearing are to be implemented in accordance with horticultural best practice. Prior to commencement of clearing, weed species are to be identified by a suitably qualified horticultural consultant, Environmental Consultant, Arborist or similar. All significant weeds within the construction area are to be treated and/or removed from the property prior to clearing where practical. Curtis Island is also known to support existing populations of pest animals including the red fox, house mouse and black rat. Waste management practices will be adopted to ensure that presence of these species are not increased.

- ***result in persistent organic chemicals, heavy metals, or other potentially harmful chemicals accumulating in the marine environment such that biodiversity, ecological integrity, or social amenity or human health may be adversely affected, or***

  The proposal will not result in the release of harmful chemicals in the marine environment. The wastewater treatment plant will be designed, constructed, operated and maintained to produce a consistent Class A+ recycled water. The recycled water will be monitored to ensure the required water quality prior to irrigation.

  Any chemicals that are required as part of the resort will be transported and stored in accordance with regulatory requirements and standards with appropriate bunding.

- ***have a substantial adverse impact on heritage values of the Great Barrier Reef Marine Park, including damage or destruction of an historic shipwreck.***

  The proposal will not have an adverse impact on the heritage values of the Great Barrier Reef Marine Park, including its aesthetic or scenic amenity values. The project has been designed to avoid significant visual impacts on the Great Barrier Reef World Heritage Area by ensuring appropriate setback distances to the shoreline and by ensuring that buildings are predominantly below the height of the existing mature trees on the site. The design, colour palette and construction materials of buildings and infrastructure will also compliment the natural environment.

On the basis of the above criteria, the project will not have a significant adverse impact on the Great Barrier Reef World Heritage Area.

4.5.3 Reef 2050 Long-Term Sustainability Plan

The Reef 2050 Long-Term Sustainability Plan sets out clear measures for identification, protection, conservation, presentation and transmission to future generations of the Outstanding Universal Value of the Great Barrier Reef World Heritage Area. The following **Table 5** provides an assessment of the project against the objectives of the Plan, as it relates to the Great Barrier Reef's World Heritage Values.

Table 5. Reef 2050 Long-Term Sustainability Plan.

Theme and context	Threats	Objectives	Criterion vii	Criterion viii	Criterion ix	Criterion x	Integrity	Assessment of Turtle Street Beach Resort Proposal
Ecosystem Health								
Well-functioning ecological systems, such as coral reefs and associated habitats, provide a host of ecosystem services and underpin resilience. They support the integrity, biodiversity and heritage values of the Reef and its economic and community benefits. Traditional Owners and their continuing connection to their sea country play an integral role in the health of the Great Barrier Reef ecosystem. The targets and actions to maintain and enhance ecosystem	Nutrient run-off Sediment run-off Crown-of-thorns starfish Exotic species Outbreak of disease Outbreak of other species Pesticide run-off Modifying coastal habitats Marine debris Illegal activities Barriers to flow Chemical spill	The knowledge, innovations and practices of Traditional Owners relevant for conservation and cultural use of biocultural diversity are preserved and maintained.	X		X	X	X	In 2006, QRE and the then Aboriginal Parties for the Gladstone area entered into a Cultural Heritage Agreement for the project area (refer to **see Appendix 3 EPBC Act Referral – Attachment 11**). Before this cultural heritage agreement was discussed between the parties, a detailed cultural heritage assessment of the project area was undertaken, using the Aboriginal Parties' nominations for cultural heritage officers and a technical adviser. A report of the cultural heritage assessment was then prepared, and approved by the Aboriginal Parties before the execution of the cultural heritage agreement. The cultural heritage agreement includes a management schedule based on recommendations of the cultural heritage report.
		The Great Barrier Reef World Heritage Area retains its integrity and system functions by maintaining and restoring the connectivity, resilience and condition of marine and coastal ecosystems.	X	X	X	X	X	The proposed development protects the connectivity and resilience of coastal and marine ecosystems, with no development or infrastructure proposed in these areas.

Theme and context	Threats	Objectives	Criterion vii	Criterion viii	Criterion ix	Criterion x	Integrity	Assessment of Turtle Street Beach Resort Proposal
health over successive decades relate to those aspects of the ecological system (for example coral reefs, seagrass meadows and coastal habitats) that support or best represent the ecological and biological processes of the Reef; provide habitat for biodiversity including threatened species; increase resilience to climate change; and economic and community benefits (for example natural beauty, fisheries and protection from wave action). Individual species contributing to ecosystem and habitat integrity are considered in the biodiversity theme.	(large) Oil spill (large) Grounding vessel (large) Damage to reef structure Spill (small) Grounding vessel (small)	Trends in the condition of key ecosystems including coral reefs, seagrass meadows, estuaries, islands, shoals and interreefal areas are improved over each successive decade.	X	X	X	X	X	The proponent has ceased cattle station operations that have operated for over 150 years plus surrendered 32,890 ha of land, including a vegetation offset area of 18,950 hectares. The 20ha resort footprint is located within a cleared area and represents only 0.0006% of the original land holding. Lands that are now managed for conservation (i.e. National Parks, offsets and areas subject to the Conservation Agreement) make a positive contribution to the condition of Great Barrier Reef Marine Park Habitats. The proposal also includes plans to rehabilitate the site using local native vegetation and as such it is anticipated that the quality of the habitat on the site will improve over time. Refer to **Appendix 3 EPBC Act Referral – Attachment 13.**

Theme and context	Threats	Objectives	Criterion vii	Criterion viii	Criterion ix	Criterion x	Integrity	Assessment of Turtle Street Beach Resort Proposal
Biodiversity								
Biodiversity is not just a measure of how many species there are, but encompasses all natural variation—from genetic differences within one species to variations across a habitat or a whole ecosystem. The Great Barrier Reef is one of the world's most diverse and remarkable ecosystems, with a wide range of habitats and many thousands of different species. Actions will be taken to protect and conserve this biodiversity, focused on applying traditional knowledge, species of conservation concern, monitoring and reporting, and specific projects,	Illegal fishing and poaching Incidental catch of species of conservation concern Extraction from spawning aggregations Extraction of particle feeders Extraction of predators Extraction of herbivores Discarded catch Artificial light Wildlife disturbance Noise pollution Modifying	Traditional Owners are engaged and participate in and manage the conservation and sustainable use of cultural keystone species and biocultural resources.	X		X	X	X	In 2006, QRE and the then Aboriginal Parties for the Gladstone area entered into a Cultural Heritage Agreement for the project area (refer to **Appendix 3 EPBC Act Referral - Attachment 11**).
		The survival and conservation status of listed species within the Great Barrier Reef World Heritage Area is promoted and enhanced.	X		X	X	X	The proposal includes plans to rehabilitate the site following construction activities using local native vegetation. Refer to **Appendix 3 EPBC Act Referral – Attachment 13).** Refer also to sections **4.2 – 4.4** of this report.
		Trends in populations of indicator species* across their natural range are stable or increasing.	X		X	X	X	The proposed development is limited to an area that is clear of integral native vegetation, which therefore avoids clearing impacts on migratory wetland species and key threatened species. The rehabilitation of vegetation on the site may lead to an increase of key species. Flatback turtles, dugongs and shorebirds are considered indicator species under this Plan. Refer to previous sections of the report (**sections 4.2 – 4.4**) for further information regarding resort design, activities and management protocols which are consistent with the objectives of this plan.

Theme and context	Threats	Objectives	Criterion vii	Criterion viii	Criterion ix	Criterion x	Integrity	Assessment of Turtle Street Beach Resort Proposal
planning and programs.	coastal habitats Wildlife Disturbance	Indices of biodiversity are in good or very good condition at Reef-wide and regional scales.	X		X	X	X	No development or infrastructure is proposed within the marine environment. Further, no biodiversity will be lost because no ecosystems that are restricted to the footprint will be lost. Direct and indirect impacts to wildlife will be managed.
		Reef habitats and ecosystems are managed to sustain healthy and diverse populations of indicator species* across their natural range.	X		X	X	X	No development or infrastructure is proposed within the marine environment and terrestrial activities will not adversely impact site run-off.
Heritage								
The heritage theme is focused on the cultural significance of the Reef, comprising all human values and meanings that might be recognised, including aesthetic, historic, scientific, social and spiritual. It encompasses Indigenous and non-Indigenous values.	Lack of capacity and opportunities for Traditional Owners Poor community awareness and appreciation of heritage values	Traditional Owners' cultural heritage rights and responsibilities are incorporated in all facets of management.	X	X	X	X	X	A cultural heritage assessment for the development was prepared by ARCHAEO in 2006 in accordance with the *Aboriginal Cultural Heritage Act 2003*. The site falls within the external boundary of the registered Native Title application of the Port Curtis Coral Coast (PCCC) native title claimants QC01/29. As no triggers exist that require QRE to undertake a Cultural Heritage Management Plan, pursuant to Part 7 of the Act, a decision was made to enter into an Agreement which includes rights and responsibilities (refer to **Appendix 3 - EPBC Act Referral - Attachment 11**).
		Indigenous and non-Indigenous heritage including natural, aesthetic, historic, scientific, and social	X	X	X	X	X	The project has been designed to avoid significant visual impacts on the Great Barrier Reef World Heritage Area by ensuring appropriate setback distances to the shoreline and by ensuring that buildings are predominantly below the height of the existing mature trees on the site. The design, colour palette and

Theme and context	Threats	Objectives	Criterion vii	Criterion viii	Criterion ix	Criterion x	Integrity	Assessment of Turtle Street Beach Resort Proposal
Protecting natural heritage, including the Outstanding Universal Value of the Reef, is embedded in the overarching vision and all themes of this Plan.		values are identified, conserved and managed in partnership with the community.						construction materials of buildings and infrastructure will also compliment the natural environment.
Water quality								
Improving the quality of water entering the World Heritage Area is pivotal in supporting the Reef's values as well as in maintaining its fundamental contribution to the wider Australian community through tourism and food production. It builds resilience in areas which support significant biodiversity and species of conservation concern such as marine turtles and dugongs, and drives fisheries productivity. It is also likely to reduce the	Diffuse source: Nutrient run-off Sediment run-off Crown-of-thorns starfish outbreaks Pesticide run-off Terrestrial discharge Point source: Dredging Damage to sea floor	Over successive decades the quality of water entering the Reef from broadscale land use has no detrimental impact on the health and resilience of the Great Barrier Reef.	X		X	X	X	The project has been designed to avoid impacts on water quality by adopting best practice stormwater management. Conveyance of flows from new areas of development will be done in a way that is sympathetic to the existing drainage characteristics of the island and receiving environment. New drainage networks will also feature elements to remove sediments and nutrients prior to discharge. Such works will be undertaken in accordance with the conditions of the Operational Works approval issued by Council and the Consent Order.
		Over successive decades the quality of water in or entering the Reef from all sources including industrial, aquaculture, port (including dredging), urban waste and stormwater sources	X		X	X	X	Works will be undertaken in accordance with the conditions of the Operational Works approval issued by Council and the Consent Order to ensure no detrimental impact on the health and resilience of the Great Barrier Reef.

Theme and context	Threats	Objectives	Criterion vii	Criterion viii	Criterion ix	Criterion x	Integrity	Assessment of Turtle Street Beach Resort Proposal
frequency of future crown-of-thorns starfish outbreaks, with one line of evidence suggesting these are driven by elevated concentrations of nutrients.	Disposal of dredge material Acid sulphate soils	has no detrimental impact on the health and resilience of the Great Barrier Reef.						
Community benefits								
The Great Barrier Reef plays an important role in community life. Local residents and visitors from within Australia and around the world are drawn to the Reef for its exceptional natural beauty, and many people have strong connections with the Reef through culture, occupation or familiarity. Human wellbeing—happiness, good health and prosperity—is inextricably linked to	Poor engagement with and opportunities for Traditional Owners Poor coastal planning to manage for impacts of climate change Coastal hazards Poor understanding of the benefits of the Reef's	The rights of Traditional Owners to derive benefits from the conservation and cultural use of biological resources are recognised.	X		X		X	In 2006, QRE and the then Aboriginal Parties for the Gladstone area entered into a Cultural Heritage Agreement for the project area (refer to **Appendix 3 EPBC Act Referral – Attachment 11**). Before this cultural heritage agreement was discussed between the parties, a detailed cultural heritage assessment of the project area was undertaken, using the Aboriginal Parties' nominations for cultural heritage officers and a technical adviser. A report of the cultural heritage assessment was then prepared, and approved by the Aboriginal before the execution of the cultural heritage agreement.
		A healthy Reef that supports sustainable lifestyles and livelihoods, and provides coastal communities with protection from extreme weather events.	X	X	X	X	X	The project is not located near any coral reefs and is positioned and designed to provide protection from extreme weather events. No development or infrastructure is proposed within the marine environment and terrestrial activities will not adversely impact site run-off.

Theme and context	Threats	Objectives	Criterion vii	Criterion viii	Criterion ix	Criterion x	Integrity	Assessment of Turtle Street Beach Resort Proposal
environmental health. Through sustainable fishing, the Reef is also a healthy food source for people in Queensland and around the world. Traditional Owners have long highlighted the benefits their communities derive from the Reef environment, including through cultural connections to sea country, access to the Reef's resources, employment and improved health outcomes. People also derive less tangible benefits from healthy ecosystems such as nature appreciation, opportunities for relaxation and enjoyment, and a better understanding of the complex natural world.	Outstanding Universal Value to the community	Community benefits provided by the Reef, including its superlative natural beauty and the sense of place are maintained for current and future generations.	X				X	The project has been designed to avoid significant visual impacts on the Great Barrier Reef World Heritage Area by ensuring appropriate setback distances to the shoreline and by ensuring that buildings are predominantly below the height of the existing mature trees on the site. The design, colour palette and construction materials of buildings and infrastructure will also compliment the natural environment (refer to **Appendix 2 – Approved Plans and Consent Permit**).
		Local, regional and Reef-wide community benefits are understood and the community is actively engaged in managing Reef activities.			X	X	X	The project has been estimated as having a total development cost (excluding the land component) of $105 million. Throughout the construction phase which has been estimated to last 18 months, the development will create a total of 350 on-site construction-related jobs. Turtle Street will utilise local contractors and tradesmen and will provide significant employment opportunities in the local Gladstone community. Once complete and operational, it is envisaged that Turtle Street will employ 175 full time equivalent staff at the resort, plus additional employment created elsewhere in the region through flow on or multiplier effects. Turtle Street will contribute significantly to the offering of Queensland's Southern Great Barrier Reef and its coastal island attractions. This will improve the economic diversity and social opportunities of the region whilst making a positive contribution to the pristine ecology of Curtis Island.

Theme and context	Threats	Objectives	Criterion vii	Criterion viii	Criterion ix	Criterion x	Integrity	Assessment of Turtle Street Beach Resort Proposal
The Reef also provides coastal residents with protection from wave action especially in extreme weather.								
Economic benefits								
The Reef is a critical economic asset, providing income and jobs for the community. Reef-dependent industries and Reef-associated industries support diverse and sustainable communities. These industries and communities need to be able to continue to prosper, while ensuring protection of the Reef's Outstanding Universal Value. Addressing the interplay between environmental, social	Cumulative impacts: Incompatible uses Acid sulphate soils Coal dust Damaging incidents from shipping and boating: Groundings Vessel waste discharge Spills	Traditional Owners derive economic benefits from conservation and sustainable use of biological resources.	X	X	X	X	X	In 2006, QRE and the then Aboriginal Parties for the Gladstone area entered into a Cultural Heritage Agreement for the project area (refer to refer to **Appendix 3 EPBC Act Referral – Attachment 11**).
		Protecting the Reef's Outstanding Universal Value is embedded within decision making, with impacts first avoided, then mitigated and then as a final consideration, any residual impacts are offset to achieve a net environmental benefit.	X	X	X	X	X	The proposed resort location and design has been based on detailed site surveys to ensure that impacts on Outstanding Universal Values (including habitats, water quality and views) are not adversely impacted by the proposal. As such no environmental offsets are required as part of the project.

Theme and context	Threats	Objectives	Criterion vii	Criterion viii	Criterion ix	Criterion x	Integrity	Assessment of Turtle Street Beach Resort Proposal
and economic factors through improved planning and decision making and an outcomes-focused approach will contribute to sustainable communities, a healthy environment and the protection of the Reef's Outstanding Universal Value for current and future generations. Investment in Reef health is an investment in ensuring ongoing economic benefits and community wellbeing.	Vessel strikes Damage to sea floor Noise pollution Poor planning and development: Modifying coastal habitats Barriers to flow Altered ocean currents Terrestrial discharge Wildlife disturbance	Reef-associated industries are planned and managed in such a way as to protect the Reef's Outstanding Universal Value and are sustainable, productive and profitable.	X	X	X	X	X	Not applicable. The proposal is not for a reef dependent industry.
		Reef-dependent industries are productive and profitable based on a healthy Reef and are ecologically sustainable.	X	X	X	X	X	Not applicable. The proposal is not for a reef dependent industry.

Source: Adapted from Reef 2050 Long-Term Sustainability Plan, Appendix G.

The above table demonstrates that the proposed project has been sensitively designed and located and is consistent with the objectives of the Reef 2050 Long-Term Sustainability Plan and will protect the Outstanding Universal Value of the Great Barrier Reef World Heritage Area.

4.6 National Heritage Place

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) establishes the National Heritage List, which includes natural, Indigenous and historic places that are of outstanding heritage value, including the Great Barrier Reef World Heritage Area. The Act also establishes the Commonwealth Heritage List, which comprises natural, Indigenous and historic places on Commonwealth lands and waters or under Australian Government control, and determined by the Minister as having Commonwealth Heritage values.

In May 2007, the Great Barrier Reef — along with other Australian World Heritage sites — was placed on the National Heritage List. The discussion in **section 4.5 World Heritage Values** is also relevant to this section.

4.6.1 National Heritage Management Principles

Heritage management principles provide a guiding framework for managing heritage properties. They set the standard and the scope for the way places should be managed in order to best protect heritage values for the generations ahead.

The National Heritage management principles are:

1. *The objective in managing National Heritage places is to identify, protect, conserve, present and transmit, to all generations, their National Heritage values.*
2. *The management of National Heritage places should use the best available knowledge, skills and standards for those places, and include ongoing technical and community input to decisions and actions that may have a significant impact on their National Heritage values.*
3. *The management of National Heritage places should respect all heritage values and seek to integrate, where appropriate, any Commonwealth, state, territory and local government responsibilities for those places.*
4. *The management of National Heritage places should ensure that their use and presentation is consistent with the conservation of their National Heritage values.*
5. *The management of National Heritage places should make timely and appropriate provision for community involvement, especially by people who:*

   (a) have a particular interest in, or associations with, the place, and

   (b) may be affected by the management of the place.
6. *Indigenous people are the primary source of information on the value of their heritage and the active participation of Indigenous people in identification, assessment and management is integral to the effective protection of Indigenous heritage values.*
7. *The management of National Heritage places should provide for regular monitoring, review and reporting on the conservation of National Heritage values.*

The proposal is considered to be consistent with these management principles as:

- The proposal will ensure the ongoing protection and conservation of the Great Barrier Reef World Heritage Area;
- The proposal has been based on numerous site surveys to ensure that the design and location of the resort protects the site's environmental values;
- The proponent has entered into a Cultural Heritage Agreement with the Traditional Owners to ensure best available knowledge and skills in managing the Indigenous Heritage Values of the site; and

- o A Construction Environmental Management Plan is proposed which will includes requirements for monitoring and review.

4.6.2 National Heritage Place Agreement

In 2009 the Great Barrier Reef Intergovernmental Agreement was signed by the Commonwealth and Queensland Government formalising this approach to manage marine and land environments within the Great Barrier Reef World Heritage Area.

It is not considered that this agreement is relevant to the assessment of the proposed development.

4.6.3 National Heritage Place Plan

There are no National Heritage Place Plans specifically covering Curtis Island.

5 Indirect, Cumulative and Consequential/Facilitated Impacts

5.1 Introduction

The following section identifies and addresses potential indirect, cumulative and consequential/facilitated impacts associated with the project. The following definitions are used in the Great Barrier Reef Region Strategic Assessment in relation to these impacts:

- Indirect impacts — can be either:
    - from actions outside the strategic assessment area with 'downstream' effects in the area (for example, modifying supporting terrestrial habitats, urban and industrial discharge)
    - as a result of another direct impact (for example, an oil spill resulting from the grounding of a ship).
- Cumulative impacts — the successive and combined effects of impacts on the environment, taking into account direct, indirect and consequential impacts and the incremental and compounding effects of these impacts over time; and
- Consequential/Facilitated impacts — where the impact arises from an action made possible by an initial direct impact (for example, anchor damage from ships now able to visit an area after dredging).

5.2 Indirect Impacts

The *Great Barrier Reef Marine Park Authority's Strategic Assessment Program Report* (2014) defines indirect impacts as being either actions outside the strategic assessment area with 'downstream' effects in the area (for example, modifying supporting terrestrial habitats, urban and industrial discharge) or as a result of another direct impact (for example, an oil spill resulting from the grounding of a ship).

The potential indirect impacts of the proposed action to MNES are described in **sections 4.2 – 4.5** and are outlined in the following table.

Table 6. Assessment of indirect impacts.

Indirect Impact	Potential Consequence	How impact is addressed
Surface Water Impacts	• Changes in surface water could impact vegetation communities and therefore the value of habitat to terrestrial migratory and threatened birds.	• Interruption to existing surface water flow patterns are expected to be minimal given the geology of the site results in a rapid rate of surface water infiltration and therefore minimal surface water flow.
Ground Water Impacts	• Changes in ground water could impact vegetation communities and therefore the value of habitat to terrestrial migratory and threatened birds.	• No groundwater extraction will be required for the project, as such no indirect impacts to groundwater are expected.

Indirect Impact	Potential Consequence	How impact is addressed
Dust	• Smothering of plants and decline in surface water quality.	• A Construction and Environmental Management Plan will be prepared prior to any work occurring on site.
Weeds	• Weeds can modify habitat areas for terrestrial migratory and threatened species and to a lesser extent nesting for turtles.	• A Vegetation Management Plan has been prepared which includes measures to prevent the spread of weeds
Fragmentation of habitat	• Habitat fragmentation can impact movement opportunities for terrestrial wildlife.	• Rehabilitation of the site using local native species is proposed as part of the development. The proposal will not fragment habitat – continuity of habitat is retained.
Boat strike	• Potential strike of dugongs.	• Go slow speeds zones in Hobble Gully are proposed in order to mitigate any potential impacts on dugongs.
Vehicle Strike	• Potential strike of wildlife and disturbance to nesting sites.	• No vehicles are permitted on the foreshore areas adjacent to the resort. • A maximum vehicle speed limit of 60km/h is required along constructed roadways within the site. • Offsite activities will require commercial activity permits from QPWS.
Plane/Bird Strike	• Impacts on migratory birds.	• A Shorebird Management Plan is proposed. • The proposed runway is aligned in an approximately northwest – southeast direction. Toward the northwest, wetland areas are not encountered until the Narrows located approximately 10km away at which point aircraft will be travelling at altitudes significantly higher than the airspace within 300 metres of the ground where birds are most frequently encountered (DSDIP, 2014). The south-eastern approach abuts the upper extent of the Grahams Creek estuary. The Logic Environmental shorebird study (Logic Environmental, 2016) did not record any activity in this area which is consistent with the area supporting suboptimal shorebird habitat (i.e. systems dominated by mangrove cover and supporting narrow waterways). While there is a risk that scheduled migratory species are encountered by aircraft on the south-eastern

Indirect Impact	Potential Consequence	How impact is addressed
		approach to the proposed runway, the risk is considered low owing to the suboptimal habitat.
Pest Animal Impacts	• Predation of threatened and migratory species and of turtle nests.	• Only allowing the entry of dogs under the control of the lessee or persons authorised by the lessee for a sight impaired person. • Pest management protocols will ensure that animal species are not introduced or aided in dispersal in association with project activities.

Measures proposed to manage the likelihood of such impacts are included **section 6** of this report – *Proposed Avoidance, Management and Mitigation Measures.*

5.3 Cumulative Impacts

The *Great Barrier Reef Marine Park Authority's Strategic Assessment Program Report* (2014) provides a detailed assessment of the values relevant to matters of national environmental significance in relation to biodiversity, geomorphological and indigenous heritage values and identifies impacts likely to present a high or very high risk to the matters of national environmental significance. In this context it is important to note that the project is independent from other projects occurring in the region, largely due to the site being distant from other development and as it is also surrounded by National Park and Conservation Reserves (included land previously surrendered to the State by the proponent). Further, most surrounding impacts associated with the Port of Gladstone and the Curtis Island LNG Facilities deal primarily with impacts associated with the marine environment, while this project is primarily focused on the terrestrial environment. The potential cumulative impacts are assessed in the following table.

Table 7. Assessment of cumulative impacts.

Cumulative Impact	Aspect	Response
Climate change	• Cyclone activity • Increased sea temperature • Ocean acidification • Rising sea level	The proposal will not result contribute to climate change with energy efficient devices and a solar/diesel energy supply system proposed. Additionally, the proponent ceased all cattle grazing activities on the site and therefore associated climate related impacts. Much of the proponent's land holding has also been dedicated as ecological offsets – associated improvements in vegetation condition is likely to aid in carbon sequestration.
Catchment run-off	• Increased freshwater inflow (also linked to climate change) • Nutrients in catchment run-off • Outbreaks of crown-of-thorns starfish, linked to higher concentrations of nutrients	The proposal will not contribute to cumulative impacts associated with catchment run-off, with the exception of the Gas Plants at the mouth of the Grahams Creek – the development is the first in the catchment. Conveyance of water flows from new areas of development will be done in a way that is sympathetic to the existing drainage characteristics of the island and receiving environment. New drainage networks will also feature elements to remove sediments and nutrients prior to discharge. Such works will

Cumulative Impact	Aspect	Response
	• Sediments in catchment run-off • Urban and industrial discharge	be undertaken in accordance with the conditions of the Operational Works approval issued by Council and the Consent Order. Further, the proponent's removal of cattle from the Island is likely to have had a positive impact on run off to the Great Barrier Reef Marine Park.
Degradation of coastal ecosystems	• Artificial barriers to flow • Modifying supporting terrestrial habitats • Coastal reclamation	The proposal will not contribute to cumulative impacts associated with the degradation of coastal ecosystems with no development or infrastructure proposed along the foreshore or tidal inlets.
Direct use of the Region	• Extraction — death of discarded species • Wildlife disturbance • Dredging • Dumping and resuspension of dredge material • Extraction — lower trophic orders, lower order predators and top order predators • Extraction — fishing spawning aggregations • Illegal fishing and poaching • Marine debris • Noise pollution	The proposal will not contribute to cumulative impacts associated with the direct use of the region with previous sections of this report demonstrating no adverse impact on turtles, dugongs, listed threatened migratory bird species and World Heritage Values. Further, no dredging, dumping or extraction from and to the marine environment is proposed.

As indicated in the above table, the potential for and likelihood of cumulative impacts to the MNES identified in Section 4 of this report is low.

5.4 Consequential and Facilitated Impacts

The proposed development is a stand-alone project on an isolated island on a leasehold lot (partly subject to a Nature Refuge Agreement with the Queensland Government), surrounded by National Park, so the development of resort infrastructure and is not likely to facilitate consequential development applications on adjacent land or surrounding land. The current Planning and Environment Court Consent Order provides for a small eco-camp ground for a maximum of 20 tents for use by resort guests on a site adjacent to the Marine Plains, some 26 kilometres north of the resort at Black Head (accessible via existing bush tracks). The potential implementation of this camp is not part of the referral and would be a subsequent project if a favourable decision is made on the current EPBC Act referral, and the resort development is able to proceed.

The proposed action will not cause increased day visitor use (beyond carrying capacity) of environmentally sensitive places, or affect visitor enjoyment by over-crowding.

Proposed access arrangements are discussed in **section 3.3** of this report, while proposed activities are outlined in **section 3.6.**

6 Proposed Avoidance, Mitigation and Management Measures

6.1 Introduction

Measures to avoid, mitigate and manage potential environmental impacts have been identified for the project and have been embodied in the Development Consent, Operational Work Approval and Nature Refuge Agreement (refer to **Appendix 2 – Approved Plans and Consent Permit 2016**), which includes requirements for:

- Construction Environmental Management Plan (Development Consent – Condition 30);
- Weed control and management (Development Consent – conditions 8 and 16);
- Pest species management (Development Consent – condition 16);
- Revegetation (Development Consent – condition 24);
- Vegetation Protection (Development Consent – condition 23);
- Minimisation of visual impact (Development Consent – conditions 26 and condition 39);
- Protection of cultural heritage (Development Consent – condition 9); and
- Erosion and Sediment Control (Operational Work – conditions 18 and 20).

6.2 Proposed Measures

The measures proposed to avoid, mitigate and manage proposed all impacts on MNES have been identified in **sections 4.2 – 4.6** of this report and are summarised in the following table.

Table 8. Proposed Avoidance, Management and Mitigation Measures.

MNES	Avoidance	Mitigate	Manage	Timing
Flatback Turtle	Development site located away from turtle nesting sites. No development on foreshore.	Implement light management strategies to ensure lighting is located, directed, shielded and specified so as to not spill onto the beach.	Appropriate pest and waste management protocols. . Increase staff and visitor knowledge by implementing the Code of Conduct on Turtle Nesting Beaches. Implement Erosion and Sediment Control Plan requirements.	At all times.
Dugong	Shipping channels to avoid seagrass areas where possible.	Designate 'go slow' zones to minimise potential for boat strikes for all operations in Graham Creek and Hobble Gully.	Adoption of erosion and sediment control measures. Implement Erosion and Sediment Control Plan requirements.	At all times.
Listed Threatened or migratory bird species	Development avoids significant sites and habitat areas.	Implement the Rehabilitation Strategies as per the approved U Plan Landscape Plans. Prepare an implement a Shorebird Management Plan, including the identification of preferred flight paths.	Implement the Vegetation Management Plan to successfully manage the sites vegetation during the construction phase of development. Implement the Fauna Habitat Management Plan and the management of pest species. Waste material contained within the designed maintenance area. Weed control measures to prevent the introduction of plants other than native plants onto the Island by construction vehicles, resort guests, resort vehicles and service providers. Landscaping plans prepared for the site are to include endemic and use non-invasive species only. Implement Erosion and Sediment Control Plan requirements.	At all times.
World Heritage Properties	Development and infrastructure is not located within the Great Barrier Reef Marine Park.	Visual amenity: controls on building locations; heights and colours; retention of trees; and landscaping with endemic species.	A Construction Environmental Management Plan will be prepared for the project.	At all times.

MNES	Avoidance	Mitigate	Manage	Timing
			Implement the Fauna and Vegetation Management Plans. Implement the approved Cultural Heritage Management Plan for the Development.	
National Heritage Place	As above.	As above.	As above.	As above.

It is considered that the above requirements provide a comprehensive management framework to ensure that the construction and operation of the resort will mitigate any potential environmental impacts and not result in any significant impacts on matters of national environmental significance.

7 Environmental Offset Requirements

The *Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy* (October 2012) defines an offset as "*measures that compensate for the residual adverse impacts of an action on the environmen*t". Specifically, an assessment of the impacts on the following controlling provisions has demonstrated that there are no residual adverse impacts on:

- Listed threatened species and communities – **sections 4.2 and 4.3**;
- Listed migratory species – **section 4.4**;
- World Heritage properties – **section 4.5;** and
- National Heritage places – **section 4.6.**

As the project will not result in a residual adverse impact on any controlling provisions no environmental offset should be required in this instance.

Further, over the years approximately 32,890 hectares of land was dedicated for National Park Conservation Park, and a Vegetation Offset Area (refer to Attachment 1of EPBC Act Referral – Turtle Street Resort Land Tenures). The delineation of this area was based on a negotiated outcome whereby:

- approximately 8,640 hectares was surrendered for a National Park; and
- approximately 5,300 hectares was surrendered for a Conservation Park; and
- Vegetation offset areas comprising 18,950 hectares (negotiated agreement with LNG consortium and Queensland Government). The 20ha resort footprint is located within a cleared area and represents only some 0.0006% of the original land holding. Lands that are now managed for conservation (i.e. National Parks, offsets and areas subject to the Nature Refuge Agreement) make a positive contribution to the condition of Great Barrier Reef Marine Park Habitats.

The proposal also includes plans to rehabilitate the site using local native vegetation and as such it is anticipated that the quality of the habitat on the site will improve over time.

In addition to surrendering land that became the first Conservation Park in Queensland, the proponent also surrendered grazing rights over the Conservation Park lease area and the Vegetation offset area with all cattle as of 10 October 2015 removed from the Island. As such, not only did the proponent surrender a significant area of land but has also ceased cattle station operations that have operated for over 150 years. At its peak Monte Christo had approximately 2,000 head of cattle.

8 Social and Economic Impacts

8.1 Background

The proposed action, and the range and quality of tourism product to be offered is consistent with the State's Draft Ecotourism Plan, Destination Tourism Plan and the Gladstone Region Planning Scheme, all of which seek to promote sustainable tourism products to facilitate the region and State's economic development.

8.2 Social Impacts

No negative social impacts are anticipated as a consequence of the proposed action due to the nature of the uses proposed, the location of the proposed resort (discrete Island land holding surrounded by National Park) and due to the site having no permanent residents. The development brings investment and new employment opportunities for the region with 350 on-site construction related jobs and 175 full time equivalent staff once operational. All of the on-site construction workforce is expected to be accommodated on the Island. The workload will be managed by using the local and regional workforce.

The following is relevant to an assessment of the proposed social impacts:

- Turtle Street Beach Resort would utilise local contractors and tradesmen and will provide significant employment opportunities in the local Gladstone community;
- Staff will be provided with recreational and leisure activities and facilities such as sports, games, books/library, barbeques, etc. to support healthy lifestyles and building relationships among staff outside of work hours;
- Once complete and operational, it is envisaged that Turtle Street will employ 175 full time equivalent staff at the resort, plus additional employment created elsewhere in the region through flow on or multiplier effects.
- The project at its projected capacity and occupancy rates will not have any impact on hospital services in the region. The project may require the emergency (and some other) services during the course of construction and operation, but this would be at a very small scale, not exceeding the capacity of a large regional centre's main hospital;
- The project will also provide visitors with a greater choice in accommodation and experiences in the region.

Socially the proposed development has negligible and minor negative impacts due to its location on a discrete Island land holding surrounded by National Park.

8.3 Economic Impacts

The project has been estimated as having a total development cost (excluding the land component) of $105 million. Throughout the construction phase which has been estimated to last 18 months, the development will create a total of 350 on-site construction-related jobs. Turtle Street Beach Resort will utilise local contractors and tradesmen and will provide significant employment opportunities in the local Gladstone community.

Once complete and operational, it is envisaged that Turtle Street Beach Resort will employee 175 full time equivalent staff at the resort, plus additional employment created elsewhere in the region through flow on or multiplier effects.

Turtle Street Beach Resort will contribute significantly to the offering of Queensland's Southern Great Barrier Reef and its coastal island attractions. This will improve the economic diversity and social opportunities of the region.

9 Other Approvals and Conditions

9.1 State Approvals, Permits and Agreements

At a State and Local Government level the proposed Turtle Street Beach Resort has been subject to rigorous assessment processes which commenced in 1989. Since this time the proponent has been involved in a complex approvals and negotiation process which has resulted numerous site investigations and a Development Permit (Operational Works) and Planning and Environment Court Consent Order for the proposed tourist resort.

The proposed action is consistent with the current Gladstone Regional Council Planning Scheme (commenced on 12/10/2015) which includes Lot 8 on CP860464 in the Major Tourism Zone.

9.1.1 Town Planning Consent Permit (material change of use)

Development Approval was originally received from Calliope Shire in December of 1991 and renewals have been routinely received from the Calliope Shire Council until November 2009 when the newly amalgamated Gladstone Regional Council voted to not extend the approvals. Council was not opposed to the resort (which is appropriately designated in Council's planning scheme). Rather, its concern was that the original conditions of approval were outdated and a more contemporary set of conditions was required. QRE appealed this decision, protecting its rights in the Planning and Environment Court and engaged in a dialogue with Gladstone Regional Council to reach a negotiated settlement which was ratified by the Planning & Environment Court on 17 February 2012. This agreement included a set of conditions that reflect the current Council planning scheme and State environmental policies.

The amended conditions package and amended plans modernised the conditions and the layout of the development. On 17 February 2012, His Honour Griffin SC, by consent of the parties, ordered that the existing 1991 Development Approval (as amended by the 2002 Development Approval) be amended, subject to conditions (the Amended Development Approval).

In 2016 the proponent submitted a request to the Court to extend the relevant period of the development approval and amend the approved plans with the new changed plans. The application was supported by Council and approved by the Court and new orders were issued on 28 September 2016 which extends the currency period to until **26 July 2021** as per condition 22 (refer to **Appendix 2**).

9.1.2 Operational Work

As part of the agreement with Gladstone Regional Council, QRE lodged an application for operational work permits for the development by 17 February 2013 and ultimately received the operational work approval in July 2013, subject to conditions. An extension was issued to this approval on 12 June 2015 with the application now due to lapse on 26 July 2017. A further extension will be sought to this permit if necessary.

9.1.3 Environmental Protection Act Approvals

The *Environmental Protection Act 1994* provides for the granting of environmental authorities for wastewater treatment activities referred to as Environmentally Relevant Activity ERA 63. The *Environmental Protection Regulation 2008* includes the requirements for protection of receiving environments for activities relating to wastewater treatment works. The *Model Operating Conditions for ERA 63 – Wastewater Treatment* published by DEHP in 2014 provides a framework of conditions to apply for applications for wastewater treatment works within Queensland.

The wastewater treatment plant will require approval for operation as described by Schedule 2, Part 13, 63 Wastewater Treatment of the *Environmental Protection Regulation* 2008 with a threshold of 100 -1,500 EP.

9.1.4 Vegetation Management Act and Marine Plant Approvals

In 2002, QRE was advised that development could not begin until a tree clearing permit for the project was obtained. QRE commissioned all required reports including vegetation studies and acid sulphate reports and the company finally received the tree clearing permit in March 2006. The State required all Broad Scale clearing permits to be exercised prior to December 31 2006 or otherwise they would have lapsed. It is also important to consider that most direct impacts, that is those associated with clearing, were approved by the Queensland Department of Natural Resources and Mines on 29 November 2005 (refer to **Attachment 9 of the EPBC Act Referral - EPBC Act Assessment**). A separate approval to clear approximately 250m^2 of mangroves was also obtained from the Queensland Department of Primary Industries and Fisheries (refer to **Attachment 10 – Marine Plant Permit**). Clearing rights granted under these approvals were exercised prior to 31 December 2006.

The 2015 EPBC Act assessment identifies that the area cleared in 2006 pursuant to a State Government approval would not have resulted in a significant impact on matters of national environmental significance (refer to **Attachment 9 of the EPBC Act Referral - EPBC Act Assessment**).

9.1.5 Cultural Heritage Approvals

A cultural heritage assessment for the development was prepared by ARCHAEO in 2006 in accordance with the *Aboriginal Cultural Heritage Act 2003*. The site falls within the external boundary of the registered Native Title application of the Port Curtis Coral Coast (PCCC) native title claimants QC01/29. As no triggers exist that require QRE to undertake a Cultural Heritage Management Plan, pursuant to Part 7 of the Act, a decision was made to enter into an Agreement, in accordance with Section 23(3) of the Act (refer to **Attachment 11 of the EPBC Act Referral – Cultural Heritage Assessment**).

9.1.6 Conservation Agreement

The proponent has a Conservation Agreement in place with the State which seeks to establish a Nature Refuge to protect significant conservation values, including:

- areas containing, or providing habitat for flora and fauna listed as rare or threatened under State legislation;
- habitats or vegetation types that are threatened, such as 'endangered' and 'of concern' regional ecosystems;
- habitats and ecosystems poorly represented in existing reserves;
- remnant vegetation of significant conservation value; and
- regional ecosystems and habitat types for which conservation is recommended on scientific grounds, irrespective of conservation status, including mound springs, dry rainforest scrubs, riparian ecosystems, wetlands and mangroves.

9.2 Commonwealth Approvals

A previous substantially larger development concept on the site (refer to **Attachment 6 - Development Concept – 1995 of the EPBC Act Referral**) was accepted by the then Commonwealth Environment Minister as meeting the object of the *Environmental Protection (Impact of Proposals) Act 1974.* This concept was for a much larger site with a significantly larger footprint (refer to **Attachment 7 of the EPBC Act Referral – Minister for the Environment Determination - 1996**).

In August 2013, Senator the Hon Don Farrell, Federal Minister for Sport and Minister Assisting the Minister for Tourism also granted Tourism Major Project Facilitation status to the Turtle Street Beach Resort project (refer to **Attachment 8 of the EPBC Act Referral – Major Project Facilitation Status**).

9.2.1 Great Barrier Reef Marine Park Authority Permit/s

As outlined in our letter of 31 May 2016 the proponent has removed marine tourism activities aspects from the EPBC Act referral on the basis that these aspects of the application will be addressed through a separate permit from GBRMPA at the time when the proposed extent of water activities have been resolved.

9.3 Summary

As such the current development approvals include:

- Town Planning Consent Order – The Town Planning Consent Permit is due to lapse in 2021 (DA/99/2009) (refer to **Appendix 2**); and
- Operational Works Approval – Roadworks, Stormwater, Water Infrastructure, Drainage Works, Earthworks, Sewerage Infrastructure and Landscaping from Gladstone Regional Council (OPW/436/2013) – due to lapse on 26 July 2017 (refer to **Appendix 7**).

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10 Compliance of the action with the objects of the EPBC Act and the Principles of Ecologically Sustainable Development

The request for additional information by the Department of Environment and Energy states that the "*proponent should ensure that the PD assesses compliance of the action with the objects of the EPBC Act and the principles of Ecological Sustainable Development as set out in sections 3 and 3A of the EPBC Act respectively*" (p2). The following provide the relevant extracts from the EPBC Act:

3 Objects of Act

(1) The objects of this Act are:

(a) to provide for the protection of the environment, especially those aspects of the environment that are matters of national environmental significance; and

(b) to promote ecologically sustainable development through the conservation and ecologically sustainable use of natural resources; and

(c) to promote the conservation of biodiversity; and

(ca) to provide for the protection and conservation of heritage; and

(d) to promote a co-operative approach to the protection and management of the environment involving governments, the community, land-holders and indigenous peoples; and

(e) to assist in the co-operative implementation of Australia's international environmental responsibilities; and

(f) to recognise the role of indigenous people in the conservation and ecologically sustainable use of Australia's biodiversity; and

(g) to promote the use of indigenous peoples' knowledge of biodiversity with the involvement of, and in co-operation with, the owners of the knowledge.

3A Principles of ecologically sustainable development

The following principles are principles of ecologically sustainable development:

(a) decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations;

(b) if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation;

(c) the principle of inter-generational equity—that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations;

(d) the conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making;

(e) improved valuation, pricing and incentive mechanisms should be promoted.

In relation to the above:

- the proposal provides for the protection of the environment through the avoidance of areas of ecological significance and the identification of management and mitigation measures that will ensure the project will not reduce or degrade the health, diversity and productivity of the environment or adversely affect current and future generations;
- the proposal has been designed to ensure the ecologically sustainable use of natural resources with water conservation measures to be incorporated in all aspects of the development design and a commitment to progressively increase reliance on renewable energy sources;
- the proposal provides for the protection and conservation of cultural heritage through the implementation of a cultural heritage agreement with local Aboriginal parities; and
- the conservation of biological diversity and ecological integrity was a fundamental consideration in development of the project. The results from the ecological studies were input into project planning and development, including rehabilitation strategies.

11 Conclusion

The proposed Turtle Street Beach Resort project has been subject to rigorous State and Local Government assessment processes which commenced in 1989. Since this time the proponent has been involved in a complex approvals and negotiation process with Commonwealth, State and Local Government agencies which has resulted numerous site investigations and a Development Permit (Operational Works) and Planning and Environment Court Consent Order for the proposed tourist resort. Through this process the design of the resort has been refined to become significantly lower in scale and intensity and approximately 32,890 hectares of the original Monte Christo holding has been either surrendered to the State for National Park and Conservation Park or for a Vegetation Off-Set Area (18,950ha) resulting in significant environmental benefits. During that time all cattle grazing has ceased; noting that a cattle station had been operating for over 150 years on the Monte Christo property.

The information in this report has demonstrated that the project has been located and designed to ensure that:

- The project will not have a significant impact on the Flatback Turtle population. The site is not located adjacent to a beach commonly used for turtle nesting and the main nesting beach on Curtis Island being located greater than 6 km to the south of the resort node. While the likelihood of turtles being found on the beaches north of the resort is low, no development is proposed on the foreshore and a lighting plan has been prepared so as to not contribute to the overall sky glow for the area. Further the lighting measures will ensure no impacts to flatback turtles to the south of the resort. The nearest turtle nesting habitat to the south of the resort lies >6 km away and is not in direct line of sight from the resort buildings. Notwithstanding this, the lighting design, which considers both indoor and outdoor light sources, is aimed at the possibility of turtles nesting within a 1.5 km radius, a much closer proximity than the nesting beach at South End;
- The project will not have a significant impact on the Dugong population. Only small patches of seagrass being located throughout Graham Creek and Hobble Gully leading to the barge landing, as such the presence of dugongs in these areas is considered rare. Also the number of barge movements will be low. Notwithstanding this restrictions are proposed on boating speed in Graham Creek and Hobble Gully to maintain “no wash” to a maximum of 5 knots to manage incidence of boat strike and sediment suspension;
- The project will not have a significant impact on listed threatened or migratory bird species with key habitat areas avoided and no substantive vegetation clearing proposed. Further, the location and design of the proposed dam will ensure impacts on migratory birds are avoided because it:
    - is located in an area that is largely cleared of woody vegetation and avoids direct impacts on tidal areas/potential wader bird habitat;
    - will incorporate appropriate wave and erosion protection as to avoid downstream erosion / sedimentation impacts on areas of potential wader bird habitat; and
    - is relatively small and therefore allows for the continuation of environmental flows.

  The dam is likely to provide additional habitat features for some species of wetland bird, but is unlikely to provide supplementary habitat for waders given its depth and freshwater condition. Management measures will also be implemented to prevent negative impacts associated with the potential introduction or spread of invasive plant and animal species by the proposal. Further, a Fauna Management Plan and Vegetation Management Plan has been prepared by Logic Environmental (2015) to ensure the successful management of the site's vegetation during the construction and operation of the proposed development;
- The proposal avoids direct impacts on known roosts and foraging habitat of migratory wetland species located beyond the mouth of Graham Creek. Indirect impacts on wetland migratory species are not anticipated to arise from barge movements, the runway or other operational functions of the proposal owing to the location of these activities (i.e. away from sensitive environments) and management measures. There are no known threatened bird species within the project area and the proposal avoids, and is separated from, potential habitat of threatened bird species such as the Black-Breasted Button-Quail; and

- The project will not have a significant impact on the Great Barrier Reef World Heritage Area and National Heritage Place. The proposal will not result in the release of degraded stormwater or harmful chemicals in the marine environment. The wastewater treatment plant will be designed, constructed, operated and maintained to produce a consistent Class A+ recycled water. Additionally, the project has been designed to avoid significant visual impacts on the Great Barrier Reef World Heritage Area by ensuring appropriate setback distances to the shoreline, ensuring buildings are predominantly below the height of the existing mature trees on the site and the colour palette and construction materials will also compliment the natural environment.

As demonstrated above, the project will not result in a residual adverse impact on matters of national environmental significance and as such an environmental offset is not required.

The proponent submits that based on the original referral and additional investigations undertaken since the time, the proposed action will not have a significant impact on any matter of national environmental significance and as such should be approved subject to the proposed mitigation measures identified in this report.

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Figures

N

0 2 4 6 8 kilometres

1:200,000

Cardno HRP

LEGEND

- SUBJECT SITE
- BARGE LANDING LOCATION (250m²)
- ROAD ACCESS

LOT 8 CP860464 AND LOT 11 CP860464
CURTIS ISLAND

Regional Context

FILENAME >	REGIONAL CONTEXT	DATE >	OCTOBER 2015
JOB NO. >	HRP01179	AMENDED >	N/A
SCALE >	1:200,000	VERSION >	1.0
SOURCE >	QUEENSLAND GOVERNMENT SmartMap (dated 23.06.10)		

FIGURE 1

N

0 1 2 3 4 kilometres

1:100,000

Cardno HRP

LEGEND

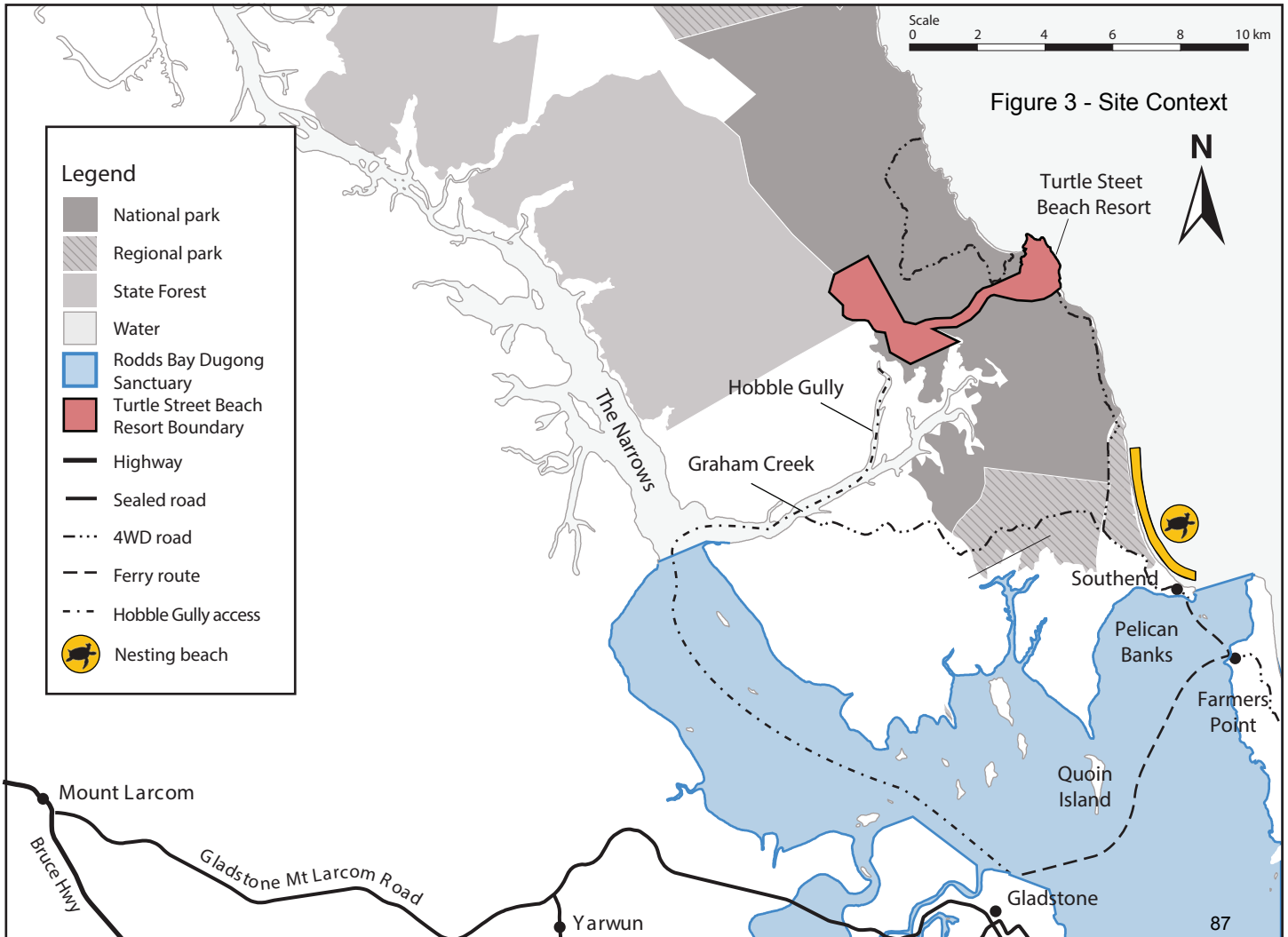
- SUBJECT SITE
- BARGE LANDING LOCATION (250m²)
- ROAD ACCESS

LOT 8 CP860464 AND LOT 11 CP860464
CURTIS ISLAND

Site Location

FILENAME >	SITE LOCATION	DATE >	OCTOBER 2015
JOB NO. >	HRP01179	AMENDED >	N/A
SCALE >	1:100,000	VERSION >	1.0
SOURCE >	GOOGLE EARTH IMAGE		

FIGURE 2


Scale
0 2 4 6 8 10 km
Figure 3 - Site Context
N
Legend
National park
Regional park
State Forest
Water
Rodds Bay Dugong Sanctuary
Turtle Street Beach Resort Boundary
Highway
Sealed road
4WD road
Ferry route
Hobble Gully access
Nesting beach
Turtle Steet Beach Resort
Hobble Gully
The Narrows
Graham Creek
Southend
Pelican Banks
Farmers Point
Quoin Island
Mount Larcom
Bruce Hwy
Gladstone Mt Larcom Road
Yarwun
Gladstone
87

NORTH

The Narrows

Black Head

Hobble Gully

Grahams Creek

South End

10km Buffer Wildlife Online Search
Queensland Coastline
Region
Curtis Island National Park
Curtis Island State Forest
Curtis Island Regional Park
Southend Regional Park
Targine State Forest
Scrubby Mountain State Forest
Mount Larcom State Forest
Rundle State Forest
Rundle Range National Park
Rundle Range Regional Park
Proposed Resort Footprint
Torilla Plains
LNG Plant

DATE PLOTTED: DD/MM/YY BY: <username>
FILE: <Insert file location path>

Cardno
Shaping the Future

Fortitude Valley Tel. 07 3369 9822

0 5 10
kilometres

QRE PTY LTD
DESKTOP SEARCH AREAS

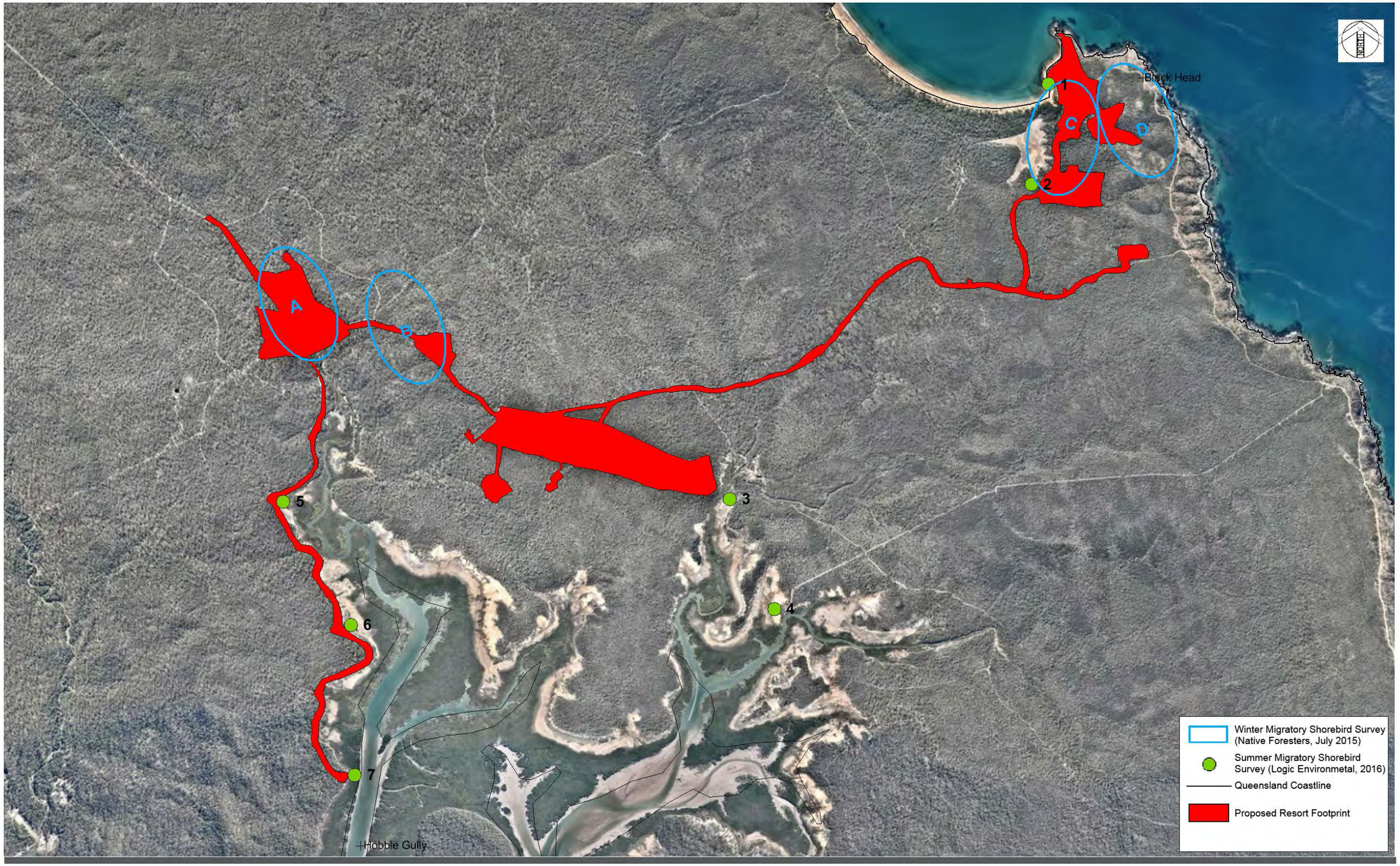
Figure 4

Date	Scale	Size
18/10/2016	1 : 75,000	A3

01
Revision

The Narrows
Black Head
Hobble Gully
Graham Creek Barge Wreck
Grahams Creek
Laird Point
South End
Western Basin Reclamation Area
N
NORTH
Roost Locations as per GHD investigation (November, 2011)
Low Grade Migratory Shorebird Habitat (GHD, Nov 2011)
Forage Sites as per GPA Investigation (GHD, Nov 2011)
Proposed Resort Footprint
Queensland Coastline
Possible movements to foraging grounds from each roost
LNG Site
0 5
kilometres
0 1 2
kilometres
Cardno
Shaping the Future
Fortitude Valley Tel. 07 3369 9822

DATE PLOTTED: DD/MM/YYY BY: <username>
FILE: <Insert file location path>
QRE PTY LTD
FORAGING HABITAT AND ROOST SITES
Date 18/10/2016
Scale 1 : 110,000
Size A3
01
Revision
Figure 5



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Cardno
Shaping the Future

Fortitude Valley Tel. 07 3369 9822

0 1 2
kilometers

QRE PTY LTD
SITE STUDIES

Figure 6

Date	Scale	Size
18/10/2016	1 : 70,000	A3

01
Revision

Black Head

Hobble Gully

Grahams Creek

Mangrove and Saltpan Vegetation

Low-grade Migratory Shorebird Habitat

LNG Plant

Proposed Resort Footprint

DATE PLOTTED: DD/MM/YY BY: <username>
FILE: <Insert file location path>

Cardno
Shaping the Future

Fortitude Valley Tel. 07 3369 9822

0 2.5 5
Kilometres

QRE PTY LTD
POTENTIAL MIGRATORY BIRD HABITAT

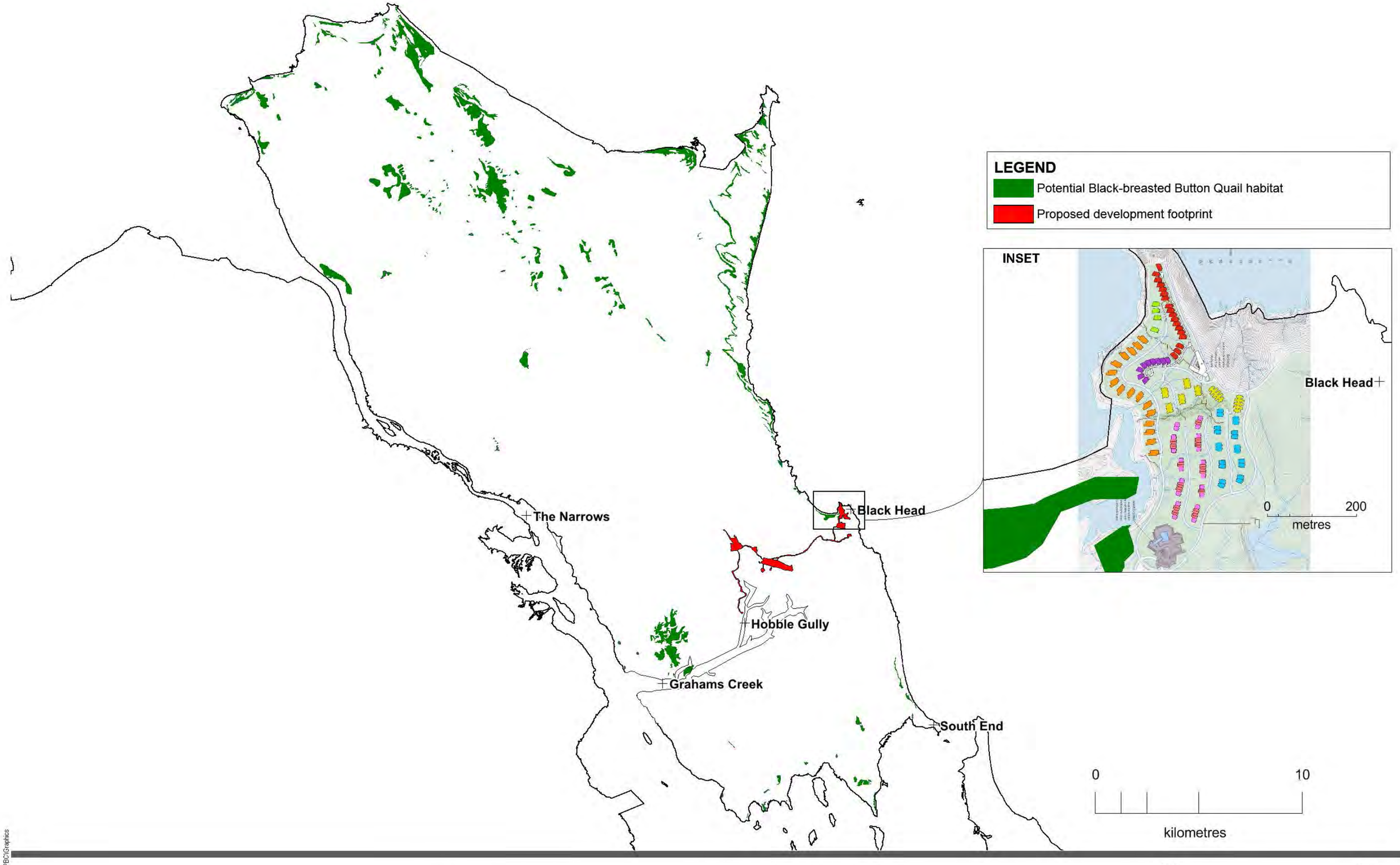
Date 18/10/2016

Scale 1 : 130,000

Size A3

01
Revision

Figure 7



DATE PLOTTED: 23/10/16 BY: DF
FILE: INHRP01179 Curtis Island EPBC\Graphics

Cardno
Shaping the Future

Fortitude Valley Tel. +61 7 3369 9822

TURTLE ST RESORT EPBC

POTENTIAL BLACK-BREASTED BUTTON QUAIL HABITAT

Date
23/10/2016

Size
A3

01

Figure 8

List of Appendices

Appendix 1 – Preliminary Documentation Information Request

Appendix 2 – Approved Plans and Consent Permit 2016

Appendix 3 – EPBC Act Referral

Appendix 4 – Protected Matters Search

Appendix 5 – Wildnet Database Search

Appendix 6 – Field Survey 2016 (Logic Environmental)

Appendix 7 – Operational Works Approval

Appendix 1 – Preliminary Documentation Information Request

Australian Government
Department of the Environment and Energy

EPBC Ref: 2015/7585

Mr Tim Reigel
Managing Director
QRE Pty Ltd
Level 11, 307 Queen Street
BRISBANE QLD 4000

Dear Mr Reigel

Additional information required for preliminary documentation
Turtle Street Beach Resort, Curtis Island, Queensland (EPBC 2015/7585)

I am writing to you in relation to your proposal to construct and operate a tourist resort at Black Head on the eastern coast of Curtis Island, approximately 20 kilometres north of Gladstone, Queensland.

On 16 September 2016, I decided that the the proposed action is a controlled action and that it will be assessed by preliminary documentation. Further information will be required to be able to assess the relevant impacts of the proposed action.

Details outlining the further information required are at Attachment A.

Details on the assessment process and the responsibilities of the proponent are set out in the enclosed fact sheet. Further information is available from the department's website at http://www.environment.gov.au/epbc.

If you have any questions about the assessment process or the further information required, please contact the project manager, Leigh Barker, by email to leigh.barker2@environment.gov.au, or telephone 0422 581 931 and quote the EPBC reference number shown at the beginning of this letter.

Yours sincerely

James Barker
Assistant Secretary
Assessments (Qld, Tas, Vic) and Sea Dumping Branch
16 September 2016

ATTACHMENT A

REQUEST FOR ADDITIONAL INFORMATION – ASSESSMENT BY PRELIMINARY DOCUMENTATION

TURTLE STREET BEACH RESORT, CURTIS ISLAND, QLD (EPBC 2015/7585)

The preliminary documentation (PD), which includes the referral information and the additional information described below, should be contained as one document with attachments, and include sufficient information to avoid the need to search for supplementary reports.

It was determined that the proposed action will have, or is likely to have, a significant impact on the following matters of national environmental significance (MNES) that are protected under Part 3 of the EPBC Act:

- Listed threatened species and communities (sections 18 & 18A)
- Listed migratory species (sections 20 & 20A)
- World Heritage properties (sections 12 & 15A)
- National Heritage places (sections 15B & 15C).

These matters are known as the controlling provisions for the assessment. Information about the action and its relevant impacts is to be provided in the PD. The PD should be sufficient to allow the Minister, or Delegate, to make an informed decision on whether or not to approve, under Part 9 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), the taking of the action for the purposes of each controlling provision.

The proponent should ensure that the PD assesses compliance of the action with the objects of the EPBC Act and the principles of Ecological Sustainable Development as set out in sections 3 and 3A of the EPBC Act respectively.

The documentation must also enable interested stakeholders and the Minister to understand the environmental consequences of the proposed development on matters of national environmental significance (MNES). The information provided should be objective, clear and succinct and where appropriate, supported by maps, plans, diagrams or other descriptive detail.

Maps, diagrams and other illustrative material should be included where appropriate. The additional information should be produced on A4 size paper capable of being photocopied with maps and diagrams on A4 or A3 size and in colour where possible. The proponent should consider the format and style of the document appropriate for publication on the internet. The capacity of the website to store data and display the material may have some bearing on how the document is constructed.

The additional information must include a copy of these guidelines and a table indicating where the information fulfilling the guidelines is included in the PD.

The PD must address the following matters:

1. DESCRIPTION OF MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE

The PD must provide a description of the relevant MNES which may be affected by the proposal (including at offsite locations). This section must address (but need not be limited to) the following matters:

- Flatback Turtle (*Natator depressus*) – vulnerable, migratory
- Dugong (*dugong dugong*) – migratory
- Listed threatened or migratory bird species.

For the matters listed above, this section must provide the following:

(a) details of the ecological requirements and habitats of each matter;

(b) quantification of the extent and quality of habitat and (if known) the number of individuals present on areas of Curtis Island that may be affected by the proposed resort, including provision of survey information with regards to timing, location, effort, methods, results and, whether surveys were undertaken in accordance with published best practice guidelines particularly those available at (www.environment.gov.au/epbc/guidelines-policies.html); and

(c) information detailing known populations or records on areas of Curtis Island that may be affected, and the size of these populations.

2. POTENTIAL IMPACTS

The PD must identify and address potential and likely impacts to relevant MNES resulting from the construction and operational phases of the proposed action. Information must include:

(a) a description of nature, extent and likelihood of potential short-term and long-term impacts of the action, including potential impacts outside the development footprint;

(b) a statement whether any relevant potential impacts are likely to be unknown, unpredictable or irreversible;

(c) analysis of the significance of potential impacts;

(d) any technical data, any sources of authority, and other information used or needed to make a detailed assessment of the relevant potential impacts. Reliability of forecasts and predictions, confidence limits and margins of error must be indicated as appropriate; and

(e) details of any additional relevant studies, surveys or, consultation with species experts/field specialists which were not included in the referral.

In relation to the integrity and Outstanding Universal Value of the Great Barrier Reef World Heritage Area, the PD must demonstrate the project will not be inconsistent with *The Reef 2050 Long-Term Sustainability Plan*.

In relation to the integrity and Outstanding Universal Value of the Great Barrier Reef National Heritage Place, the PD must demonstrate the project will not be inconsistent with:

(a) the National Heritage management principles; or

(b) an agreement to which the Commonwealth is party in relation to a National Heritage place; or

(c) a plan that has been prepared for the management of a National Heritage place under section 324S or as described in section 324X of the EPBC Act.

3. INDIRECT IMPACTS

The PD must identify and address potential and likely indirect impacts to relevant MNES resulting from the proposed action. Indirect impacts include impacts caused by the proposed action and may occur later in time or be further removed in distance from the project area.

4. CUMULATIVE IMPACTS

The PD must identify and address potential and likely cumulative impacts to relevant MNES resulting from the proposed action. Cumulative impacts include where potential project impacts are in addition to existing impacts of other activities (including known potential future expansions or developments by the proponent and other proponents in the vicinity). Where relevant to the potential impact, risk assessment must be conducted and documented. The risk evaluation must include known potential future expansions or developments by the proponent and other proponents in the vicinity of the proposed action.

5. CONSEQUENTIAL AND FACILITATED IMPACTS

The PD must identify and address potential and likely consequential impacts to relevant MNES resulting from the proposed action. Consequential impacts are impacts arising from third party activities which are facilitated to a large extent by the project. Consequential impacts may include, but are not limited to, impacts relating to increased number of tourists, vehicles and activities on Curtis Island and impacts from nutrient, herbicide or pesticide run-off from irrigation areas facilitated by the project.

6. PROPOSED AVOIDANCE, MANAGEMENT AND MITIGATION MEASURES

The PD must provide information on measures to be undertaken to avoid, mitigate, and manage impacts to relevant MNES, including for example:

(a) information on what steps have been undertaken to avoid direct impacts to relevant MNES wherever practicable;

(b) a description of mitigation measures which deal with indirect, cumulative and facilitated impacts to relevant MNES outside the development footprint;

(c) associated timeframes for undertaking proposed mitigation measures (i.e. duration and timing of implementation); and

(d) measures to avoid or minimise damage to the Great Barrier Reef World Heritage Area.

7. PROPOSED OFFSETS

This section should consider offsets for all relevant MNES for which there may be significant residual impacts and contingency offsets where impacts are uncertain.

The PD must provide information on any offset measures which are available and achievable, in the event they are deemed to be required by the Department.

ENVIRONMENTAL OUTCOMES

The Australian Government has developed policy and guidance on outcomes-based conditions under the EPBC Act. Outcomes-based conditions specify the environmental outcome that must be achieved by an approval holder without prescribing how that outcome should be achieved. Outcomes-based conditions allow approval holders to be innovative and achieve the best environmental outcome at the lowest cost, while increasing the public transparency of the required environmental outcomes.

In the event that the project is to receive approval under the EPBC Act and for outcomes-based conditions to be applied, the PD must provide information on the outcomes that the proponent will achieve for relevant MNES. Outcomes need to be specific, measurable and achievable, and must be based on robust baseline data. Outcomes must be developed in consideration of the *Outcomes-based Conditions Policy 2015* and *Outcomes-based Conditions Guidance 2015* (see https://www.environment.gov.au/epbc/publications/outcomes-based-conditions-policy-guidance), with suitable justification for considerations identified in the policy and guidance.

The PD must include:

(a) information to demonstrate that the application of outcomes-based conditions will be reliable and achievable;

(b) the specific environmental outcomes to be achieved, and reasoning for these in reference to relevant Recovery Plans, Conservation Advices, Threat Abatement Plans, Heritage values statements, Ramsar information sheets and other relevant material; and

(c) for each proposed outcome:

i. the risks associated with achieving the outcome;

ii. the measurability of the outcome, including all suitable performance measures;

iii. appropriate baseline data upon which the outcome has been defined and justified;

iv. the likely impacts that the proposed outcome will address;

v. demonstrated willingness and capability of achieving the outcome;

vi. the level of knowledge about the protected matter or its surrogate, upon which outcomes were based;

vii. commitments to independent and periodic audits of performance towards achieving outcomes;

viii. assessment of the likely level of control that the proponent will have over achieving the outcome;

ix. discussion of the appropriateness of any surrogates for protected matter outcomes; and

x. details of proposed management to achieve the outcome, including, but not limited to performance indicators, periodic milestones, proposed monitoring and adaptive management, and record keeping, publication and reporting processes.

8. SOCIAL AND ECONOMIC

Information on the economic and social impacts of the proposed action, both positive and negative, must be provided. Economic and social impacts should be considered at the local, regional and national levels.

9. OTHER APPROVALS AND CONDITIONS

The PD must include information on any other requirements for approval or conditions that apply, or that the proponent reasonably believes are likely to apply, to the proposed action. This must include:

(a) details of any local or state government planning scheme, or plan or policy under any local or state government planning system that deals with the proposed action; and

(b) a description of any approval that has been obtained or is required to be obtained from a State agency or authority (other than an approval under the EPBC Act), including any conditions that apply to the action.

Appendix 2 – Approved Plans and Consent Permit 2016

Note: the plans included in this Appendix are more current and override those plans referred to in Appendix 3 – EPBC Act Referral.

GKE

IN THE PLANNING AND ENVIRONMENT COURT
REGISTRY: BRISBANE **Application No. 3322 of 2016**

BETWEEN:

QRE PTY LTD ACN 067 532 601 FINAL ORDER Applicant

AND:

GLADSTONE REGIONAL COUNCIL

Respondent

JUDGMENT

Before	His Honour Judge Searles
Date of Hearing:	28 September 2016
Date of Judgment:	28 September 2016

THIS MATTER HAVING on this day come on for hearing by way of Originating Application filed on 19 August 2016 to change the development approval granted by this Honourable Court on 26 September 1991 in Planning and Environment Court Appeal No. 306 of 1990 and further amended by this Honourable Court on 1 May 2002 in Planning and Environment Application Court No. 1219 of 2002 and 17 February 2012 in Planning and Environment Court Application No. 4595 of 2011 for a Tourist Development (hotel, tourist facilities, outdoor entertainment, staff accommodation, restaurants, shops, rural use, animal husbandry and catering industry) ("the Development Approval"), in respect of land described as Lots 8 and 11 on CP860464 and Lot 11 on SP257867 and situated at Black Head, Curtis Island,

AND UPON HEARING Counsel for the Applicant and Counsel for the Respondent,

AND UPON READING

1. The Originating Application filed 19 August 2016;

2. The Affidavit of David Wayne Perkins filed 19 August 2016;

Thynne + Macartney
Level 19, 66 Eagle Street
BRISBANE QLD 4001
Tel: (07) 3231 8888
Fax: (07) 3229 0855
Email: tquirk@thymac.com.au

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3. The Affidavit of Timothy John Quirk filed 25 August 2016; and

4. The Affidavit of David Wayne Perkins filed 26 September 2016,

AND UPON THE COURT BEING SATISFIED THAT

1. There has been compliance with the provisions of the *Sustainable Planning Act 2009* with respect to service of the Originating Application;

2. The changes to the plans of the Development Approval as set out in the changed plans of development in Exhibit "DWP-10" of the Affidavit of David Wayne Perkins filed 19 August 2016 are a permissible change within the meaning of section 367 of the *Sustainable Planning Act 2009*; and

3. The changes to the conditions of the Development Approval are a permissible change within the meaning of section 367 of the *Sustainable Planning Act 2009*,

IT IS ORDERED THAT

1. The Development Approval be changed in accordance with the conditions and plans attached hereto and marked "Attachment 1", contained in pages 1 to 43.

2. Each party bears their own costs.

Filed on: 28 September 2016

Registrar

Attachment 1

Approval Package
Conditions of Approval - Turtle Street Beach Resort
28 September 2016

Condition 1

Subject to the modifications and condition contained herein the development shall be carried out in general accordance with Plan Numbers and documents as identified in the Table below:

Drawing or Document	Number	Dated
Zenith Architectural Plans		
Location Plan	Sheet Ref: 001	25/8/10
Map of Lot 8	Sheet Ref: 002	22/9/10
Resort Facilities Lower Floor Plan	Sheet Ref: 301	19/8/10
Resort Facilities Upper Floor Plan	Sheet Ref: 302	19/8/10
Resort Facilities Elevations	Sheet Ref: 303	19/8/10
Resort Facilities Elevations	Sheet Ref: 304	19/8/10
Marin Plain Camp Floor Plan	Sheet Ref: 501	24/8/10
Marine Plain Camp Section/ Elevation	Sheet Ref: 502	24/8/10
Aquatonic Architectural Plans		
Resort Master Plan	N/A	12/07/2016
Pavilion Facility Building – Upper Plan	N/A	12/07/2016
Pavilion Facility Building – Lower Plan	N/A	12/07/2016
Pavilion Facility Building – Areas	N/A	21/06/2016
Bridal Pavilion Concept Plan	N/A	04/08/2015
King Suite Concept Plan	Rev. A	22/09/2015
Queen Suite Concept Plan	Rev. A	22/09/2015
Livistona Pavilion Concept Plan	SK01	29/10/2015
Pandanus Pavilion Concept Plan	SK02	29/10/2015
Seascape Villa Concept Plan	SK04	06/11/2015
Eagles Nest Apartment Concept Plan	SK05	12/07/2016
Eagles Nest Villas Cluster – Ground Floor Concept Plan	SK17	15/07/2016
Eagles Nest Villas Cluster – Upper Floor Concept Plan	SK18	15/07/2016
Ocean Villa Concept Plan	SK18	23/10/2015
U Plan Landscape Plans		
Landscape Master Plan	Plan 1 of 6	Sept 2010
Landscape Master Plan	Plan 2 of 6	Sept 2010
Cross Section Plan Part A	Plan 3 of 6	Sept 2010
Cross Section Plan Part B	Plan 4 of 6	Sept 2010
Building Habitats by Ecological Zones Plan Part A	Plan 5 of 6	Sept 2010
Building Habitats by Ecological Zones Plan Part B	Plan 6 of 6	Sept 2010
Setback Plan	Plan 1 of 5	Sept 2010
Beach Access Plan	Plan 2 of 5	Sept 2010
Road Sections Plan	Plan 4 of 5	Sept 2010
Cross Sections Plan	Plan 5 of 5	Sept 2010

Condition 2

The approval limits the proposed development to the density, height and resort building envelope shown on the plans listed in Condition 1 above and in accordance with the following limits:

- Maximum number of rooms – 375
- Maximum Gross Floor Area – 18,745m^2

Condition 3

Hobble Gully will provide access to the development.

Condition 4

Operation of the resort airstrip is not to conflict in any way with the future proposed airport site at Kangaroo Island identified under the Calliope Shire Planning Scheme 2007.

Condition 5

The development as hereby approved shall at all times be serviced by an adequate supply of potable water which meets the guidelines and standards required by the National health and Medical Research Council listed in Table 3.1 "Drinking Water Quality Parameters" in the publication "Guidelines for Planning and Design of Urban Water Supply Schemes" published by the Water Resources Commission in 1989.

Condition 6

The development as hereby approved, shall at all times be serviced by a suitable effluent disposal system constructed in accordance with the *Water Supply (Safety and Reliability) Act 2008* and the guidelines set out in Section 5.2.2 "Sewer Treatment" of the Concept Planning Report lodged in conjunction with the application. In this regard an approval of an ERA for sewerage treatment will be required before the use commences

Condition 7

All solid wastes shall be disposed of in accordance with the Refuse Management Regulations, which should include provision for recycling where possible.

Condition 8

The application shall take appropriate action to prevent the introduction of plants other than native plants onto the Island by construction vehicles, resort guests, resort vehicles and service providers.

Condition 9

The developer shall implement the approved Cultural Heritage Management Plan for the development.

Condition 10

The applicant shall provide a dedicated vehicular access at no cost to Council, from the southern boundary of Lot 8 to the southern boundary of Lot 6 (the National Park). The location of this access is shown on "Map Referred to in Condition 11 (18 February 2011)". Such access shall be within a road reserve of 30 metres in width, constructed to a rural road standard with gravel surface, with a minimum carriage width of 3.8 metres.

Condition 11

The tidal inlet adjacent to the resort development shall not be modified or otherwise adversely impacted on by the development

Condition 12

The lessee must at all times take the necessary precautions to ensure that all lights on or above the leased land are shielded to prevent glare or reflection which may interfere with safe navigation of surrounding waterways or with reasonable enjoyment of neighbouring properties or nesting sites for turtles.

Condition 13

The developer shall undertake landscaping utilising indigenous plants in general accordance with the U Plan landscape plans listed in Condition 1.
In general the landscape intent for the resort node at Black Head is to limit the removal of vegetation, except for:

- The building footprint;
- Necessary bushfire management practices, in accordance with the approved bushfire management plan; and
- The construction of access ways.

Condition 14

Access to the foreshore is to be limited to the access points indicated on the U Plan Beach Access Plan - Sheet 2 of 5.

Condition 15

The site is to be maintained in a clean and orderly state at all times.

Condition 16

Prior to the use commencing, the developer shall eliminate or control any/all declared pests or weeds on the site in accordance with the Council's Policy 4.22 'Control of Declared Plants - New Subdivisions'.

Condition 17

An Operational Works Development Permit must be obtained for the following works prior to the commencement of construction:

- Earthworks (for the resort node and resort dam)
- Roadworks (for the resort node)
- Stormwater management (for the resort node)
- Water infrastructure (for the resort node)
- Street lighting (for the resort node)
- Landscaping (for the resort node)
- Sewerage infrastructure (for the resort node)
- Environmental protection and associated works (for the resort node)

The design and supporting calculation/documentation associated with these works must be certified by a Registered Professional Engineer of Queensland (RPEQ).

Condition 18

Any on-site civil works in the resort node shall be undertaken and executed under the supervision of a RPEQ. On completion, give to Council "as constructed" details of the civil works including certification that all civil works have been completed in accordance with the approved plans and specifications.

Condition 19

For the following elements of the resort, as constructed engineering plans certified by a consulting engineer are to be lodged with Council and these elements are to be suitably maintained at all times:

- Access Roads within Lot 8 (outside the resort node);
- Main dam;
- Airstrip.

Condition 20

The developer is to obtain the following before the use commences:

- Obtain registration as a water service provider;
- Confirm water supply system complies with the current applicable legislation;
- Obtain Regional Fire Service approval for the resort firefighting water supply;
- Obtain an ERA for sewerage treatment.

Condition 21

The following reports are to be submitted to Council with the application for operational works referred to in Condition 17 above:

An acid sulphate soils management plan in general accordance with the Geo Coastal Australia and GJR Holding Pty Ltd ASS Investigations, 15 December 2003 and ASS Management Plan, 5 December 2003
Stormwater Quality and Quantity Management Plan
The Bushfire Hazard Assessment/Management Plan prepared by Logic Environmental 2010
Drainage Erosion and Sediment Control Plan
Environmental Management Plan
Geotechnical Report
Recycled Water Management Plan
Drinking Water Quality Management Plan
Waste Management Plan

Condition 22

The Relevant Period will lapse on 26 July 2021.

Condition 23

The Developer shall incorporate provisions in the Rules to the Owners Association to ensure vegetation protection over the areas located outside the building envelopes and access ways. These provisions shall protect the vegetation from disturbance in these areas and require that any new planting is in accordance with the U Plan Landscape Plans referred to in Condition 1. The Rules to the Owners Association are to be submitted to Council for approval with the operational works development application.

Condition 24

The developer shall undertake on-site revegetation utilising plants from the list of species identified on the U Plan Landscape Plans referred to in Condition 1 in which the need to revegetate arises. Such areas may include, but may not necessarily be limited to, building footprints, roads, pedestrian accesses and the like.

Condition 25

The management of vegetation on land, other than the building footprints, shall be in accordance with the *Vegetation Management Act 1999* and be carried out by the Owners Association and secured through The Rules to the Owners Association.

Condition 26

The Rules to the Owners Association shall ensure that the height and location of any buildings and structures, ensures that they are in general accordance with the U Plan Landscape Plans referred to in Condition 1 so as to not protrude above any horizon or ridgeline when viewed from any public place readily accessible to the public.

Operational Works

Condition 27

The Operational Works for the Hobble gully esplanade road are to be executed under the supervision of a RPEQ. The applicant / developer must give to the Council, construction certificates from such supervising engineer, that the work has been constructed in accordance with the Operational Works Permit and good engineering practice, together with relevant quality assurance, operation and maintenance, and as constructed" documentation prior to commencement of the use.

Condition 28

Operational works may necessitate minor amendments to the proposed development layout to achieve a safer, more efficient, effective, sustainable or best practice engineering solution and to accommodate the findings of more detailed analyses of public health infrastructure (water supply and sewerage), transportation infrastructure, *landscape construction and management* and stormwater management strategies.

Advisory Note This development is located in an environmentally sensitive area. Innovative engineering, environmental management and landscape solutions may be required to successfully achieve the desired environmental outcomes.

Condition 29

Operational works for the Hobble Gully esplanade road are to be designed and constructed in accordance with Council's relevant standards at the time of lodgment of an application for an Operational Works Permit and in accordance with the relevant Australian Standards and good engineering practice. Council's current standards include:

1. Roads and Transport Standard 2005 (Joint CSC and GCC)
2. Gladstone Storm Water Management Strategy 2000 - Drainage Management Document.

Condition 30

Construction Environmental Management Plan

(a) Any application for operational works shall be undertaken in accordance with the approved Environmental Management Plan (CEMP) defining measures to be undertaken during the works to ensure that the environmental impact of the construction works are addressed. Matters to be addressed in the CEMP shall include:
(b) soil erosion and sedimentation control measures in accordance with the Institution of Engineers Australia publication "Soil Erosion and Sediment Control; Engineering Guidelines for Queensland Construction Sites';
(c) topsoil management and stockpiles;
(d) water quality;
(e) vegetation preservation and native fauna habitat;
(f) weed management;
(g) air quality;
(h) noise;
(i) waste management and site clean up;
(j) incident management;
(k) monitoring and reporting; and
(l) integration with the Cultural Heritage Management Plan.

Condition 31

Waste Water

(a) All waste water shall be collected from each building in an underground reticulation system and delivered to the treatment plant on common property.
(b) The treatment plant shall produce effluent of a quality suitable for use as recycled non potable water and in accordance with the terms of the licence to be obtained.

Condition 32

All works and infrastructure shall (as a minimum standard) comply with Australian Water Supply and Sewerage Standards and the terms and conditions of the licence to be obtained.

Condition 33

Roads

All internal roads and car parking areas shall be designed to the following specifications:

(a) single lane with passing lanes at intervals of a maximum of 100 metres;
(b) on alignments designed to minimise vegetation removal and avoid erosion prone areas and to facilitate stormwater drainage; and
(c) designed to minimise concentration of run-off in favour of sheet flow across shoulders and natural infiltration assisted by swales where necessary.

Stormwater Management

Condition 34

All stormwater drainage Infrastructure shall be designed and constructed to ESD principles and to allow surface management through -

(a) Separation according to quality where necessary;
(b) end of pipe treatment systems to collect pollutants;
(c) design to encourage infiltration; and
(d) designed to prevent erosion.

Condition 35

An operational works permit for landscaping, environmental protection and associated works must include but shall not be limited to drawings, specifications the location of proposed plant species, a plant schedule indicating common and botanical names, plant densities, topsoil depth, subgrade preparation, mulch type and depth, type of turf, paving, edging etc together with vegetation establishment, cultivation and maintenance details:

(a) irrigation system details;
(b) location, extent, specification and installation, establishment, cultivation and maintenance details for scour protection / soil stabilisation measures for the operational phase of the development, including but not limited to the turfing of footpaths, batter protection measures, measures to protect against high velocity and concentrated stormwater flows, retaining structures, fences and barriers, median and roundabout plantings, access for the public and for maintenance vehicles, signage, open space and pathway lighting etc;
(c) it is noted that the subject scour protection, stabilisation and other environmental protection works to be included in these landscaping works relate to long term environmental protection during the operational phase of the development. These works are designed to provide positive, sustainable environmental protection and are additional to the relatively short term erosion and sediment control measures implemented during the construction phase of the development.

Condition 36

The operational works permit for landscaping, environmental protection and associated works must specifically address but shall not be limited to the following items:

(a) full width planting of all "verges" and associated open space / access areas;
(b) the long term stabilisation and scour protection of all embankment slopes including the treatment of slopes:
    - flatter than 1 vertical to 4 horizontal
    - between 1 vertical to 4 horizontal and 1 vertical to 3 horizontal
    - steeper than 1 vertical to 3 horizontal;
(c) measures to protect against high velocity and concentrated, stormwater flows in relation to open drains, diversion drains, table drains, swales and drainage structures, particularly at changes in flow direction, and at the entrance / exit to stormwater drainage structures[1] (culverts, spillways, beds of drains, bends in drains etc); and

(d) planting of appropriate vegetation along the top of embankment slopes (steeper than 1 vertical to 4 horizontal) to deter/discourage access to the slopes.

Security

Condition 37

For the Hobble Gully esplanade road prior to construction commencing the applicant / developer must lodge a construction security bond (in the form of cash or a bank guarantee) in the amount of 2.5% of the estimated cost of the construction of the works. The construction security bond is intended to cover action by Council where:

(a) either the works need to be carried out by Council as a matter of urgency to provide for people safety, traffic safety or for the protection of property or the environment, or

(b) the works need to be carried out by Council because the developer / applicant has failed to comply with a notice to:

- remedy a breach of this approval or an associated operational works approval, or
- provide for people safety, traffic safety, or to provide for the protection of property or the environment.

The cost incurred by Council in actioning the above, will be recovered from the construction security bond. The construction security bond shall be released when the operational works commence the maintenance / performance verification period.

Condition 38

For the Hobble Gully esplanade road a maintenance / performance verification security bond must be lodged with Council and prior to the works being accepted "on maintenance". The applicant / developer must lodge a maintenance / performance verification security bond (in the form of cash or a bank guarantee) in the amount of 5.0% of the estimated cost of the construction of the works. The maintenance / performance verification security bond is intended to cover action by Council where:

(a) either the works need to be carried out as a matter of urgency to provide for people safety, traffic safety or for the protection of property or the environment, or

(b) the works need to be carried out by Council because the developer / applicant has failed to comply with a notice to:

- remedy a breach of this approval, or
- rectify defective work or to construct new work resulting from design deficiencies, or
- rectify defective work or to construct new work resulting from construction deficiencies, or
- carry out maintenance of the works, or
- provide for people safety, traffic safety, or to provide for the protection of property or the environment.

The cost incurred by Council in actioning the above, will be recovered from the maintenance / performance verification security bond. The maintenance / performance verification security bond shall be held by Council for a minimum period of 12 months. This period will be extended by Council to verify the integrity and performance of the works or of any remedial works carried out, should actual or potential defects or omissions be identified.

Condition 39

Proposed treatments and colour scheme to be submitted for Council approval prior to the issue of a development permit for building works.

ENVIRONMENT & REGULATION DEPARTMENT CONDITIONS

SCHEDULE A – GENERAL CONDITIONS

A1 In carrying out the activity, all reasonable and practical measures are to be taken to minimise releases and the likelihood of releases of contaminants to the environment, except as otherwise provided by the conditions of this development approval.

A2 The holder of this development approval must:
(a) install and operate all works and control equipment, and
(b) take all measures, perform all acts and do all things, necessary to ensure compliance with the conditions of this development approval.

A3 Notwithstanding any other condition of this development approval, this development approval does not authorise any release of contaminants that causes or is likely to cause an environmental nuisance beyond the boundaries of the registered place.

SCHEDULE B – AIR

B1 Odour and visible contaminants, including but not limited to dust, smoke, fumes and aerosols must not be released to the environment in a manner that will or may cause environmental harm or environmental nuisance unless such release is authorised.

B2 Suitable screens and/or barriers shall be erected during excavation and building works, where required, to reduce the emission of dust, water effluent or other matter from the site.

B3 No incineration or open burning shall be carried out on site.

B4 Following site preparation and clearing, all greenwaste material for disposal shall be stockpiled and removed to an approved refuse disposal facility or wood chipped on site. Burning of material prior to removal is not permitted due to interferences with the surrounding areas.

B5 During construction, stockpiles and areas of bare soil or earth that are likely to become eroded must be adequately protected - by upslope surface water diversion, downslope sediment fencing and temporary surface coverings.

SCHEDULE C – WATER / STORMWA TER

C1 Contaminants must not be directly or indirectly released from the site to which this development approval applies, to any waters or stormwater.

C2 This approval does not relate to structural integrity. The approval holder is responsible for ensuring that the designed facilities, along with ancillary drains, channels and pipes, shall be designed and constructed in accordance with good engineering practice. This approval does not remove any obligation on the holder to obtain any other approval legally required by any other authority.

SCHEDULE D – NOISE

D1 The installation and operations of noise generating equipment and vehicles shall be carried out in a manner to minimise their impacts on neighbouring properties.

D2 The building works must be carried out by such practicable means necessary to prevent the emission or likelihood of emission of noise that constitutes environmental nuisance.

D3 All noise producing machinery and equipment {including airconditioners, compressors and cooling systems) are to be fitted with noise attenuation features so that noise at the boundary of the site does not exceed the levels indicated in the table below –

NOISE LIMITS AT A NOISE SENSITIVE PLACE	
Period	Noise Level at a Noise Sensitive Place (ie a residence) Measured as the Adjusted Maximum Sound Pressure Level (Lamax adj, T)
7am - 7 pm	Background noise level plus 5dB(A)
7pm - 10pm	Background noise level plus 5dB(A)
10pm - 7am	Background noise level plus 3dB(A)
Sundays & Public Holidays	Background noise level plus 5dB(A)

NOISE LIMITS AT A COMMERCIAL PLACE	
Period	Noise Level at a Commercial Place Measured as the Adjusted Maximum Sound Pressure Level (Lamax adj, T)
7am - 7pm	Background noise level plus 10dB(A)
7pm - 10pm	Background noise level plus 10dB(A)
10pm - 7am	Background noise level plus 8dB(A)
Sundays & Public Holidays	Background noise level plus 5dB(A)

SCHEDULE E – WASTE MANAGEMENT

E1 Where waste is a contaminant, waste must not be released to the environment where the release will or may cause environmental harm or environmental nuisance, unless such release is authorised.

E2 Concrete wastes, or washing concrete mixers, must not be deposited in any location where they may flow or be washed into any stormwater system or kerb drainage.

E3 Paintbrushes, rollers, tins, trays etc shall not be washed out or emptied into stormwater drain/system.

SCHEDULE F - MONITORING AND REPORTING

F1 All complaints received by the holder of this development approval relating to releases of contaminants from the activity must be recorded and kept in a log book with the following details:

(a) time, date and nature of complaint:
  i) type of communication (telephone, letter, personal etc.);
  ii) name, contact address and contact telephone number of complainant (note: if the complainant does not wish to be identified then "Not identified" is to be recorded);
  iii) response and investigation undertaken as a result of the complaint;

(b) name of person responsible for investigating complaint; and

(c) action taken as a result of the complaint investigation and signature of responsible person.

F2 As soon as practicable after becoming aware of any emergency or incident which results in the release of contaminants not in accordance, or reasonably expected to be not in accordance with the conditions of this development approval, the holder of the registration certificate to which this development approval relates, must notify the administering authority of the release by telephone or facsimile.

F3 The notification of emergencies or incidents as required by condition F2 must include but not be limited to the following:

(a) the operator of the activity to which this development approval relates;
  i) the location of the emergency or incident;
  ii) the name and telephone number of the designated contact person;
  iii) the time of the release;

(b) the time the holder of the registration certificate became aware of the release;
  iv) the suspected cause of the release;

(c) the environmental harm and or environmental nuisance caused threatened; or suspected to be caused by the release; and
  v) actions taken to prevent further any release and mitigate any environmental harm and/or environmental nuisance caused by the release.

F4 Not more than 14 days following the initial notification of an emergency or incident, the holder of the development approval must provide written advice of the information supplied in accordance with condition number F3 in addition to:

(a) proposed actions to prevent a recurrence of the emergency or incident;
  i) outcomes of actions taken at the time to prevent or minimise environmental harm and or environmental nuisance; and

(b) the results of any environmental monitoring performed.

SCHEDULE G – DEFINITIONS

G1 For the purposes of this development approval the following definitions apply:

(a) "L(Amax adj, T)" means the average maximum A- weighted sound pressure level, adjusted for noise character and measured over a time period of not less than 15 minutes, using Fast response.

(b) "commercial place" means a place used as an office or for business or commercial purposes.

(c) "noise sensitive place" means –

  i) a dwelling, mobile home or caravan park, residential marina or other residential premises; or
  ii) a motel, hotel or hostel; or
  iii) a kindergarten, school, university or other educational institution; or
  iv) a medical centre or hospital, or
  v) a protected area ; or
  vi) a park or gardens.

G2 For the purposes of this development approval any term not otherwise defined in the *Environmental Protection Act 1994*, and the *Integrated Planning Act 1997* and any subordinate legislation made pursuant to these Acts or in the Definitions Schedule of this development approval has the meaning conferred to that term in its common usage.

END OF CONDITIONS

Advice to Applicant:

ADVISORY NOTES

1 An application for a Food Business Licence shall be submitted to Council Environmental Health Section, and approved, prior to the commencement of use of the kitchen as determined by the *Food Act 2006*. Please note that a design approval is required prior to the installation of the kitchen/s when it is a licensable activity. Contact Council's Environmental Health department for further information.

2 It is advised that any future Development Application for Operational Works as a result of compliance with Condition 17 are to be designed and assessed in accordance with the Engineering Design Planning Scheme Policy and the Capricorn Municipal Development Guidelines of the Gladstone Regional Council Planning Scheme.

ZENITH DESIGN

A.B.N. 92-430-095-302
Q.B.S.A. Lic. No. 65213
50 Michel Drive, Narangba QLD 4504
Phone: 3888 2555
Fax: 3888 2444
Email: pzimmermann@bigpond.com

FLOOR AREAS:

TOTAL AREAS:

PROJECT :

TURTLE STREET BEACH RESORT

REAL PROPERTY DESCRIPTION :

PARISH :
COUNTY :

SITE AREA:

CLIENT :

Q.R.E. Pty Ltd

PROJECT ADDRESS :

CURTIS ISLAND, QUEENSLAND

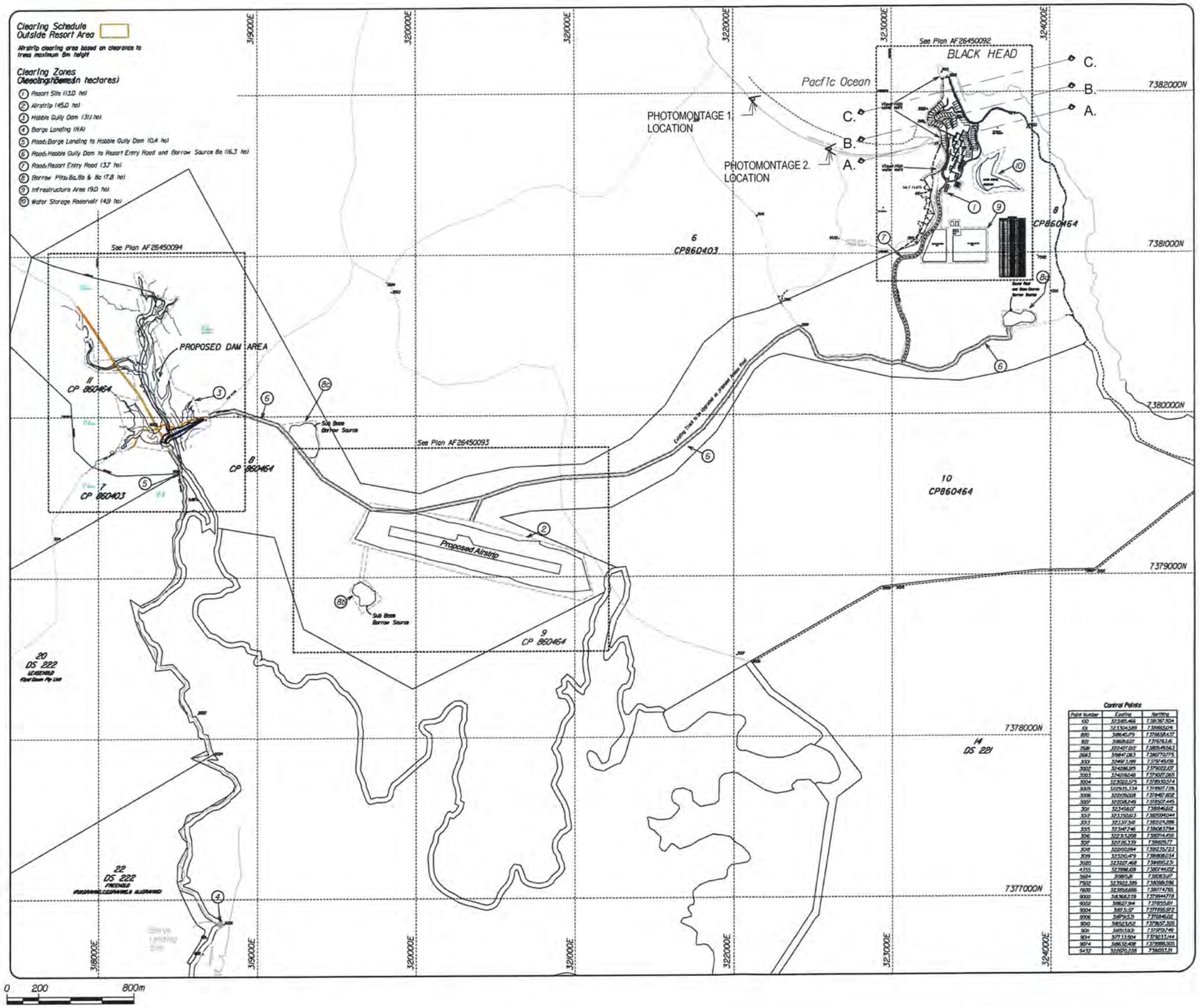
DRAWING

TURTLE STREET BEACH RESORT LOCATION PLAN

SHEET: 001 OF

SCALE: 1:150 000
DATE: 25/08/2010 8:20:42 AM

DRAWN: lde
CHECKED: pz
JOB NO : 787-08



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FLOOR AREAS:

TOTAL AREAS:

PROJECT :

TURTLE STREET BEACH RESORT

REAL PROPERTY DESCRIPTION :

PARISH :
COUNTY :

SITE AREA:

CLIENT :

Q.R.E. Pty Ltd

PROJECT ADDRESS :

CURTIS ISLAND, QUEENSLAND

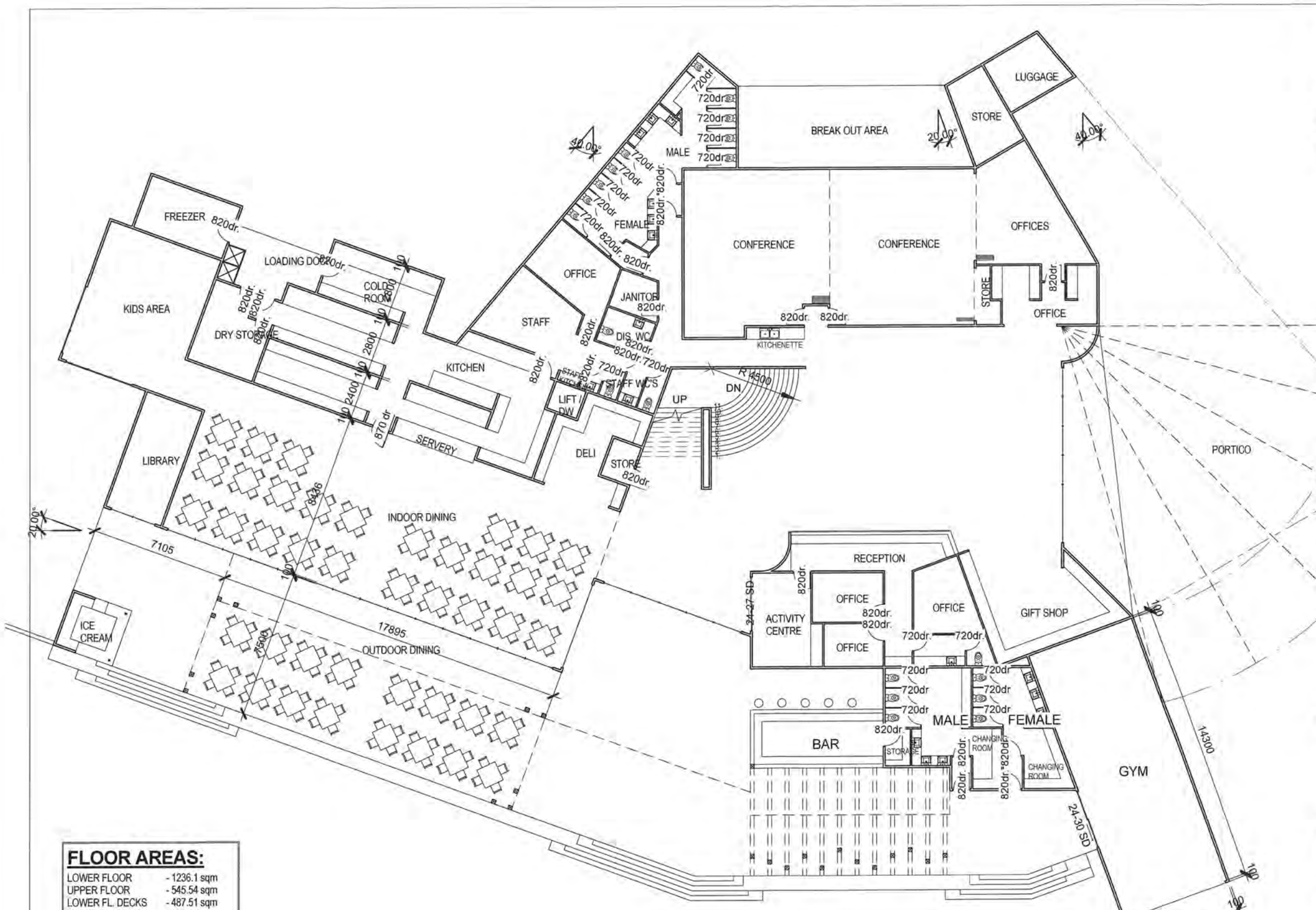
DRAWING

MAP OF LOT 8

SHEET: 002 OF

SCALE: 1 : 25000
DATE: 22/09/2010 8:48:43 AM

DRAWN: lde
CHECKED: pz
JOB NO : 787-08



FLOOR AREAS:

LOWER FLOOR	- 1236.1 sqm
UPPER FLOOR	- 545.54 sqm
LOWER FL. DECKS	- 487.51 sqm
UPPER FL. DECKS	- 290.17 sqm
PORTICO AREA	- 281.77 sqm
TOTAL	**= 2841.09 sq.m.**
POOL AREA	- 614.75 sqm
POOL PAVED AREA	- 2089.5 sqm
TOTAL POOL AREA	= 2704.25 sqm

ZENITH DESIGN

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Fax: 3888 2444
Email: pzimmermann@bigpond.com

FLOOR AREAS:

TOTAL AREAS:

PROJECT :

TURTLE STREET BEACH RESORT

REAL PROPERTY DESCRIPTION :

PARISH :
COUNTY :
SITE AREA:

CLIENT :

Q.R.E. Pty Ltd

PROJECT ADDRESS :

CURTIS ISLAND, QUENSLAND

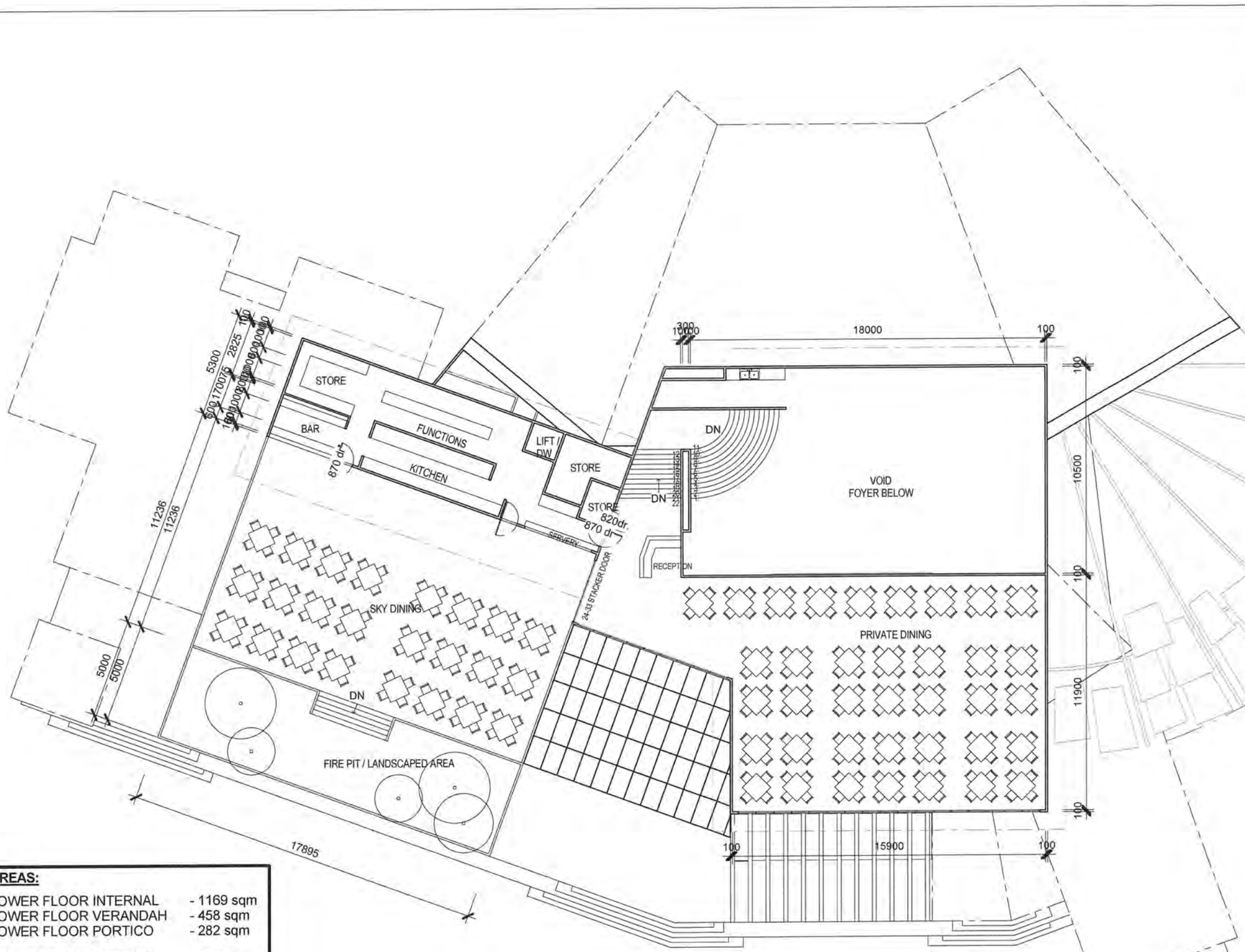
DRAWING

RESORT FACILITIES - LOWER FLOOR PLAN

SHEET: 301 OF

SCALE: 1 : 200
DATE: 19/08/2010 7:41:55 AM

DRAWN: Ide
CHECKED: pz
JOB NO : 787-08



AREAS:

LOWER FLOOR INTERNAL	- 1169 sqm
LOWER FLOOR VERANDAH	- 458 sqm
LOWER FLOOR PORTICO	- 282 sqm
UPPER FLOOR INTERNAL	- 519 sqm
UPPER FLOOR VERANDAH	- 240 sqm
TOTAL:	= 2668 sqm
(internal only)	= 1688 sqm

ZENITH DESIGN

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Phone: 3888 2555
Fax: 3888 2444
Email: pzimmermann@bigpond.com

FLOOR AREAS:

TOTAL AREAS:

PROJECT :

TURTLE STREET BEACH RESORT

REAL PROPERTY DESCRIPTION :

PARISH :
COUNTY :

SITE AREA:

CLIENT :

Q.R.E. Pty Ltd

PROJECT ADDRESS :

CURTIS ISLAND, QUENSLAND

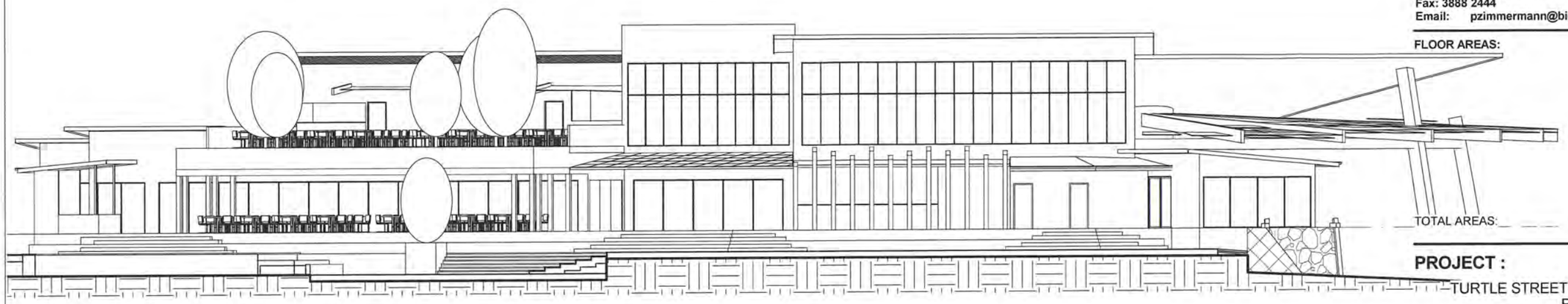
DRAWING

RESORT FACILITIES - UPPER FLOOR PLAN

SHEET: 302 OF

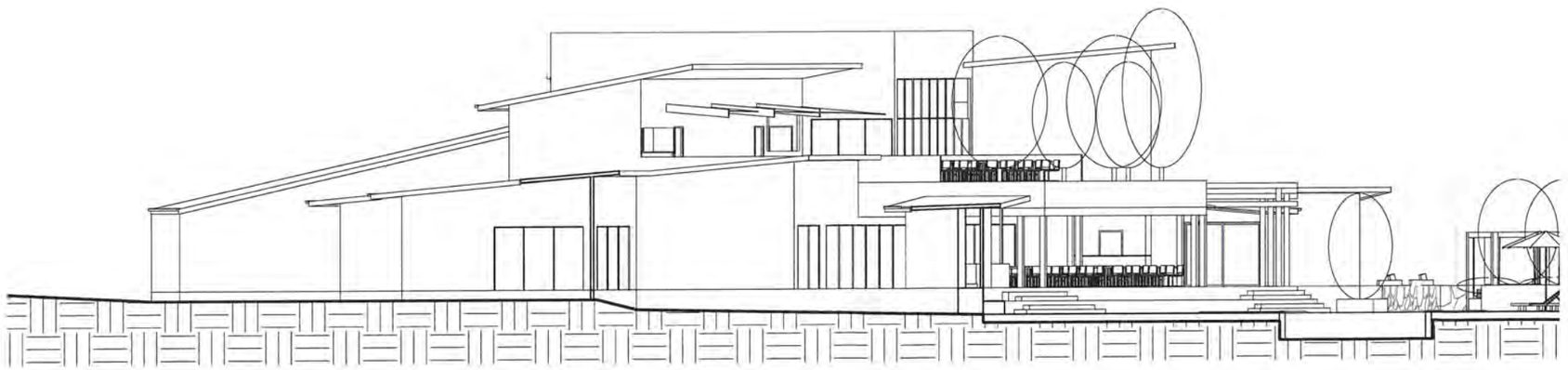
SCALE: 1 : 200
DATE: 19/08/2010 7:41:33 AM

DRAWN: lde
CHECKED: pz
JOB NO : 787-08



1 ELEVATION 1

1 : 200



2 ELEVATION 2

1 : 200

ZENITH DESIGN

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50 Michel Drive, Narangba QLD 4504
Phone: 3888 2555
Fax: 3888 2444
Email: pzimmermann@bigpond.com

FLOOR AREAS:

TOTAL AREAS:

PROJECT :

TURTLE STREET BEACH RESORT

REAL PROPERTY DESCRIPTION :

PARISH :
COUNTY :

SITE AREA:

CLIENT :

Q.R.E. Pty Ltd

PROJECT ADDRESS :

CURTIS ISLAND, QUENSLAND

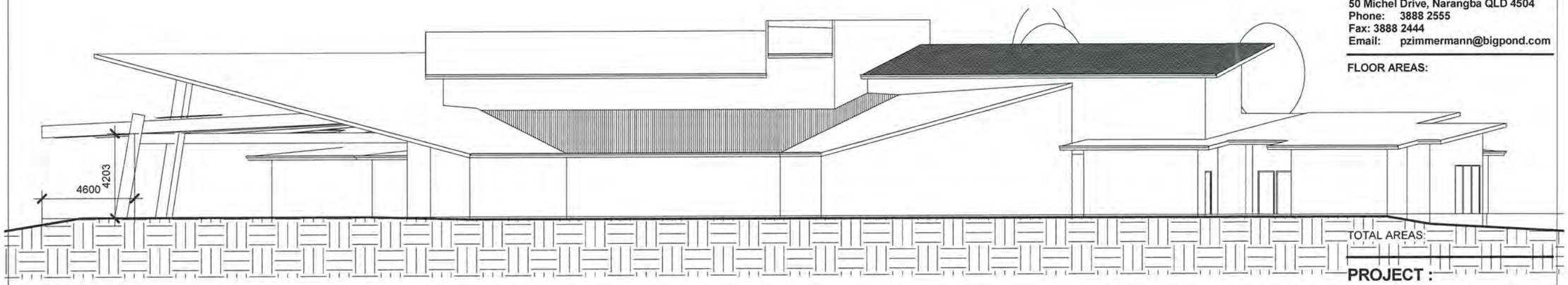
DRAWING

RESORT FACILITIES - ELEVATIONS

SHEET: 303 OF

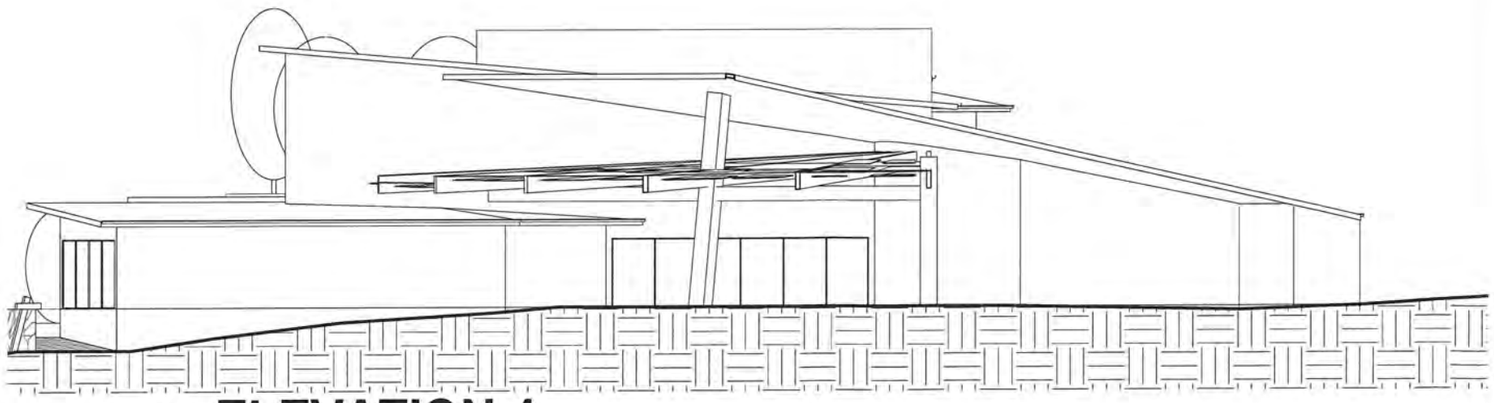
SCALE: 1 : 200
DATE: 19/08/2010 7:41:04 AM

DRAWN: lde
CHECKED: pz
JOB NO : 787-08



1 **ELEVATION 3**

1 : 200



2 **ELEVATION 4**

1 : 200

ZENITH DESIGN

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Q.B.S.A. Lic. No. 65213
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Phone: 3888 2555
Fax: 3888 2444
Email: pzimmermann@bigpond.com

FLOOR AREAS:

TOTAL AREAS:

PROJECT :

TURTLE STREET BEACH RESORT

REAL PROPERTY DESCRIPTION :

PARISH :
COUNTY :

SITE AREA:

CLIENT :

Q.R.E. Pty Ltd

PROJECT ADDRESS :

CURTIS ISLAND, QUENSLAND

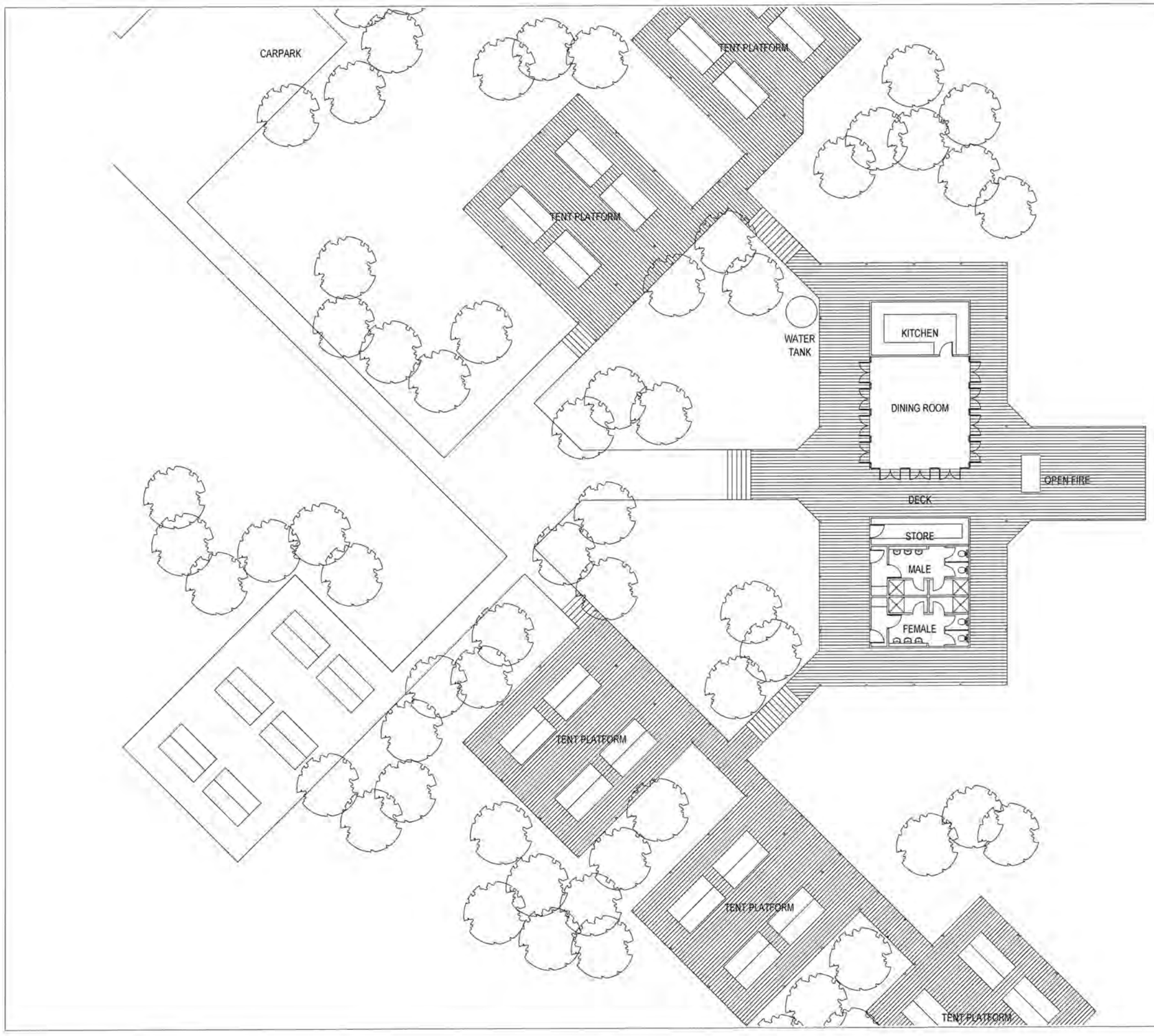
DRAWING

RESORT FACILITIES - ELEVATIONS

SHEET: 304 OF

SCALE: 1 : 200
DATE: 19/08/2010 7:39:58 AM

DRAWN: lde
CHECKED: pz
JOB NO : 787-08



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Phone: 3888 2555
Fax: 3888 2444
Email: pzimmermann@bigpond.com

FLOOR AREAS:

TOTAL AREAS:

PROJECT :

TURTLE STREET BEACH RESORT

REAL PROPERTY DESCRIPTION :

PARISH :
COUNTY :

SITE AREA:

CLIENT :

Q.R.E. Pty Ltd

PROJECT ADDRESS :

CURTIS ISLAND, QUEENSLAND

DRAWING

MARINE PLAIN CAMP - FLOOR PLAN

SHEET: 501 OF

SCALE: 1 : 250
DATE: 24/08/2010 12:25:42 PM

DRAWN: lde
CHECKED: pz
JOB NO : 787-08

ZENITH DESIGN

A.B.N. 92-430-095-302
Q.B.S.A. Lic. No. 65213
50 Michel Drive, Narangba QLD 4504
Phone: 3888 2555
Fax: 3888 2444
Email: pzimmermann@bigpond.com

FLOOR AREAS:

TOTAL AREAS:

PROJECT :

TURTLE STREET BEACH RESORT

REAL PROPERTY DESCRIPTION :

PARISH :
COUNTY :

SITE AREA:

CLIENT :

Q.R.E. Pty Ltd

PROJECT ADDRESS :

CURTIS ISLAND, QUEENSLAND

DRAWING

MARINE PLAIN CAMP SECTION / ELEVATION

SHEET: 502 OF

SCALE: 1 : 200
DATE: 24/08/2010 12:31:50 PM

DRAWN: lde
CHECKED: pz
JOB NO : 787-08

Legend

Livistona Pavilions	18
Pandanus Pavilions	9
Bridal Pavilions	4
Seascape Villas	16
Ocean Villas	10
Eagles Nest Villas	10
Eagles Nest Apartments	20
King Units	40
Queen Units	60
TOTAL	187

the lodge
pavilion & vila reception
restaurant
clubhouse & spa
infinity pool

resort facilities
reception & lobby
gift shop & activities centre
restaurant/bar/coffee shop
2 resort style pools & gym

pdf issue date - 12 July 2016

RESORT MASTER PLAN

1:1000 @ A1 / 1:2000 @ A3

Turtle Street
CURTIS ISLAND

Aquatonic

Aquatonic

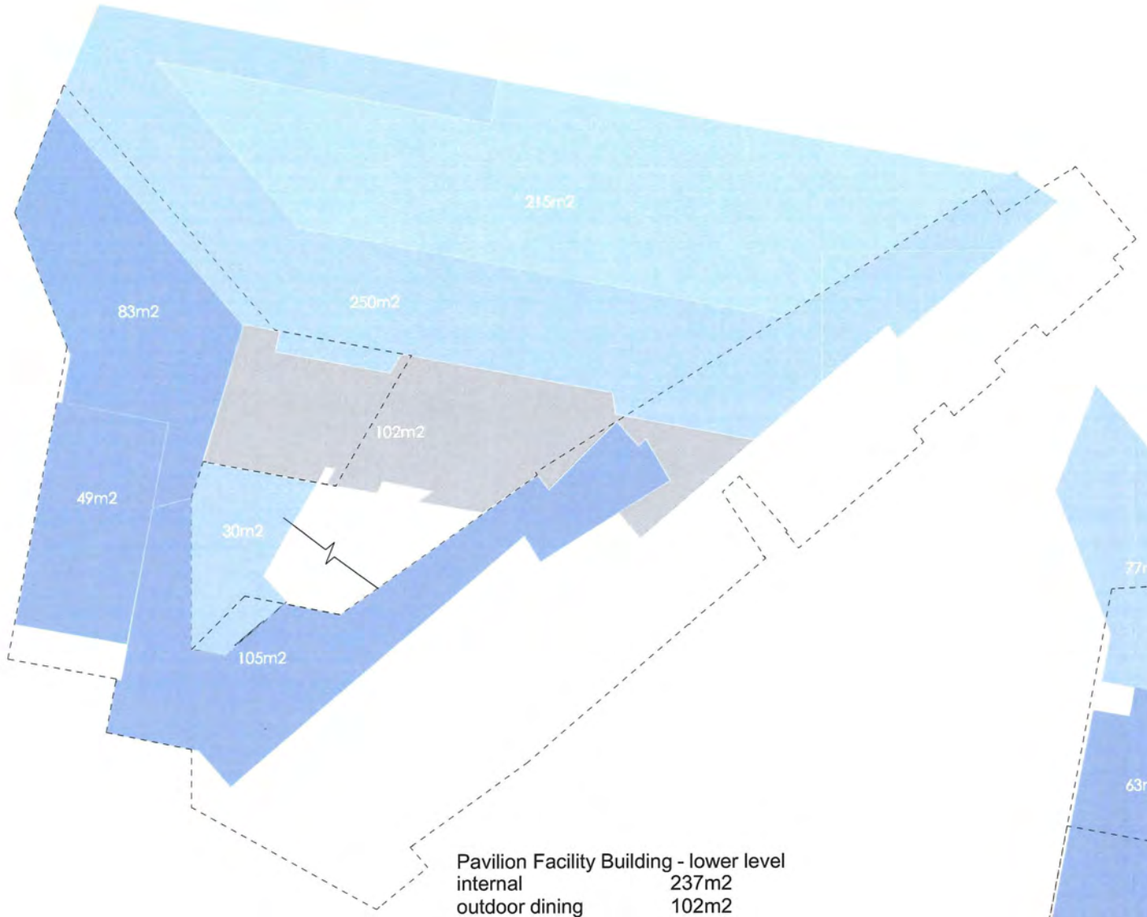
pavilion facility building - lower plan 1:250

Turtle Street
CURTIS ISLAND

Aquatonic

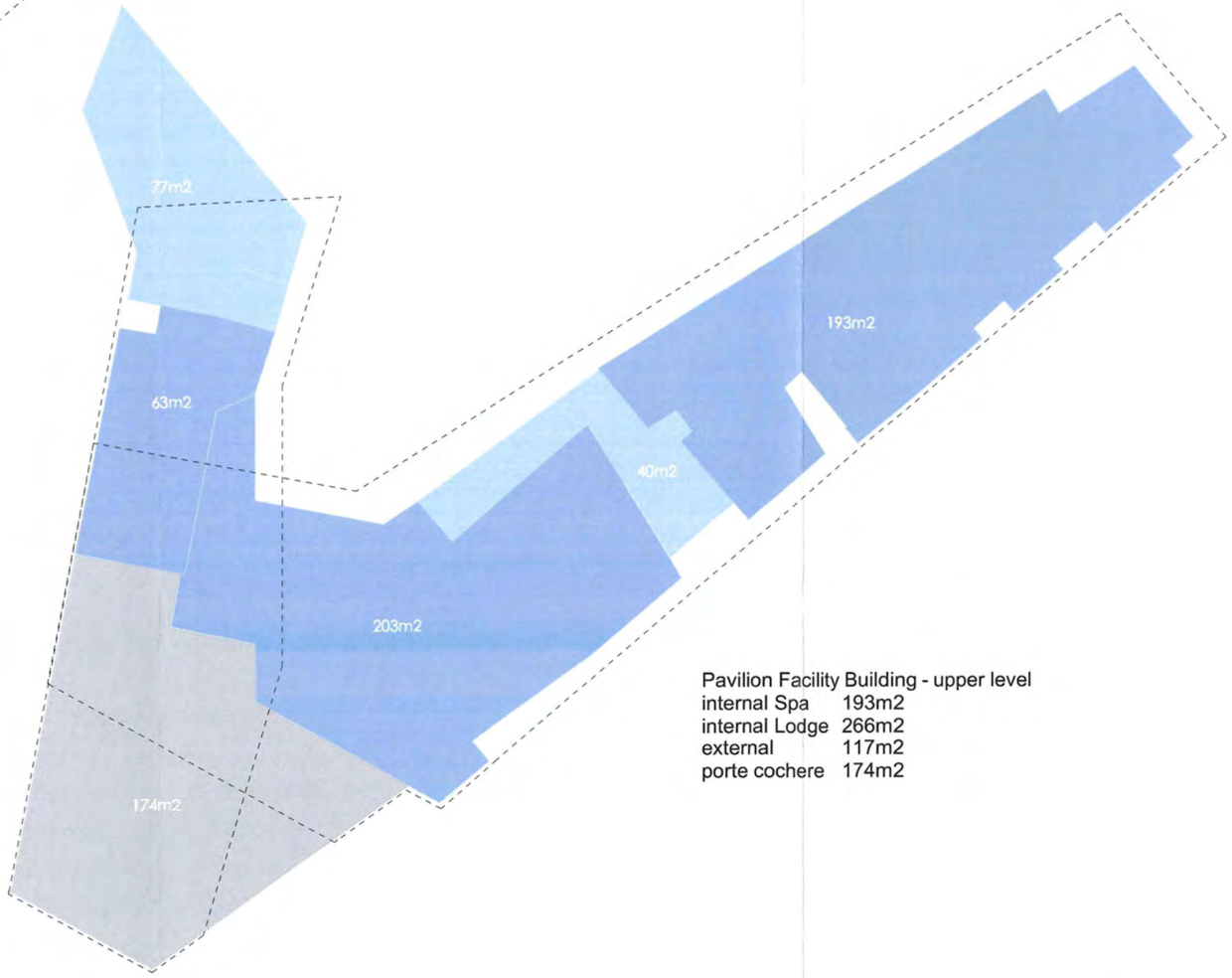
pavilion facility building - upper plan 1:250

Turtle Street
CURTIS ISLAND



Pavilion Facility Building - lower level

internal	237m2
outdoor dining	102m2
external pool terrace	280m2
pool	215m2



Pavilion Facility Building - upper level

internal Spa	193m2
internal Lodge	266m2
external	117m2
porte cochere	174m2

Pavilion Facility Building - totals

internal	696m2
external	499m2
pool	215m2
porte cochere	174m2

dwg issue date - 21 Jun 2016

Aquatonic

pavilion facility building - areas 1:250

Turtle Street
CURTIS ISLAND

Turtle Street
CURTIS ISLAND

bridal pavilion

90sqm internal
30sqm decks and pool court

120sqm TOTAL

additional 28sqm entry deck and cart parking

dwg issue date - 4 August 2015

Aquatonic

bridal pavilion concept plan

Turtle Street
CURTIS ISLAND

king suite
65sqm internal
20sqm deck

85sqm total

dwg issue date - 22 Sept 2015

Aquatonic

king suite concept plan

rev A - september 2015

Turtle Street
CURTIS ISLAND

0 1 2 3 M

queen suite
52sqm internal
10sqm deck

62sqm total

dwg issue date - 22 Sept 2015

Aquatonic

queen suite concept plan

rev A - september 2015

0 1 2 3 M

livistona pavilion
85sqm internal
35sqm deck and pool court (excluding pool)

120sqm TOTAL

additional 20sqm entry deck and cart parking

dwg issue date - 29 October 2015

Aquatonic

livistona pavilion concept plan

scale	date	job number	dwg number	revision
1:100	JUL 15	AT1415	SK01	

Turtle Street
CURTIS ISLAND

0 1 2 3 M

pandanus pavilion

70 sqm internal
20 sqm deck and spa court (excluding spa)

90sqm TOTAL

additional 20sqm entry deck and cart parking

dwg issue date - 29 October 2015

Aquatonic

pandanus pavilion concept plan

scale	date	job number	dwg number	revision
1:100	AUG 15	AT1415	SK02	

Turtle Street
CURTIS ISLAND

lower plan

upper plan

seascape villa
192sqm internal +
external varies

210sqm TOTAL

additional 18m2 entry deck and cart parking

dwg issue date - 6 Nov 2015

Aquatonic

seascape villa concept plan

scale	date	job number	dwg number	revision
1:100	AUG 15	AT1415	SK04 A3	

Turtle Street
CURTIS ISLAND

0 1 2 3 M

floor plan

roof plan

eagles nest apartment
75sqm queen +
50sqm studio

125sqm total

dwg issue date - 12 July 2016

Aquatonic

eagles nest apartment concept plan

scale	date	job number	dwg number	revision
1:100	AUG 15	AT1415	SK05 A3	

Turtle Street
CURTIS ISLAND

typical 2 bed
ground floor plan

0 1 2 3 M

2 bed eagles nest villa

103.5 internal +
32.5sqm external

136sqm total

dwg issue date - 15 July 2016

Aquatonic

eagles nest villas cluster - ground floor concept plan

scale	date	job number	dwg number	revision
1:100	JUL 16	AT1415	SK17 A3	

Turtle Street
CURTIS ISLAND

typical 2 bed
upper floor plan

0 1 2 3 M

2 bed eagles nest villa
103.5 internal +
32.5sqm external

136sqm total

dwg issue date - 15 July 2016

Aquatonic

eagles nest villas cluster - upper floor concept plan

scale	date	job number	dwg number	revision
1:100	JUL 16	AT1415	SK18 A3	

Turtle Street
CURTIS ISLAND

0 1 2 3 M

ocean villa
109sqm internal +
28sqm external

137sqm TOTAL

upper plan

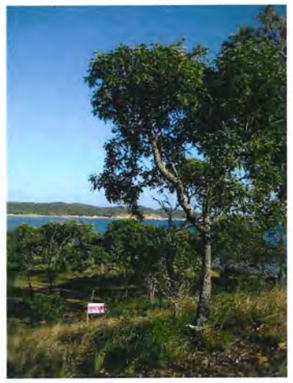
dwg issue date - 23 Oct 2015

Aquatonic

ocean villa concept plan

scale	date	job number	dwg number	revision
1:100	OCT 15	AT1415	SK18 A3	

Turtle Street
CURTIS ISLAND



EXISTING COASTAL MELALEUCA AND EUCALYPT WOODLAND - SEVERELY STUNTED BY WIND AND SALT IMPACTS

EUCALYPT WOODLAND VILLAS AND APARTMENTS (TREES AVERAGE 6-12M)

ENTRY ARRIVAL ZONE FROM SOUTH END

PROPOSED SITE FOR DAM

EUCALYPT WOODLAND APARTMENTS (TREES AVERAGE 8-14M)

ECOTONAL FOREST CENTRAL FACILITY

DAY VISITOR & BUGGY PARKING

ENTRY ARRIVAL ZONE FROM FUTURE AIR / BOAT ACCESS

ROCKY HEADLAND COASTAL VILLAS

EUCALYPTUS WOODLAND APARTMENTS (TREES AVERAGE 6-10M)

LEGEND

- EXISTING TREES PLUS ADDITIONAL SUPPLEMENTARY PLANTINGS OF ENDEMIC SPECIES
- PROPOSED LOW PROFILE BUGGY ROADS - LOCATION INDICATIVE
- PROPOSED PEDESTRIAN NETWORK WITH LOOKOUT AND SEATING NODES
- INDICATIVE RANGE OF BUILDING STYLES AND FUNCTIONS. NOTE LOCATION SUBJECT TO DETAILED SITE SPECIFIC ASSESSMENT AND INTEGRATION WITH LOW IMPACT ACCESS NETWORK

LANDSCAPE MASTER PLAN

1: 2000 AT A1

TURTLE STREET BEACH RESORT
CURTIS ISLAND
CLIENT: QRE PTY LTD
PROJECT NO: 600807
PLANS IN SERIES: 1 OF 6
DATE: SEPT. 10

CHENOWETH ENVIRONMENTAL PLANNING & LANDSCAPE ARCHITECTURE

U PLAN Pty Ltd

HIGHLY EXPOSED STEEP COASTAL ESCARPMENT AVERAGE 1 -1.5M HIGH VEGETATION INCLUDING LOCAL MELALEUCA & EUCALYPTUS SPECIES. THIS ESCARPMENT IS HIGHLY VISIBLE & THIS EDGE & RIDGELINE WILL REMAIN NATURAL AS VIEWED FROM THE CORAL SEA & OCEAN TO THE NORTH, AS IS IN ACCORD WITH THE STATE COASTAL POLICY

EUCALYPT WOODLAND
(TREES AVERAGE 6-12M)
VILLAS AND APARTMENTS

EXISTING COASTAL MELALEUCA AND EUCALYPT WOODLAND - SEVERELY STUNTED BY WIND AND SALT IMPACTS

WATER STORAGE OR DAM ZONE
DESIGNED & SHAPED TO FIT INTO THE CONTOURS, THE DAM WILL BE EDGED WITH LOCAL GRASS TO ADD VISUAL, WILDLIFE, WATER QUALITY & SITE STABILITY VALUES. A LOW KEY FRINGING TRACK WITH OCCASIONAL PASSIVE RECREATIONAL NODES WILL ADORN THE VERGES AND REVEGETATED CATCHMENT SLOPES.
ACCESS LIMITED TO DESIGNATED MANAGEMENT & PEDESTRIAN ACCESS TRAIL

ROCKY HEADLAND
SITE OF FUTURE ECO VILLAS NESTLED BELOW THE VISUAL RIDGELINE VILLAS WILL BE VISIBLE THROUGH INTERVENING TREES FROM THE SMALL BEACH BELOW, & AT DISTANCE (800 - 1KM) FROM ALONG TURTLE BEACH
BUILDING COLOUR, NON REFLECTIVE MATERIALS & LOW KEY SUSTAINABLE ACCESS ALL KEY DESIGN & SITING PARAMETERS

EUCALYPTUS WOODLAND ZONE
BORDERED BY NATURAL VEGETATED GULLY , WOODLAND TREES OF MIXED SPECIES & TO AVERAGE HEIGHTS OF 8 - 14M
BUILDINGS TO DISPLAY A HIGH DEGREE OF COLOURS & TEXTURES EVIDENT WITHIN THE SURROUNDING LANDSCAPES
ACCESS VIA 3.5 - 4.0 MIN ACCESS WAY ONLY

COASTAL WOODLAND 'BOWL'
NESTLED BELOW THE ECO VILLAS AMID SCATTERED & SMALLER (6 - 10m) WOODLAND ARE PROPOSED VILLAS. THIS BOWL IS NOT EVIDENT FROM THE MAIN BEACH AREAS, UNTIL GAINED AS A DISTANT VIEW, UPON WHICH EXISTING TREES, SHADOWS & SITE UNDULATIONS WILL HELP CONCEAL THE SCATTERED BUILDING FORMS.

ECOTONAL FOREST ZONE
SITE OF FUTURE CENTRAL FACILITY THIS VISUALLY CONCEALED UNIT HAS A HIGH CAPACITY TO VISUALLY ABSORB DEVELOPMENT DUE TO GENTLE SLOPES, DIVERSITY OF TREED COVERAGE, AND VARIETY OF NATIVE VEGETATION HEIGHT & FORMS.

LANDSCAPE PROTECTION ZONE
SENSITIVE & PRIORITY MANGROVE & RIPARIAN CORRIDOR
HIGH STANDARD OF ECOLOGICAL MANAGEMENT, IN LIAISON WITH DERM INCLUDING WEED MANAGEMENT, SEDIMENT & STORM WATER PROTECTION & ACTIVE LOCAL PROVENANCE REVEGETATION.
INTERPRETATION OPPORTUNITY.
ACCESS ONLY VIA NATIONAL PARKS STYLE PEDESTRIAN BOARDWALK

COASTAL BEACH, ROCKY SHORE PLATFORMS & HEADLAND EDGES
LANDSCAPE PROTECTION ZONE.
ACCESS PEDESTRIAN ONLY & VIA BOARDWALK OR OTHER SUSTAINABLE METHOD.
ENVIRONMENTAL MONITORING PROGRAM TO BE UNDERTAKEN

HEADLAND TIDAL INTERFACE

LANDSCAPE PROTECTION ZONE
SENSITIVE & PRIORITY MANGROVE & TIDAL ZONE
MONITOR ONLY. NO ACCESS REQUIRED

EUCALYPTUS WOODLAND ZONE
BORDERED BY SIGNIFICANT NATURAL VEGETATED GULLY , WOODLAND TREES OF MIXED SPECIES & TO AVERAGE HEIGHTS OF 6 - 10M
BUILDINGS TO DISPLAY A HIGH DEGREE OF COLOURS & TEXTURES EVIDENT WITHIN THE SURROUNDING LANDSCAPES
ACCESS VIA 3.5 - 4.0 MIN ACCESS WAY ONLY

BEACH, PRIMARY DUNE & EMERGING DUNAL WOODLAND
ACCESS LIMITED TO BEACH ZONE
EXISTING TREED VEGETATION ON SITE PROVIDES 50 - 70% VISUAL COVERAGE OF THE TWO 'CENTRAL COASTAL WOODLAND' UNITS THAT ARE VISIBLE FROM THE IMMEDIATE BEACH ZONE

EUCALYPTUS WOODLAND ZONE
BORDERED ON BOTH SIDES BY NATURAL VEGETATED GULLIES , WOODLAND TREES OF MIXED SPECIES & TO AVERAGE HEIGHTS OF 6 - 12M. ACCESS THRU GULLY ZONES VIA BOARDWALK OR OTHER PEDESTRIAN ONLY SYSTEM
BUILDINGS TO DISPLAY A HIGH DEGREE OF COLOURS & TEXTURES EVIDENT WITHIN THE SURROUNDING LANDSCAPES
ACCESS VIA 3.5 - 4.0 MIN ACCESS WAY ONLY

LEGEND

ECOLOGICAL LANDSCAPE ZONES

GULLY CORRIDORS

MAJOR VISUAL CATCHMENTS OR VISUAL EDGES

LANDSCAPE ZONES PLAN

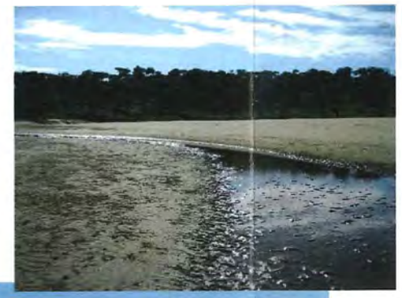
1: 5000 AT A1

TURTLE STREET BEACH RESORT
CURTIS ISLAND
CLIENT: QRE PTY LTD
PROJECT NO: 100807.20
PLANS IN SERIES: 2 OF 6
DATE: SEPT. 2010

FOR DISCUSSION ONLY

ABC CROSS SECTION PLAN
1:2000

VISUAL IMPACT OF BUILDING BULK & MASSING WILL BE SCREENED BY THE 50-70% DENSITY OF THE TREED LANDSCAPE COVER



SECTION A
1:500 AT A1

FROM LOWER BEACH POSITION THE HEADLAND GRADES CONCEAL THE MAJORITY OF THE APARTMENTS & ALL OF THE HIGH RIDGELINE COASTAL VILLAS.

SECTION B
1:500 AT A1

TURTLE STREET BEACH RESORT
CURTIS ISLAND
CLIENT: QRE PTY LTD
PROJECT NO: 100807.30
PLANS IN SERIES: 3 OF 6
DATE: SEPT. 2010

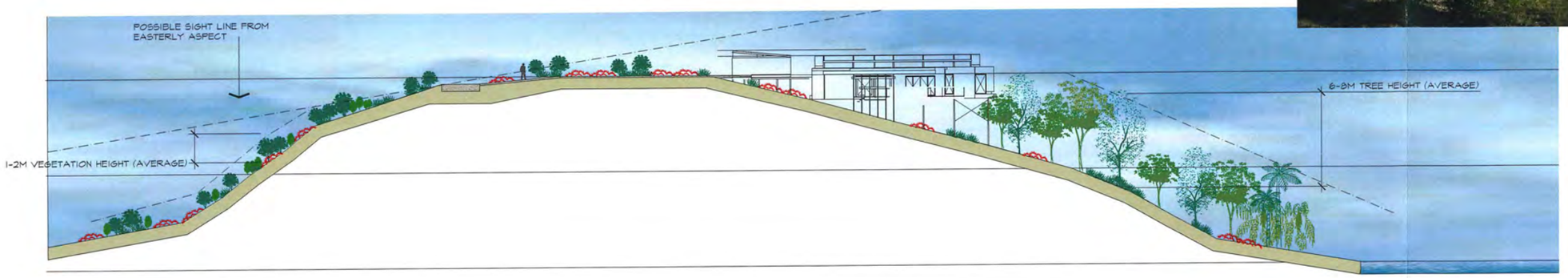
CHENOWETH
ENVIRONMENTAL PLANNING & LANDSCAPE ARCHITECTURE

U PLAN Pty Ltd

DISCUSSION ONLY

NOTE: ACCESS TO VILLAS IS VIA A PUBLIC ACCESS WAY WITH INDIVIDUAL CROSSOVERS LEADING TO CONTOURED(LOW PROFILE) PRIVATE DRIVEWAYS TO EACH (OR A CLUSTER OF) VILLAS. A SINGLE AND SHARED PUBLIC ACCESS WAY ALONG THE HEADLAND IS PREFERRED FOR VISUAL & ENVIRONMENTAL IMPACT REASONS

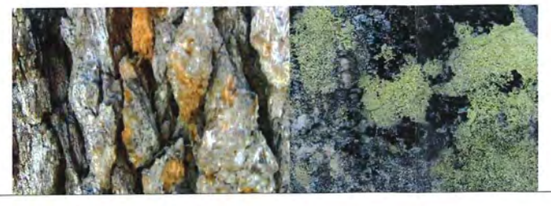
VILLAS WILL BE VISIBLE FROM LOWER SMALL BEACH & WITHIN A SMALL VISUAL BOWL FROM THE DISTANT (800M-1KM) BEACHES



SECTION C
1:250 AT A1

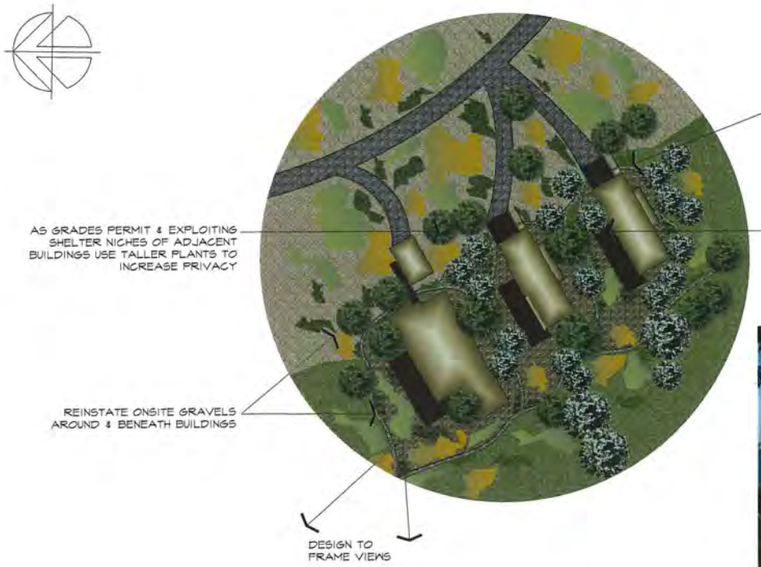
COMPARATIVE PHOTO MONTAGE- ACTUAL SITE PHOTO & ARTISTS IMPRESSION OF DWELLINGS SET WITHIN TREED LANDSCAPE

TURTLE STREET BEACH RESORT
CURTIS ISLAND
CLIENT: QRE PTY LTD
PROJECT NO: 100807.40
PLANS IN SERIES: 4 OF 6
DATE: SEPT. 2010



CHENOWETH
ENVIRONMENTAL PLANNING & LANDSCAPE ARCHITECTURE

U PLAN Pty Ltd



ROCKY HEADLAND COASTAL VILLAS
1: 250 AT A1

SITING AND DESIGN PRINCIPLES:

- EACH BUILDING IS TO BE SPECIFICALLY SITED TO EXPLOIT SITE VARIATIONS AND ENHANCEMENT OF EXISTING RETAINED TREES
- EACH BUILDING IS TO ENJOY FRAMED VIEWS TOWARDS THE COASTLINES
- SCALE, BUILDING MATERIALS AND PROFILES TO BE REFLECTIVE OF AND SUBORDINATE TO, THE LANDSCAPE SETTING.
- ALL NEW TREE, SHRUBS, PALMS AND GRASSES TO BE FROM LOCAL ENDEMIC SPECIES EXCLUSIVELY.
- BEST PRACTICE WEED MANAGEMENT PLAN TO BE DEVELOPED & IMPLEMENTED PRIOR, DURING & POST CONSTRUCTION PERIODS.
- ALL EXITING TOPSOILS, GRAVELS MULCHES AND OTHER MATERIALS TO BE SALVAGE, STORED AND REUSED.

SUGGESTED PLANT SCHEDULE FOR ROCKY HEADLAND & COASTAL VILLAS		
Botanical Name	Common Name	Rocky headland coastal villas
Acacia amblygona		•
Carpobrotus glaucescens	Angular Pigface	•
Chrysocephalum apiculatum	Yellow Buttons	•
Cymbopogon bombycinus	Silky Oilgrass	•
Cymbopogon refractus	Barbed Wire Grass	•
Dianella brevipedunculata		•
Dianella caerulea		•
Dianella longifolia		•
Helichrysum boormanii var. tryonii		•
Lithomyrtus obtusa		•
Lomandra multiflora	Many Flow ered Mat rush	•
Myoporum boninense	Coastal Boobialla	•
Pandanus tectorius	Pandanus	•
Podolepis longipedata		•
Themeda triandra	Kangaroo Grass	•
Xanthorrhoea purmilio	Grass Tree	•

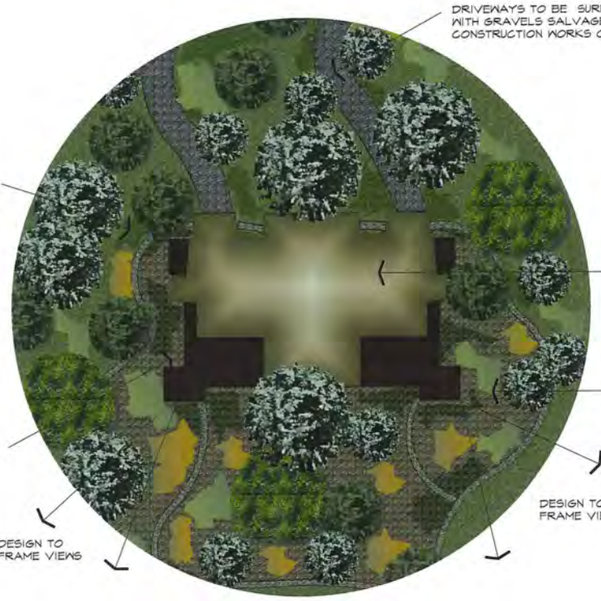
NOTE: THIS PLANT SCHEDULE IS AN EXCEPT FROM CHENOWETH & ASSOCIATES COMPREHENSIVE ENVIRONMENTAL REPORT- PLEASE REFER TO FULL LIST FOR RECOMMENDED PLANT SPECIES FOR OTHER AREAS OF THE PROPOSED RESORT

BUILDING HABITATS BY ECOLOGICAL ZONES PLAN
1: 2000 AT A1

CHENOWETH
ENVIRONMENTAL PLANNING & LANDSCAPE ARCHITECTURE

TURTLE STREET BEACH RESORT
CURTIS ISLAND
CLIENT: QRE PTY LTD
PROJECT NO: 100807.50
PLANS IN SERIES: 5 OF 6
DATE: SEPT. 2010

U PLAN



EUCALYPTUS WOODLAND APARTMENTS
1: 250 AT A1

SITING AND DESIGN PRINCIPLES:

- EACH BUILDING IS TO BE SPECIFICALLY SITED TO EXPLOIT SITE VARIATIONS AND ENHANCEMENT OF EXISTING RETAINED TREES
- EACH BUILDING IS TO ENJOY FRAMED VIEWS TOWARDS THE COASTLINES
- SCALE, BUILDING MATERIALS AND PROFILES TO BE REFLECTIVE OF AND SUBORDINATE TO, THE LANDSCAPE SETTING.
- ALL NEW TREE, SHRUBS, PALMS AND GRASSES TO BE FROM LOCAL ENDEMIC SPECIES EXCLUSIVELY.
- BEST PRACTICE WEED MANAGEMENT PLAN TO BE DEVELOPED & IMPLEMENTED PRIOR, DURING & POST CONSTRUCTION PERIODS.
- ALL EXITING TOPSOILS, GRAVELS MULCHES AND OTHER MATERIALS TO BE SALVAGE, STORED AND REUSED.

SUGGESTED PLANT SCHEDULE FOR WOODLAND APARTMENTS

Botanical Name	Common Name	Eucalyptus woodland apartments (trees 6-18m)	Eucalyptus woodland apartments & villas (trees 6- 12m)	Eucalyptus woodland apartments & villas (trees 8- 14m)
Acacia amblygona		•	•	•
Acacia conferta	Crowded Wattle	•	•	•
Acacia disparrima	Hickory Wattle	•	•	•
Acacia podalyriifolia		•	•	•
Allocasuarina littoralis		•	•	•
Allocasuarina luehmannii	Bull oak	•	•	•
Allocasuarina torulosa	Forest She-oak	•	•	•
Alloteris semialata	Cockatoo Grass	•	•	•
Alphitonia excelsa	Red Ash	•	•	•
Arundinella nepalensis		•	•	•
Banksia integrifolia	Coastal Banksia	•	•	•
Bursaria incana	Prickly Pine	•	•	•
Callistemon viminalis		•	•	•
Chrysocephalum apiculatum	Yellow Buttons	•	•	•
Clerodendron floribundum	Lolly Bush		•	•
Corymbia clarksoniana		•	•	•
Corymbia intermedia		•	•	•
Corymbia tessellaris	Moreton Bay Ash	•	•	•
Cupaniopsis anacardioides	Tuckeroo	•	•	•
Cyclophyllum coprosmoides	Beach Canthium			•
Cymbopogon bombycinus	Silky Oilgrass	•	•	•
Cymbopogon refractus	Barbed Wire Grass	•	•	•
Dianella brevipedunculata		•	•	•
Dianella caerulea		•	•	•
Dianella longifolia		•	•	•
Dodonaea lanceolata	Native Hop Bush	•	•	•
Drynaria rigidula	Rock Fern			•
Eremochloe bimaculata	Poverty Grass	•	•	•
Eucalyptus crebra		•	•	•
Eucalyptus exserta	Queensland Peppermint	•	•	•
Eucalyptus tereticornis		•	•	•
Ficus rubiginosa	Rock Fig			•
Gahnia aspera	Saw Sedge	•	•	•
Glochidion lobocarpum				•
Grewia retusifolia		•	•	•
Hardenbergia violacea	False Sarsaparilla	•	•	•
Helichrysum boormanii var. bryonii		•	•	•
Helichrysum bracteatum		•	•	•
Hibbertia scandens		•	•	•
Hibbertia vestita		•	•	•
Hibiscus heterophyllus	Native Hibiscus	•	•	•
Imperata cylindrica	Blady Grass	•	•	•
Jacksonia scoparia	Dogwood	•	•	•
Jasminum simplicifolium	Native Jasmine	•	•	•
Keraudrenia lanceolata		•	•	•
Leptospermum polygalifolium	Wild May	•	•	•
Lomandra confertifolia spp pallida	Mat rush	•	•	•
Lomandra longifolia	Mat rush	•	•	•
Lomandra multiflora	Many Flowered Mat rush	•	•	•
Lophostemon suaveolens	Swamp Box	•	•	•
Melaleuca nervosa		•		
Pandorea pandorana	Wonga vine	•	•	•
Panicum effusum		•	•	•
Pelatostigma pubescens	Bitter Bark	•	•	•
Pimelea linifolia	Rice Flower	•	•	•
Pittosporum revolutum		•	•	•
Planchonia careya	Cocky Apple	•	•	•
Podolepis longipedata		•	•	•
Pogonolobas reticulatus		•	•	•
Sophora tomentosa		•	•	•
Themeda triandra	Kangaroo Grass	•	•	•

NOTE: THIS PLANT SCHEDULE IS AN EXCEPT FROM CHENOWETH & ASSOCIATES COMPREHENSIVE ENVIRONMENTAL REPORT- PLEASE REFER TO FULL LIST FOR RECOMMENDED PLANT SPECIES FOR OTHER AREAS OF THE PROPOSED RESORT













BUILDING HABITATS BY ECOLOGICAL ZONES PLAN
1: 2000 AT A1

TURTLE STREET BEACH RESORT
CURTIS ISLAND
CLIENT: QRE PTY LTD
PROJECT NO: 100807.60
PLANS IN SERIES: 6 OF 6
DATE: SEPT. 2010

U PLAN Pty Ltd




CHENOWETH
ENVIRONMENTAL PLANNING & LANDSCAPE ARCHITECTURE

CROSS SECTION A

1: 500 AT A1

CROSS SECTION C

1: 500 AT A1

NOTE:
ACCESS TO VILLAS IS VIA "A PUBLIC ACCESS WAY" WITH INDIVIDUAL CROSSOVERS LEADING TO CONTOURED (LOW PROFILE) PRIVATE DRIVEWAYS TO EACH (OR A CLUSTER OF) VILLAS.
A SINGLE AND SHARED PUBLIC ACCESS WAY ALONG THE HEADLAND IS PREFERRED FOR VISUAL ENVIRONMENTAL AND IMPACT REASONS.

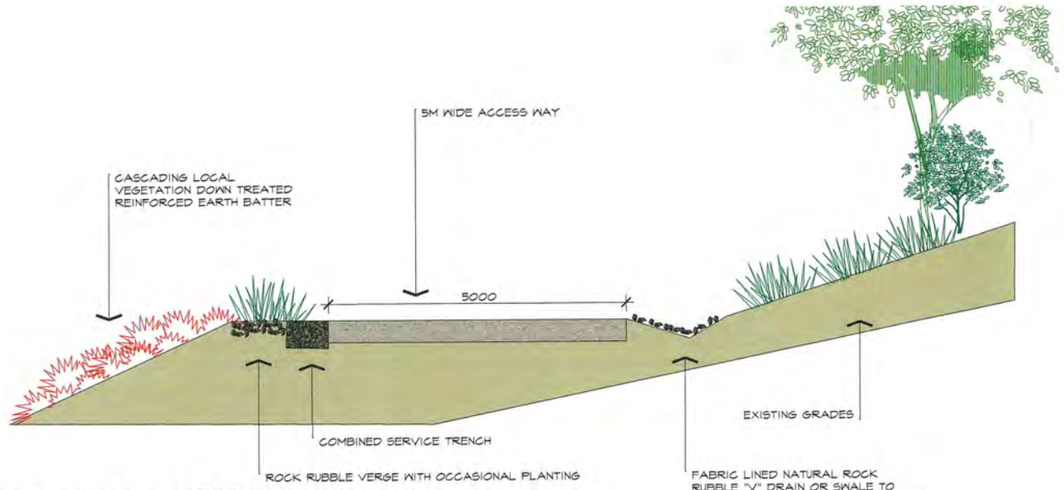
CROSS SECTIONS

1: 5000 AT A1

TURTLE STREET BEACH RESORT
CURTIS ISLAND
CLIENT: QRE PTY LTD
PROJECT NO: 100807.20
PLANS IN SERIES: 5 OF 5
DATE: SEPT. 2010

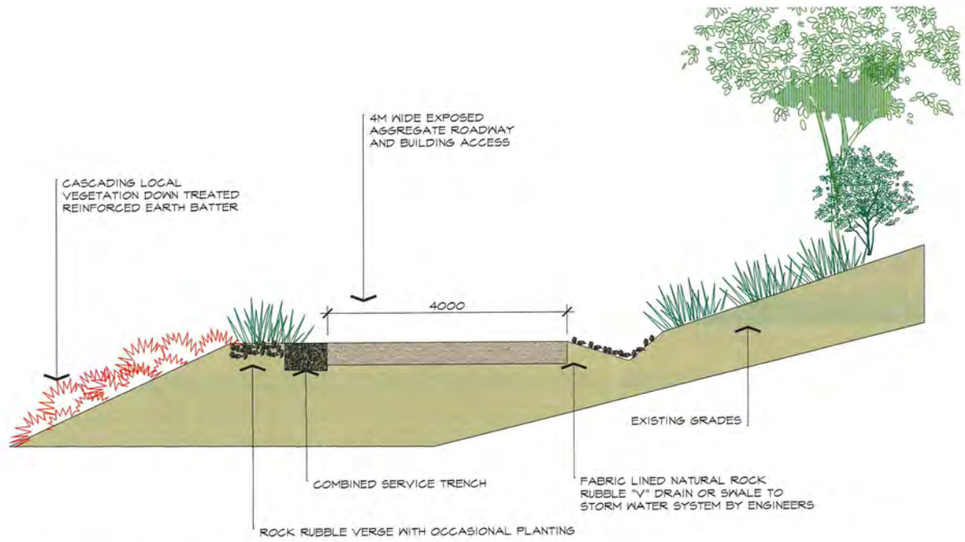
ROAD SECTIONS

1: 5000 AT A1



TYPICAL 5.0M ACCESS WAY

5.0M MAX ROAD WIDTH
MAIN LOOP AND FACILITY ACCESS ONLY



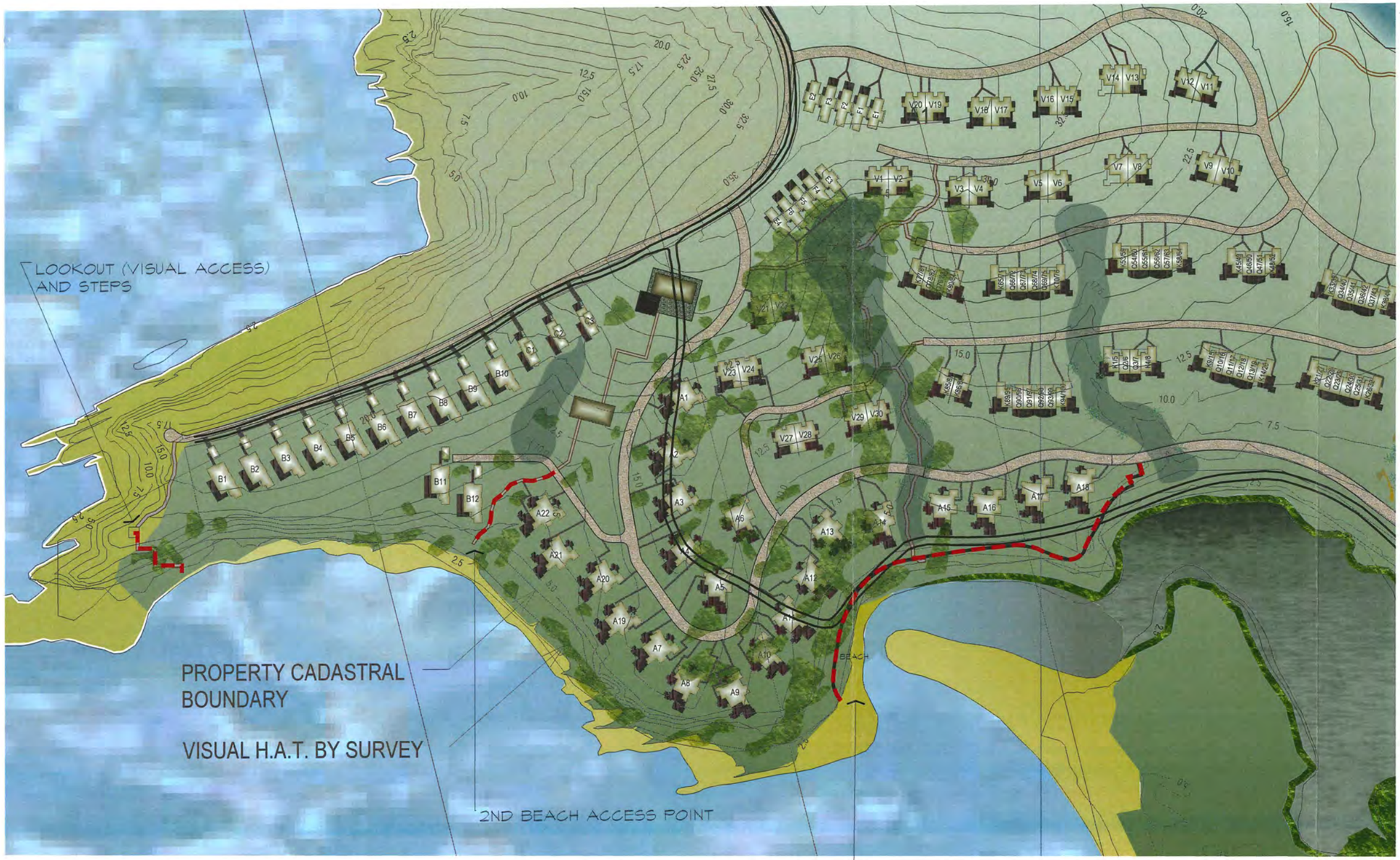
TYPICAL 4M ACCESS WAY

SUBJECT TO SITE DESIGN BY ENGINEERS
PREDOMINANTLY ROAD WIDTH TO ACCESS ALL VILLAS AND APARTMENTS

TURTLE STREET BEACH RESORT
CURTIS ISLAND
CLIENT: QRE PTY LTD
PROJECT NO: 100807.20
PLANS IN SERIES: 4 OF 5
DATE: SEPT. 2010

U PLAN Pty Ltd

CHENOWETH
ENVIRONMENTAL PLANNING & LANDSCAPE ARCHITECTURE



BEACH ACCESS

1: 1000 AT A1

TURTLE STREET BEACH RESORT
CURTIS ISLAND
CLIENT: QRE PTY LTD
PROJECT NO: 100807.20
PLANS IN SERIES: 2 OF 5
DATE: SEPT. 2010

CHENOWETH
ENVIRONMENTAL PLANNING & LANDSCAPE ARCHITECTURE

U PLAN Pty Ltd

SETBACK PLAN

1: 1000 AT A1

10M ESPLANADE.
(SETBACK ZONE BETWEEN HAT AND PROPERTY BOUNDARY)

TURTLE STREET BEACH RESORT
CURTIS ISLAND
CLIENT: QRE PTY LTD
PROJECT NO: 100807.20
PLANS IN SERIES: 1 OF 5
DATE: SEPT. 2010

CHENOWETH
ENVIRONMENTAL PLANNING & LANDSCAPE ARCHITECTURE

U PLAN

Appendix 3 – EPBC Act Referral

Note: This appendix includes the extract of the EPBC Act Referral Form (not including attachments).

Referral of proposed action

Project title: Turtle Street Beach Resort, Curtis Island

1 Summary of proposed action

1.1 **Short description**

QRE Pty Ltd propose to develop an eco-sensitive tourist resort at Black Head, Curtis Island on a relatively small part of a large landholding previously used for cattle grazing (the Monte Christo Station). The proposed Turtle Street Beach Resort includes 177 villas and units (297 rooms), resort amenities (beach centre, pools and tennis courts) and a central facility with a reception, conference facilities, shop, bar and restaurant. The proposed Turtle Street Beach Resort has been subject to rigorous State and Local Government assessment processes which commenced in 1989. Since this time the proponent has been involved in a complex approvals and negotiation process with Commonwealth, State and Local Government agencies which has resulted numerous site investigations and a Development Permit (Operational Works) and Planning and Environment Court Consent Order for the proposed tourist resort. Through this process the design of the resort has been refined to become lower in scale and intensity and approximately 32,890 hectares of the original Monte Christo holding has been dedicated to the State for National Park and Conservation Park, and for a Vegetation Off-Set Area (18,950ha) resulting in significant environmental benefits.

The proponent submits that the proposal will not have a significant impact on matters of national environmental significance given the site selection, sensitive design, investigations and comprehensive approval framework in place governing the development of the site.

1.2 **Latitude and longitude** — Refer to **Appendix 1 – Latitude and Longitude.**

1.3 **Locality and property description**

The site is located on the eastern side of Curtis Island with the resort node centred on a coastal headland known as Black Head. Curtis Island is located approximately 20 kilometres north of Gladstone and 40 kilometres south-east of Rockhampton. The Island is separated from the mainland by "The Narrows" which forms a protected north-south water course (refer to **Figure 1 – Regional Context Figure**). Significant LNG facilities have been established to the south-west of the site (refer to **Figure 2 – Site Location**).

1.4 **Size of the development footprint or work area (hectares)**

The site comprises 713 hectares of leasehold land (Lot 8 CP860464, Lot 11 CP860464 and an area of Esplanade of approximately 250m^2 for barge landing and access at Hobble Gully), with the resort itself concentrated on a very small portion of this total site area, about 20 hectares. The site was originally part of the Monte Christo cattle station which comprised approximately 33,911 hectares of primarily leasehold land (refer to **Attachment 1 – Turtle Street Resort Land Tenures**). The resort and infrastructure area cover a total of 20 hectares or 2.8% of Lots 8 and 11 (713 hectares) and represents 0.0006% of the original holding with only a very small area to be physically developed for tourism accommodation and recreation facilities with the majority of the lease area being left in its natural state. Lots 8 and 11 on CP860464 are part of the original Monte Christo property over which a tourism special lease exists. Part of the site is subject to Nature Refuge Conservation Agreement (refer to **Attachment 2 - Curtis Island Nature Refuge Conservation Agreement**).

Over the years approximately 32,890 hectares of land was surrendered for National Park Conservation Park, and a Vegetation Offset Area (refer to **Attachment 1 – Turtle Street Resort Land Tenures)**. The delineation of this area was based on a negotiated outcome whereby:

- approximately 8,640 hectares was surrendered for a National Park; and
- approximately 5,300 hectares was surrendered for a Conservation Park (with leaseback for grazing and tourism purposes); and
- Vegetation offset areas comprising 18,950 hectares (negotiated agreement with LNG consortium and Queensland Government).

In addition to surrendering land that became the first Conservation Park in Queensland, the proponent also surrendered grazing rights over the Conservation Park lease area and the Vegetation offset area with all cattle as of 10 October 2015 removed from the Island. As such, not only did the proponent surrender a significant area of land but has also ceased cattle station operations that have operated for over 150 years. At its peak Monte Christo had approximately 2,000 head of cattle.

1.5	**Street address of the site**		Black Head, Curtis Island, Queensland, 4680
1.6	**Lot description** The site is described as Lots 8 CP860464 (630 hectares), Lot 11 on CP860464 (83 hectares) and area of Esplanade of approximately 250m^2 associated with existing barge landing at Hobble Gully (refer to **Figure 2**). The site area comprises approximately 713 hectares.		
1.7	**Local Government Area and Council contact (if known)** The proposed action is located within the local government area of Gladstone Regional Council. The relevant Council contact is Renqi Shen, PO Box 29, GLADSTONE QLD 4680.		
1.8	**Time frame** Detailed design work is scheduled to commence in December 2015, with construction of civil work proposed to commence in the following wet season. The civil/services would be completed by end of 2016 and the accommodation and facilities for all 177 villas completed by the end of 2017. These dates are indicative and would be subject to the construction contractor's preferences and funding.		
1.9	**Alternatives to proposed action**		No
		X	Yes, you must also complete section 2.2
1.10	**Alternative time frames etc**	X	No
			Yes, you must also complete Section 2.3. For each alternative, location, time frame, or activity identified, you must also complete details in Sections 1.2-1.9, 2.4-2.7 and 3.3 (where relevant).
1.11	**State assessment**	X	No
			Yes, you must also complete Section 2.5
1.12	**Component of larger action**	X	No
			Yes, you must also complete Section 2.7
1.13	**Related actions/proposals**	X	No
			Yes, provide details:
1.14	**Australian Government funding**	X	No
			Yes, provide details:
1.15	**Great Barrier Reef Marine Park**		No
		X	Yes, you must also complete Section 3.1 (h), 3.2 (e)

2 Detailed description of proposed action

2.1 Description of proposed action

QRE Pty Ltd propose to develop an eco-sensitive tourist resort at Black Head on the eastern coast of Curtis Island, Queensland. The proposed resort includes 177 villas and units (297 rooms), resort amenities (beach centre, pools, tennis courts) and a central facility with a reception, conference facilities, shop, bar and restaurant. The position and design of buildings and other works and the physical conditions of this locality are such that the development would have no significant impact on matters of national environmental significance. A combination of strategic landscaping, encouragement of natural vegetation and control of pedestrian access will minimise impacts on the natural values including the beaches and wetland. Further, no guest vehicles will be allowed in the resort precinct (buggies and service vehicles only).

The Development Application was originally approved by Calliope Shire Council in 1991 (now Gladstone Regional Council). The approved plans are included in **Attachment 3 – Development Approvals and Approved Plans.**

Stormwater
Best practice stormwater and drainage design is critical to ensure the natural hydrology is not adversely impacted by the proposed development. Conveyance of flows from new areas of development will be done in a way that is sympathetic to the existing drainage characteristics of the island and receiving environment. New drainage networks will also feature elements to remove sediments and nutrients prior to discharge. Work will be undertaken in accordance with the conditions of the Operational Works approval issued by Council and the Consent Order (refer to **Attachment 3 – Development Approvals and Approved Plans)**.

Visual
The project has been designed to minimise visual impacts on the Great Barrier Reef World Heritage Area by ensuring appropriate setback distances to the shoreline and by ensuring that buildings are predominantly below the height of the existing mature trees on the site. The design, colour palette and construction materials of buildings and infrastructure will also compliment the natural environment (refer to **Attachment 3 – Development Approvals and Approved Plans**).

Landscaping
Landscape concept plans have been prepared for the proposed development that identify existing trees and additional areas for supplementary planting (refer to **Attachment 3 – Development Approvals and Approved Plans** and **Attachment 4 – Landscape Concept Background**). All new trees, shrubs and grasses will be from local endemic species and a best practice weed management plan is proposed.

Infrastructure/Services
There is no reticulated water supply, electricity or sewerage currently servicing the Island. The following is proposed:

- Energy – a standalone diesel energy system is proposed for the development and will provide a combined genset supply of 1.2 megawatts. In August 2014, Managing Director, Tim E. Reigel, committed QRE Pty Ltd to a path of research and development of renewable energy sources which will most efficiently and effectively contribute to the resort's clean energy aspirations. This commitment sets the company, its officers and shareholders, the clear objective to reduce the resort's reliance on hard fuels by 20% by the year 2020. The objective shall be met through exhaustive consideration of all green energy sources, with a total contribution to the resort's energy needs of 24 megawatts. Turtle Street shall by 2020, utilize its own standalone solar PV arrays, solar hot water and wind turbine systems; with an inverter system, storage batteries and wind turbine-driven street lighting;
- Water Supply – the main water supply will be from a dam located in the infrastructure and access corridor, with the dam located in the resort node to serve as a backup supply for emergencies (e.g. fire management). A small package water treatment plant is proposed to be located in the resort infrastructure area to treat the raw water from the dam to a potable standard;
- Sewerage – underground sewers are proposed with sewage being pumped to a treatment plant located to the west of the resort node; and
- Waste - solid waste will be generated initially during the construction phase and subsequently due to ongoing resort operations. The preferred option is to recycle as much material as possible and compact and export the waste to the mainland (Gladstone Refuse Centre) by barging operations.

Access

Access to the resort will be via helicopter or plane and an existing dedicated barge landing point located at Hobble Gully located to the south of the resort node. Staff will obtain access via the existing barge service located to the South End. The barge landing facility at Hobble Gully has been constructed in accordance with State approvals and will provide the opportunity to connect to Gladstone Harbour via regular barge and boat services. It will also facilitate the launching of private pleasure craft by resort guests for estuary fishing. Guests who bring small boats with them would launch them either at Hobble Gully or the South End. The barge landing provides access to the resort node at Black Head via some 11.5 km of gravel roadway constructed from redeveloped bush tracks that already exist across the island.

Management anticipates guests to arrive by helicopter or plane to be approximately 35%-40% of total guests. Guests travelling to Turtle Street via Hobble Gully will arrive by water taxi - 3 trips (each way) per day. Servicing of the resort will require an average of one boat or barge (each way) per day. Staff will use existing barge service at South End. Key assumptions include:

- 177 units/villas X 2.5 people per unit = 442 total guest population @ 100% occupancy;
- 70% average occupancy = 310 total guests population on average;
- 65% coming via Hobble Gully = 201; and
- average length of stay of 4 days - approximately 50 people coming and going daily via Hobble Gully.

The proposed access route from Hobble Gully to the resort node is already existing and has been for some time. Extra works are required to ensure the road satisfies Council Specifications but all future works will have little or no impact on the environment.

Resort Roads

No guest vehicles will be allowed in the 12.5 hectare resort precinct (buggies and service vehicles only). The road standard proposed for internal roads is that of a rural road with a design speed of 30 km per hour to provide access for golf buggies and service vehicles. The design encompasses internal roads of a maximum of 6.3m width and a minimum of 5.0m width constructed using site won gravels and insitu material stabilised with a polymer stabiliser to a depth of 150mm and sealed with a 10mm chip seal. The provision of an underground services corridor will be located in the road verge. Roads to the resort and the internal roads of the resort will be constructed using local materials. The road profile is to be to rural road standards with table drain road drainage and utilisation of culverts where necessary.

Airstrip

To accommodate the needs of fly-in fly-out guests a 1,100 metre length airstrip is proposed near the resort. The proposed airstrip is an integral part of the resort infrastructure. Fly-in guests comprise a viable and important secondary market, and to accommodate their needs the proposed airstrip will permit light aircraft to land near the resort. The airstrip will be served primarily by charter services and private light aircraft from Gladstone and Rockhampton.

The location for the airstrip is in the south central portion of Lot 8 CP86046. This location is on an existing broad natural ridge and has been chosen as due to its beneficial topography and alignment. The location is sheltered from the blustery coastal winds, which will allow the strip to be useable in all but the most extreme weather conditions. The alignment also permits a lower level of earthworks and visual disturbance to the natural features of the island. Being only 4km from the resort node its position also offers convenience. The airstrip land was cleared in 2006 and the airstrip is partially built.

Access to Foreshore

Access to the foreshore will be managed by:

- providing a total of three pedestrian access points only to the foreshore from the resort;
- not providing for vehicle access to the foreshore; and
- utilising topography and landscaping to prevent access to the foreshore other than at the designated pedestrian access points.

2.2 Alternatives to taking the proposed action

A number of alternatives to undertaking the proposed action have been considered. In 1990 a development concept was prepared for a much higher intensity form of development including a hotel complex with 250 rooms, 175 cottages and 50 dormitory type accommodation surrounding by a golf course, tennis facilities and other sporting facilities (refer to **Attachment 5 – Development Concept - 1990**). This development concept was refined in 1995 to remove the golf course and include provision for 220 rooms (170 units), a lodge, homestead, camp and a precinct of resort condominiums refer to **Attachment 6 – Development Concept - 1995**). The current development proposal is smaller in scale and intensity to both these alternatives.

2.3 Alternative locations, time frames or activities that form part of the referred action

Not applicable.

2.4 Context, planning framework and state/local government requirements

Background

In 1976 a small group of private US based investors headed by Mr W Reigel purchased the cattle property known as "Monte Christo" on Curtis Island off Gladstone with the view to constructing a tourism resort. The property consisted of 1,030ha of freehold land and 30,378ha of leasehold on land covering approximately two thirds of the entire island. The land holding had been used as a cattle breeding and fattening property for almost 150 years. Since this time the project proponents have been seeking to obtain the necessary land tenure and approvals to construct a tourism resort on Curtis Island. Under the legislation at that time, approval was required from the Local Authority (being Calliope Shire Council) for a Consent Approval and from State Government to change the land tenure from an existing grazing lease to a lease able to accommodate tourism activity. These two levels of government were consulted with to obtain the necessary approvals. At that time, no specific Federal Government approval was required.

Commonwealth Approvals

A previous larger development concept on the site (refer to **Attachment 6 - Development Concept - 1995**) was accepted by the then Commonwealth Environment Minister as meeting the object of the *Environmental Protection (Impact of Proposals) Act 1974*. This concept was for a much larger site with a significantly larger footprint (refer to **Attachment 7 – Minister for the Environment Determination - 1996**).

In August 2013, Senator the Hon Don Farrell, Federal Minister for Sport and Minister Assisting the Minister for Tourism also granted Tourism Major Project Facilitation status to the Turtle Street Beach Resort project (refer to **Attachment 8 – Major Project Facilitation Status**).

Tenure Approvals

Monte Christo Properties was acquired in 1976 and an application for a change of tenure made to the state government in 1983. The application was suspended until 1987 whilst the Commonwealth considered the establishment of a naval base on Curtis Island. The naval base did not proceed and the proponents were invited to make a new application for a change of tenure, which they did. Complex and protracted negotiations ensued with the Lands Department and the National Parks department until agreement was reached and a 75 year tourism lease for the resort area was issued in 1999. However, marketing and financial consultants advised that a minimum 100-year lease was required. For the next 4 years, QRE negotiated with the Queensland government to increase the term of the lease and a new 100-year lease was issued in December 2003.

Planning Framework and Development Approvals

The proposed action is consistent with the current Gladstone Regional Council Planning Scheme (commenced on 12/10/2015) which includes Lot 8 on CP860464 in the Major Tourism Zone. It is also consistent with the superseded planning scheme applying to the Island (Calliope Planning Scheme), which states that the intended outcome for Black Head is:

> *Development of the area known as Black Head, Curtis Island and identified as Lots 8 and 11 CP860464 as a tourist resort which includes the following facilities:*
>
> *(a) central resort facilities and resort accommodation designed to a high architectural standard;*
> *(b) a landing in Hobble Gully;*
> *(c) vehicular access from the landing to Black Head;*
> *(d) an airstrip;*
> *(e) a dam in Hobble Gully; and*
> *(f) water supply and sewerage infrastructure;*
>
> *and preserves Curtis Island's natural features and integrates the natural recreational opportunities.*

Development Approval was originally received from Calliope Shire in December of 1991 and renewals have been routinely received from the Calliope Shire Council until November 2009 when the newly amalgamated Gladstone Regional Council voted to not extend the approvals. Council was not opposed to the resort (which is appropriately designated in Council's planning scheme). Rather, its concern was that the original conditions of approval were outdated and a more contemporary set of conditions was required. QRE appealed this decision, protecting its rights in the Planning and Environment Court and engaged in a dialogue with Gladstone Regional Council to reach a negotiated settlement which was reached and ratified by the Planning & Environment Court on 17 February 2012. This agreement included a set of conditions that reflect the current Council planning scheme and State environmental policies. As part of the agreement with Gladstone Regional Council, QRE lodged an application for operational work permits for the development by 17 February 2013 and ultimately received the operational work approval in July 2013. On 12 June 2015 Gladstone Regional Council approved the extension of the currency period for this approval to 26 July 2017.

A current development permit and Planning and Environment Court Consent Order exists on part of the site for a tourist resort. These approvals represent the culmination of an approvals and negotiation process that commenced in 1989 and has involved extensive consultation and studies over many years with Gladstone Regional Council (and the former Calliope Shire Council), State agencies and the Commonwealth (refer to **Attachment 3 – Development Approvals and Approved Plans**).

Vegetation (including Mangrove Clearing) Approvals

In 2002, QRE was advised that development couldn't begin until a tree clearing permit for the project was obtained. QRE commissioned all required reports including vegetation studies and acid sulphate reports and the company finally received the tree clearing permit in March 2006. The State required all Broad Scale clearing permits to be exercised prior to December 31 2006 or otherwise they would have lapsed. It is also important to consider that most direct impacts, that is those associated with clearing, were approved by the Queensland Department of Natural Resources and Mines on 29 November 2005 (refer to **Attachment 9 - EPBC Act Assessment**). A separate approval to clear approximately 250m^2 of mangroves was also attained from the Queensland Department of Primary Industries and Fisheries (refer to **Attachment 10 – Marine Plant Permit**). Clearing rights granted under these approvals were exercised prior to 31 December 2006. The 2015 EPBC Act assessment identifies that the area cleared in 2006 pursuant to a State Government approval would not have resulted in a significant impact on matters of national environmental significance (refer to **Attachment 9 - EPBC Act Assessment**).

Cultural Heritage Approvals

A cultural heritage assessment for the development was prepared by ARCHAEO in 2006 in accordance with the *Aboriginal Cultural Heritage Act 2003*. QRE entered into a Cultural Heritage Agreement with Aboriginal groups that had an interest on Curtis Island in 2006 (refer to **Attachment 11 – Cultural Heritage Assessment**).

Queensland Tourism Investment Attraction

In September 2013, the Queensland Department of Tourism, Major Events, Small Business and Commonwealth Games' Tourism Investment Attraction Unit (TIAU) selected the Turtle Street Beach Resort project to join a number Queensland tourism projects to be promoted globally by the TIAU in collaboration with Trade and Investment Queensland, Tourism Australia and Austrade.

QRE now has all Local Government and State approvals in place to develop 177 villas and units (297 rooms) and associated facilities on the site.

Commonwealth Legislation

The following table lists the key relevant Commonwealth legislation applying to the project.

Table 2.4.1. Commonwealth Legislation.

Legislation	Description	Relevance to the Project
Environment Protection and Biodiversity Conservation Act 1999	The *Environment Protection and Biodiversity Conservation Act* 1999 ('EPBC Act') establishes a Commonwealth process for assessment of proposed actions that have the potential to have an impact on matters of national environmental significance or on Commonwealth land. The EPBC Act requires that actions, which have the potential to have an environmental impact on Commonwealth land, be assessed for the purpose of Commonwealth decision making. The Commonwealth Minister for the Environment will determine whether approval is necessary under the EPBC Act and, if so, the type of assessment that will be undertaken.	The proponent submits that given the substantial planning work to avoid impacts on environmental values, including matters of national environmental significance, that the project should not be declared a controlled action under the EPBC Act (refer to **Attachment 9 – EPBC Act Assessment**).

State Legislation

The following **Table 2.4.2** provides a summary of the key State (Queensland) statutes applying to the development.

Table 2.4.2. Key State Legislation.

Key Legislation	Description	Relevance to the project
Aboriginal Cultural Heritage Act 2003	The *Aboriginal Cultural Heritage Act 2003* recognises the existing right of ownership of cultural heritage by Aboriginal people ensuring	A cultural heritage assessment for the development was prepared by ARCHAEO in 2006 in accordance with the *Aboriginal*

Key Legislation	Description	Relevance to the project
	native title is not affected. The legislation seeks to protect areas of significance to Aboriginal people. The 'duty of care' provisions includes a legal responsibility or statutory 'duty of care' requiring those conducting activities in areas of significance to take all reasonable and practical measures to avoid harming cultural heritage.	*Cultural Heritage Act 2003*. The site falls within the external boundary of the registered Native Title application of the Port Curtis Coral Coast (PCCC) native title claimants QC01/29. As no triggers exist that require QRE to undertake a Cultural Heritage Management Plan, pursuant to Part 7 of the Act, a decision was made to enter into an Agreement, in accordance with Section 23(3) of the Act (refer to **Attachment 11 – Cultural Heritage Assessment)**.
Coastal Protection and Management Act 1995	The principal objectives of the *Coastal Protection and Management Act 1995* are the protection, conservation, rehabilitation and management of the state's coastal resources and biodiversity by the provision, in conjunction with other legislation, of a coordinated and integrated management and administrative framework for the ecologically sustainable development of the coastal zone.	The proposed development is compliant with the Coastal Management and Biodiversity Overlay Code of the Calliope Planning Scheme.
Environmental Protection Act 1994	The object of the Act is to protect Queensland's environment while allowing for development that improves the total quality of life, both now and in the future, in a way that maintains the ecological processes on which life depends (ecologically sustainable development).	Approval for Environmentally Relevant Activities ('ERAs'), including but not necessarily limited to sewage treatment, water treatment and fuel storage may be required under the *Environmental Protection Act 1994* and the *Environmental Protection Regulation 2008*. Further applications will be submitted for ERAs as required.
Land Act 1994	The *Land Act 1994* deals with the allocation of tenure and other dealings involving State land, including through the granting of leases.	The land holding contains State-owned land. Land tenure issues relevant to the project have been resolved.
Nature Conservation Act 1992	The *Nature Conservation Act 1992* ('NCA') protects areas that have been dedicated for conservation as well as individual specimens of plants and animals, and seeks to achieve "*…an integrated and comprehensive conservation strategy for the whole of the State…*" (section 5 of the NCA). The most relevant portions of the NCA to the proposed development are the sections relating to Wildlife and Habitat Conservation.	The Nature Refuge which has been declared over part of the site requires the land to be managed in accordance with the principles contained in the *Nature Conservation Act 1992 (*refer to **Attachment 2 – Curtis Island Nature Refuge Conservation Agreement**).
Sustainable Planning Act 2009	The *Sustainable Planning Act 2009* ('SPA') and the *Sustainable Planning Regulation 2009* ('SPR') provide the statutory framework for the making and assessment of development applications. The SPA delivers an Integrated Development Assessment System ('IDAS') for integrating State and local government assessment and approval processes for development.	A current Planning and Environment Court Consent Order, as well as an Operational Work approval exists on part of the site for a tourist resort (refer to **Attachment 3 – Development Approvals and Approved Plans**). These approvals represent the culmination of an approvals and negotiation process that commenced in 1989 and has involved extensive consultation and studies over many years with Gladstone Regional Council (and the former Calliope Shire Council), State agencies and the Commonwealth.
Vegetation Management Act 1999	Clearing of native vegetation is regulated by the *Vegetation Management Act 1999* ('VMA'). Clearing remnant vegetation on a regulated vegetation management map, if not exempt, can only be done under a permit. Common exemptions include clearing for necessary fence lines, necessary road or vehicular tracks, fire management lines and fire breaks. A development application that includes vegetation clearing will require referral and assessment by the Department of Natural Resources and Mines (DNRM).	Previous approvals were issued by the State in 2006 for vegetation clearance (refer to **Attachment 9 – EPBC Act Assessment**). A Property Map of Assessable Vegetation (PMAV) has also been issued by the State for the site and demonstrates that the resort footprint aligns with cleared areas (refer to **Attachment 12 – Property Map of Assessable Vegetation)**.

2.5 Environmental impact assessments under Commonwealth, state or territory legislation

Not applicable.

2.6 Public consultation (including with Indigenous stakeholders)

A cultural heritage assessment for the development was prepared by ARCHAEO in 2006 in consultation with the Port Curtis Coral Coast native title claimants. The Aboriginal Parties agreed to provide field representatives to undertake the assessment to determine whether were are any significant Aboriginal areas or objects as defined by the Act (refer to **Attachment 11 – Cultural Heritage Assessment**).

2.7 A staged development or component of a larger project

Not applicable.

3 Description of environment & likely impacts

3.1 Matters of national environmental significance

A search for matters protected by *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) based on a 10 kilometre buffer to exclude mainland attributes (refer to **Attachment 9 – EPBC Act Assessment**) has identified that the following matters of national environmental significance may occur in, or may relate to the locality:

- World Heritage Properties – 1 (Great Barrier Reef);
- National Heritage Places – 1 (Great Barrier Reef);
- Wetlands of International Importance – None;
- Great Barrier Reef Marine Park – 4;
- Commonwealth Marine Areas – None;
- Listed Threatened Ecological Communities – 2;
- Listed Threatened Species – 30;
- Listed Migratory Species – 55;
- Listed Marine Species – 96;
- Whales and other cetaceans – 12;
- Invasive Species – 20; and
- Nationally Important Wetlands – 3 (Great Barrier Reef Marine Park, Port Curtis and The Narrows).

3.1 (a) World Heritage Properties

Description

The site is located within the Great Barrier Reef World Heritage Area that extends over 2,000 kilometres and covers 348 000 km^2 on the north-east continental shelf of Australia. As the world's most extensive coral reef system, it is one of the best known marine protected areas. The Great Barrier Reef's diversity reflects the maturity of the ecosystem which has evolved over many thousands of years (Department of the Environment, 2015[1]). Within the Great Barrier Reef there are some 2,500 individual reefs of varying sizes and shapes, and over 900 islands, ranging from small sandy cays and larger vegetated cays, to large rugged continental islands rising, in one instance, over 1,100 metres above sea level. Collectively these landscapes and seascapes provide some of the most spectacular maritime scenery in the world. The latitudinal and cross-shelf diversity, combined with diversity through the depths of the water column, encompasses a globally unique array of ecological communities, habitats and species. This diversity of species and habitats, and their interconnectivity, make the GBR one of the richest and most complex natural ecosystems on earth (Department of the Environment, 2014[2]).

World Heritage places have outstanding natural or cultural values of significant importance. The Great Barrier Reef was inscribed on the World Heritage List in 1981 based on the following criteria:

- *Criterion (vii): The GBR is of superlative natural beauty above and below the water, and provides some of the most spectacular scenery on earth. It is one of a few living structures visible from space, appearing as a complex string of reefal structures along Australia's northeast coast.*
- *Criterion (viii): The GBR, extending 2,000 kilometres along Queensland's coast, is a globally outstanding example of an ecosystem that has evolved over millennia. The area has been exposed and flooded by at least four glacial and interglacial cycles, and over the past 15,000 years reefs have grown on the continental shelf.*
- *Criterion (ix): The globally significant diversity of reef and island morphologies reflects ongoing geomorphic, oceanographic and environmental processes. The complex cross-shelf, longshore and vertical connectivity is influenced by dynamic oceanic currents and ongoing ecological processes such as upwellings, larval dispersal and migration.*
- *Criterion (x): The enormous size and diversity of the GBR means it is one of the richest and most complex natural ecosystems on earth, and one of the most significant for biodiversity conservation. The amazing diversity supports tens of thousands of marine and terrestrial species, many of which are of global conservation significance.*

[1]Source: http://www.environment.gov.au/heritage/publications/factsheet-great-barrier-reef-world-heritage-area

[2]Source: http://www.environment.gov.au/epbc/publications/epbc-act-referral-guidelines-outstanding-universal-value-great-barrier-reef-world-heritage

Nature and extent of likely impact

The proponent recognises that the Great Barrier Reef's World Heritage Values must be protected against the potential for deleterious impacts. Importantly in this regard, no dredging, marinas or other direct impacts on the Great Barrier Reef or associated aquatic, oceanic or foreshore environments are proposed. The Great Barrier Reef and associated environments are a cornerstone to the proposed facility and their protection/enhancement is integral to the proponent. Limited recreational uses are proposed for the marine environment including swimming, fishing, snorkelling and boating subject to compliance with Marine Park Zoning Plans.

The proposed eco-sensitive resort has been designed to protect matters of national environmental significance and the Outstanding Universal Value of the Great Barrier Reef World Heritage Area as demonstrated by the following:

Criterion (vii): The GBR is of superlative natural beauty above and below the water, and provides some of the most spectacular scenery on earth. It is one of a few living structures visible from space, appearing as a complex string of reefal structures along Australia's northeast coast.

- The project has been designed to avoid significant visual impacts on the Great Barrier Reef World Heritage Area by ensuring appropriate setback distances to the shoreline and by ensuring that buildings are predominantly below the height of the existing mature trees on the site. The design, colour palette and construction materials of buildings and infrastructure will also compliment the natural environment (refer to **Attachment 3 – Development Approvals and Approved Plans**).

Criterion (viii): The GBR, extending 2,000 kilometres along Queensland's coast, is a globally outstanding example of an ecosystem that has evolved over millennia. The area has been exposed and flooded by at least four glacial and interglacial cycles, and over the past 15,000 years reefs have grown on the continental shelf *AND* ***Criterion (ix): The globally significant diversity of reef and island morphologies reflects ongoing geomorphic, oceanographic and environmental processes. The complex cross-shelf, longshore and vertical connectivity is influenced by dynamic oceanic currents and ongoing ecological processes such as upwellings, larval dispersal and migration.***

- The project has been designed to avoid significant impacts on the oceanographic and coastal processes of the Great Barrier Reef by ensuring no dredging, managing access to the foreshore and by adopting best practice stormwater management. Conveyance of flows from new areas of development will be done in a way that is sympathetic to the existing drainage characteristics of the island and receiving environment. New drainage networks will also feature elements to remove sediments and nutrients prior to discharge. Such works will be undertaken in accordance with the conditions of the Operational Works approval issued by Council and the Consent Order.

Criterion (x): The enormous size and diversity of the GBR means it is one of the richest and most complex natural ecosystems on earth, and one of the most significant for biodiversity conservation. The amazing diversity supports tens of thousands of marine and terrestrial species, many of which are of global conservation significance.

- *Vegetation* – the project has been assessed against the significant impact guidelines for EPBC Act listed threatened ecological communities and species. The results of this assessment indicate that it is unlikely that the proposed resort development will have a significant impact on matters of national environmental significance (refer to **Attachment 9 – EPBC Act Assessment**). Further, limited clearing is required to facilitate development with the dedication/surrender of key areas of environmental significance and previous clearing activities undertaken in 2006 in accordance with State Government approvals (refer to **Attachment 9 – EPBC Act Assessment**). A Vegetation Management Plan has also been prepared by Logic Environmental (2015) to ensure the successful management of the site's vegetation during the operational works phase of the development (refer to **Attachment 13 – Vegetation Management Plan**); and

- *Fauna* - the project has been assessed against the significant impact guidelines for EPBC Act listed threatened species and migratory species which are known or likely to occur within the vicinity of the resort development. The results of this assessment indicate several threatened species potentially exist within/around the site. It should be noted however that none of these species (including the Yellow Chat or Turtles) were observed during the Fauna Survey and Habitat Assessment (refer to **Attachment 14 – Fauna Survey and Habitat Assessment**). Suitable habitat for the Yellow chat is absent from the resort footprint and the beach fronting the resort site is not a recognised turtle rookery. Notwithstanding this lighting will be located, directed, shielded and specified so as to not spill onto the beach (refer to **Attachment 15 - Lighting Design**). A Fauna Management Plan has also been prepared by Logic Environmental (2015) (refer to **Attachment 16 – Fauna Habitat Management Plan**).

3.1 (b) National Heritage Places

Description
The Great Barrier Reef is a World and National Heritage Place. Refer to discussion in 3.1(a) above.

Nature and extent of likely impact

The proponent recognises that the Great Barrier Reef's World Heritage Values must be protected against the potential for deleterious impacts and as such no dredging or marinas are proposed. Refer to discussion in 3.1(a) above.

3.1 (c) Wetlands of International Importance (declared Ramsar wetlands)

Description
The site does not include any wetlands of international importance.

Nature and extent of likely impact

Not applicable.

3.1 (d) Listed threatened species and ecological communities

Description
The EPBC Act Protected Matters Report (based on a 10 km buffer) identified 30 listed threatened species and 2 listed threatened ecological communities as having potential to occur within the site. The results of the EPBC database searches and list of marine species protected by the EPBC Act is available in **Attachment 9 – EPBC Act Assessment**.

Threatened Species
A detailed Fauna Survey and Habitat Assessment was undertaken by Native Foresters in March–June 2015 (refer to **Attachment 14 – Fauna Survey and Habitat Assessment**). In summary the study did not record any EPBC Act threatened species on the site.

Ecological Communities
One Threatened Ecological Community (TEC) - Littoral Rainforest and Coastal Vine Thickets of Eastern Australia, occurs within the vicinity of the resort infrastructure (refer to **Attachment 9 – EPBC Act Assessment**). This Threatened Ecological Community (TEC) was listed on 10 October 2008. Regional Ecosystem (RE) 12.2.2 equates to this TEC and is mapped by the Queensland Government as a component of remnant vegetation adjacent the existing cleared footprint.

Nature and extent of likely impact

The key approach of the resort design with respect to minimising impacts to environmental values is the avoidance of environmentally significant areas in the development footprint and the dedication of some 13,940 hectares to the State for Conservation/National Park and the recent sale of 18,950 hectares as a vegetation offset area for the LNG projects.

Threatened Species
Whilst no listed threatened fauna species were found within the site or its surrounds, the proponent is committed to fauna conservation. The Fauna Habitat Management Plan (refer to **Attachment 16**) seeks to protect key species and native vegetation during resort construction and operation.

Ecological Communities
The Littoral Rainforest and Coastal Vine Thickets of Eastern Australia occurs within the vicinity of the resort infrastructure. No direct impacts to this community are anticipated as a result of the construction and operation of the resort. Indirect impacts as result of incursion of exotic weed species will be avoided by the implementation of proposed management measures including the use of local native plants in landscaping and the removal of significant weeds within the construction area (refer to **Attachment 13 – Vegetation Management Plan**).

It is considered that these measures will serve to protect and enhance the threatened ecological community.

3.1 (e) Listed migratory species

Description
The EPBC Act Protected Matters Report (based on a 10 km buffer) identified 55 listed threatened species as having potential to occur within the site. The results of the EPBC database searches and list of marine species protected by the EPBC Act are available in **Attachment 9 – EPBC Act Assessment**. Detailed ecological assessments undertaken in March – June 2015 found no evidence of the 55 listed migratory species having potential to utilise the site. The resort footprint is entirely terrestrial, with the exception of a small incursion into mangroves for a barge landing that is a tidal environment. The development avoids areas typically important to several migratory species.

Nature and extent of likely impact

Whilst there were no listed migratory species found within the site or its surrounds, the proponent is committed to fauna conservation and has prepared a Fauna Management Plan (refer to **Attachment 16 - Fauna Management Plan**). It is also likely that the proposed rehabilitation and revegetation program (refer to **Attachment 3 – Development Approvals and Approved Plans – Landscape Concept**) will serve to create new habitat for fauna.

While the beach is not recognised as being a turtle rookery, the proposal has been designed to ensure that no light spills from the resort (refer to **Attachment 15 – Lighting Design**).

3.1 (f) Commonwealth marine area

(If the action is in the Commonwealth marine area, complete 3.2(c) instead. This section is for actions taken outside the Commonwealth marine area that may have impacts on that area.)

Description
The project has been designed to ensure that there will be no impact on the Commonwealth marine area – refer to 3.1 (a) World Heritage Properties.

Nature and extent of likely impact

Not applicable.

3.1 (g) Commonwealth land

(If the action is on Commonwealth land, complete 3.2(d) instead. This section is for actions taken outside Commonwealth land that may have impacts on that land.)

Description
The action will not have any impact on Commonwealth land.

Nature and extent of likely impact

Not applicable.

3.1 (h) The Great Barrier Reef Marine Park

Description
Water based activities like sailing, kayaking and paddle boarding are proposed from the front of the resort site whilst motorised boating activities will be from the South End and Hobble Gully. Marine access to the site is proposed via the existing barge landing area at Hobble Gully.

Nature and extent of likely impact

In accordance with the 1996 determination by the then Commonwealth Minister for Environment, Sport and Territories, potential boating impacts will be mitigated by restriction of boating speeds in Hobble Gully and Graham Creek.

3.1 (i) A water resource, in relation to coal seam gas development and large coal mining development

Description
The proposal is not related to water resource used for coal seam gas development or a coal mining development.

Nature and extent of likely impact

Not applicable.

3.2 Nuclear actions, actions taken by the Commonwealth (or Commonwealth agency), actions taken in a Commonwealth marine area, actions taken on Commonwealth land, or actions taken in the Great Barrier Reef Marine Park

3.2 (a)	**Is the proposed action a nuclear action?**	X	No
			Yes (provide details below)
	If yes, nature & extent of likely impact on the whole environment		

3.2 (b)	**Is the proposed action to be taken by the Commonwealth or a Commonwealth agency?**	X	No
			Yes (provide details below)
	If yes, nature & extent of likely impact on the whole environment		

3.2 (c)	**Is the proposed action to be taken in a Commonwealth marine area?**	X	No
			Yes (provide details below)
	If yes, nature & extent of likely impact on the whole environment (in addition to 3.1(f))		

3.2 (d)	**Is the proposed action to be taken on Commonwealth land?**	X	No
			Yes (provide details below)
	If yes, nature & extent of likely impact on the whole environment (in addition to 3.1(g))		

3.2 (e)	**Is the proposed action to be taken in the Great Barrier Reef Marine Park?**		No
		X	Yes (provide details below)

If yes, nature & extent of likely impact on the whole environment (in addition to 3.1(h))

Water based activities like sailing, kayaking and paddle boarding are proposed from the front of the resort site whilst motorised boating activities will be from the South End. Marine access to the site is proposed via the existing barge landing area at Hobble Gully. In accordance with the 1996 determination by the then Commonwealth Minister for Environment, Sport and Territories, potential boating impacts will be mitigated by restriction of boating speeds in Hobble Gully and Graham Creek.

3.3 Other important features of the environment

3.3 (a) Flora and fauna

Flora

The property contains a relatively diverse range of vegetation types dependent upon topography and proximity to the coastline. There are areas of remnant vegetation and cleared areas of non-remnant vegetation associated with the proposed resort development. The Regional Ecosystems (RE) occurring over the site are described in Fauna Survey and Habitat Assessment (refer to **Attachment 14**). A Property Map of Assessable Revegetation (PMAV) has been certified by Queensland's Department of Natural Resources and Mines and replaces the Regional Ecosystem mapping (refer to **Attachment 12**). It demonstrates that the resort footprint aligns with approved cleared areas.

A Vegetation Management Plan has also been prepared by Logic Environmental (2015) to ensure the protection and enhancement of the site's vegetation (refer to **Attachment 13**).

Fauna

A detailed Fauna Survey and Habitat Assessment was undertaken by Native Foresters in March – June 2015 (refer to **Attachment 14 – Fauna Survey and Habitat Assessment**). In summary the study did not record any EPBC Act threatened species on the site but it did record the following species that are not scheduled under the Act:

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

- Terrestrial mammals - the program of Elliot trapping over the site did not identify the presence of any small terrestrial mammals (Dasyurids) in any of the four survey areas. It is also noted that GHD undertook an Elliot trapping program on an adjacent property in 2004 with no Dasyurids, Bandicoots or Rodents detected. One feral species of Black Rat was detected onsite by camera trapping. No evidence of Bandicoot digs were observed onsite. The only large native mammal detected onsite was the Eastern Grey Kangaroo;

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

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

- Amphibians - The survey identified 5 native frog species and the pest species Cane toad occurring onsite. This represents a reasonable diversity of frog species. The presence of rain and the resultant ephemeral ponding over the site was conducive for the detection of frogs. The Cane toad was found in large numbers onsite. Cane toad tadpoles prey on the tadpoles of native amphibian species. In addition, cane toads are considered likely to cause declines in faunal biodiversity through competition for food with other carnivores, predation upon small vertebrates (such as skinks) and by causing intoxication among larger predators such as goannas (Varanus spp.) and raptors; and

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

A Fauna Habitat Management Plan has also been prepared by Logic Environmental (2015) to manage potential fauna impacts during the construction and operation of the resort (refer to **Attachment 16**).

3.3 (b) Hydrology, including water flows

The hydrology predominantly drains towards the west. Graham Creek is a large mangrove wetland that almost dissects Curtis Island from The Narrows. Two named and one unnamed gullies drain into Graham Creek. Hobble Gully, the most northern creek (where the water storage facility is proposed) is a steep-banked ephemeral creek for much of its length within the study area. Outside of the study area, it becomes a deep tidal mangrove lined creek. To the west of the main channel of Hobble Gully are a series of necklace pools that possibly may be spring fed and contain relatively permanent water. Logbridge Creek is the major drainage creek with steep banks and flows into Graham Creek further to the south. In 2003 approval was issued by the Department of Primary Industries to clear an area of mangroves (approximately 250m^2) to allow a barge landing area to be constructed (refer **to Attachment 10 – Marine Plant Permit**).

3.3 (c) Soil and Vegetation characteristics

Geological investigations indicate that the geology at the resort site is dominated by "*sandy loam topsoils (being approximately 300mm depth) overlying between 300 and 600mm of shallow gravelly residual sandy soils or duplex soils with lower silty clay subsoil underlain by hard weathered rock*"(McWilliam Consulting Engineers, facsimile transmission 28.11.2002). The northern portions of the headland include exposed areas of greywacke and mudstone or thin soils derived from the metasediments of the Shoalwater Formation. Deeper soils prevail in the more protected parts of the site. These soils give way to a mixture of sandy, rocky and muddy shores on the western edge of the resort site. In the southern flatter parts of the resort site there are deeper soils and exposed rock (refer to **Attachment 4 – Landscape Concept Background**). The property contains a relatively diverse range of vegetation types dependent upon topography and proximity to the coastline.

3.3 (d) Outstanding natural features

The principal natural features of the original Monte Christo Station included a highly scenic stretch of shoreline on the island's east coast which includes rugged bluffs and headlands, scalloped bays and beaches, sand dune formations, and an extensive marine plain. The site of the proposed beach resort is located close to 'Black Head', a rock promontory with a maximum height of approximately 54 metres. Black Head forms the southern limit of Turtle Street Beach and is the commencement of a 7.5 kilometre stretch of high bluffs extending south to Connor. The site contains the prominent features of Black Head and Turtle Street Beach, together with the sea cliffs and native vegetation. In additional to these coastal features are a series of gullies and creeks, including Hobble Gully and Logbridge Creek.

3.3 (e) Remnant native vegetation

The resort footprint is cleared and is surrounded by various vegetation types, predominantly eucalyptus woodland (refer to **Attachment 14 – Fauna Survey and Habitat Assessment**).

3.3 (f) Gradient (or depth range if action is to be taken in a marine area)

The topography in the resort is diverse. In its eastern part, the terrain comprises of hilly lands with narrow rounded crests on the ridges and spurs and with steep planner slopes within the range of 20% to 40% (1: 5 to 1:2.5). Although the majority of the site has slopes less than 25% (1 in 4) some steep gullies have been left undisturbed and it is proposed that they will remain as features of the landscaping. The exposed eastern rugged coastal fringe is outside the resort area, largely within an Esplanade, and will not be developed.

3.3 (g) Current state of the environment

The site is considered to be in moderate ecological condition with parts of the site having been previously cleared and used for historic grazing purposes. The Fauna Survey and Habitat Assessment found that feral pigs, feral horses (brumbies), wild dogs, feral cats, foxes and stray stock are considered to be the main feral species impacting on conservation values on Curtis Island and these were all detected during the survey. The fox, feral cat, feral dog and in some situations the feral pig are all predatory and have an adverse effect on native fauna and may account for the apparent absence of small and medium size native fauna species over the site. The black rat is also present, with this species competing with native rodents (refer to **Attachment 14 – Fauna Survey and Habitat Assessment**).

3.3 (h) Commonwealth Heritage Places or other places recognised as having heritage values

Not applicable.

3.3 (i) Indigenous heritage values

A cultural heritage assessment for the development was prepared by ARCHAEO to provide the project with compliance with its cultural heritage duty of care, pursuant to the *Aboriginal Cultural Heritage Act 2003*. The study area falls within the external boundary of the registered Native Title application of the Port Curtis Coral Coast (PCCC) native title claimants QC01/29. As no triggers exist that require QRE to undertake a Cultural Heritage Management Plan, pursuant to Part 7 of the Act, a decision was made to enter into an Agreement, in accordance with Section 23(3) of the Act.

In accordance with an existing Memorandum of Understanding (MoU) between the native title claimants of PCCC, availability of people who are the applicant of PCC and therefore can be described as Aboriginal Parties by the Act, and the requirement of Section 23(3) of the Act that an agreement should be with an Aboriginal Party, consultation was commenced with those Aboriginal Parties who specifically speak for Curtis Island, and who would be available to attend

discussions. The Aboriginal Parties agreed to provide field representatives to undertake the assessment to determine whether there are any significant Aboriginal areas or objects as defined by the Act (refer to **Attachment 11 – Cultural Heritage Assessment**).

3.3 (j) Other important or unique values of the environment

The Curtis Island National Park (formerly part of the Monte Christo Station) surrounds the site and protects a variety of vegetation types including open forest, grasslands and wetlands.

3.3 (k) Tenure of the action area (eg freehold, leasehold)

The tenure of the site is leasehold – refer to section to 1.6.

3.3 (l) Existing land/marine uses of area

Until recently, the whole of the Monte Christo Cattle Station, comprising of freehold and leasehold lands, was used as a cattle property. The property was used for cattle grazing purposes for over 150 years and was managed on the basis of limiting herd numbers to a level, which was sustainable even in poor seasonal conditions. As part of a vegetation offset agreement, most of the original holding will become protected land under either National or Conservation park tenure. The principal structures on that land include the homestead complex, cattle yards and cattle fencing (those huts are on land surrendered for National Park). There are no structures on that part of the island, which forms the resort site. On 10 October 2015 cattle grazing ceased on the Island.

3.3 (m) Any proposed land/marine uses of area

Water based activities like sailing, kayaking and paddle boarding are proposed from the front of the resort site whilst motorised boating activities will be from the South End and Hobble Gully. Marine access to the site is proposed via the existing barge landing area at Hobble Gully.

4 Environmental outcomes

The property is considered to be in moderate ecological condition with parts of the site previously cleared and used for historic grazing purposes. The Fauna Survey and Habitat Assessment found that feral pigs, feral horses (brumbies), wild dogs, feral cats, foxes and stray stock are considered to be the main feral species impacting on conservation values on Curtis Island (refer to **Attachment 14 – Fauna Survey and Habitat Assessment**).

It is considered that the project will protect the Outstanding Universal Vale of the Great Barrier Reef and will assist in creating new habitat areas for matters of national environmental significance, as demonstrated by the following:

- **Protected Area Estate** - the project has significantly increased the Protected Area estate on Curtis Island, with some 32,890 hectares of the original Monte Christo Station surrendered for National Park and Conservation Park, including a Vegetation Offset area of 18,950 hectares. A large portion of the site is subject to the provisions of a Nature Refuge Agreement, the purpose of which is to protect biological diversity, including native flora and fauna and their habitats;

- **Cessation of Cattle Grazing Operations** - in addition to surrendering land the proponent also surrendered grazing rights over the Conservation Park lease area and the Vegetation offset area. Also, as of 10 October 2015 all cattle have been removed from the Island. As such, not only has the proponent surrendered a significant area of land but also a cattle station that has operated for over 150 years. At its peak Monte Christo would have had approximately 2,000 head of cattle with attenuate impacts;

- **Water Quality** – the project has been designed to avoid impacts on the Great Barrier Reef and will adopt best practice stormwater management measures; and

- **Biodiversity** – All significant weeds and pest species within the construction area are proposed to be treated and/or removed from the property. Significant site revegetation works are proposed to enhance habitat opportunities (refer to **Attachment 13 – Vegetation Management Plan** and **Attachment 16 – Fauna Habitat Management Plan**).

The proposal comes at the end of process which has resulted in significant environmental benefits associated with the increase in the protected area estate on Curtis Island.

5 Measures to avoid or reduce impacts

Avoidance
The site selection and design process has resulted in a reduction in the scale and intensity of the proposed resort from the previous development concepts (1990 and 1995) and has sought to avoid impacts on matters of national environmental significance by:

- dedicating areas of high conservation value to the State for National Park and Conservation Park;
- locating development outside of important habitats e.g. wetlands;
- ensuring activities are small in scale and intensity with no dredging, no marinas and no golf course proposed;
- providing setback distances to the coastal foredunes; and
- ensuring best practice stormwater management.

Reduction of Impacts
Measures to reduce potential environmental impacts have identified in site investigations and these have been embodied in the Development Consent and Operational Work Approval (refer to **Attachment 3 – Development Approvals and Approved Plans**), which includes requirements for:

- Construction Environmental Management Plan (Development Consent – Condition 30);
- Weed control and management (Development Consent – conditions 8 and 16);
- Pest species management (Development Consent – condition 16);
- Revegetation (Development Consent – condition 24);
- Vegetation Protection (Development Consent – condition 23);
- Minimisation of visual impact (Development Consent – conditions 26 and condition 39);
- Protection of cultural heritage (Development Consent – condition 9); and
- Erosion and Sediment Control (Operational Work – conditions 18 and 20).

These conditions and other proposed environmental measures are summarised in the following **Table 5.1.**

Table 5-1. Summary of environmental management measures.

Potential Value and Impact	Environmental Measure	Responsibility	Timing
World Heritage			
General	A Construction Environmental Management Plan will be prepared for the project. The construction contractor will ensure that all workers are trained in the requirements of the Construction Environmental Management Plan and ensure that the project does not have a negative impact on the World Heritage Values of the Great Barrier Reef. The Construction Environmental Management Plan (refer to Condition 30 of **Attachment 3 – Development Approval and Approved Plans – Development Consent**) shall address: (a) soil erosion and sediment control measures; (b) water quality; (c) vegetation preservation and native fauna habitat; (d) weed management; (e) air quality; (f) noise; (g) waste management; (h) incident management; (i) monitoring and reporting; and (j) integration with the Cultural Heritage Management Plan.	Construction contractor	Construction
Flora			
Weeds	Implement weed control measures to prevent the introduction of plants other than native plants onto the Island by construction vehicles, resort guests, resort vehicles and service providers (refer to **Attachment 3 – Development Approval and Approved Plans – Development Consent – Condition 8**).	Site Manager and Operator	Construction and Operation
General	Implement the Vegetation Management Plan to successfully manage the sites vegetation during the construction phase of development (refer **Attachment 13 – Vegetation Management Plan).**	Site Manager	Construction
	Implement the Rehabilitation Strategies as per the approved U Plan Landscape Plans (refer to **Attachment 3 – Development Approval and Approved Plans – Development Consent – Condition 24**).	Site Manager and Operator	Construction and Operation
Fauna			
General	Implement the Fauna Habitat Management Plan (refer **Attachment 16 – Fauna Habitat Management Plan).**	Site Manager	Construction
Turtles	Ensure lighting is located, directed, shielded and specified so as to not spill onto the beach (refer **Attachment 15 – Lighting Design**).	Site Manager and Operator	Construction and Operation
Cultural Heritage			
General	Implement the approved Cultural Heritage Management Plan for the Development (refer to **Attachment 11 – Cultural Heritage Assessment**).	Site Manager and Operator	Construction and Operation
Visual			
General	Implement the approved plans which requires natural colours and the height and location of buildings and structures to not protrude above any horizon or ridgeline when viewed from any public place readily accessible to the public (refer to **Attachment 3 – Development Approval and Approved Plans – Development Consent – Conditions 26 and 39**).	Site Manager	Construction

It is considered that the above requirements provide a comprehensive management framework to ensure that the construction and operation of the resort will mitigate any potential environmental impacts and not result in any significant impacts on matters of national environmental significance.

6 Conclusion on the likelihood of significant impacts

6.1 Do you THINK your proposed action is a controlled action?

X	No, complete section 5.2
	Yes, complete section 5.3

6.2 Proposed action IS NOT a controlled action.

The site is part of the former Monte Christo Station which operated as a cattle property for almost 150 years. The proposed Turtle Street Beach Resort has been subject to rigorous State and Local Government assessment process which commenced in 1989. Since this time the proponent has been involved in a complex approvals and negotiation process with Commonwealth, State and Local Government agencies which has resulted in a Development Permit (Operational Works) and Planning and Environment Court Consent Order for the proposed tourist resort. Through this process a total of 32,890 ha (13,940 ha as a direct trade-off to the State Government for the resort lease) and 18,950 ha as a subsequent sale to provide vegetation offset land for the LNG projects, ensuring the long-term protection of these areas for future generations.

Further to the above, the eco-sensitive resort is proposed on a relatively small part of the former Monte Christo Station and has been designed to protect matters of national environmental significance and the Outstanding Universal Value of the Great Barrier Reef World Heritage Area, as demonstrated by the following:

Criterion (vii): The GBR is of superlative natural beauty above and below the water, and provides some of the most spectacular scenery on earth. It is one of a few living structures visible from space, appearing as a complex string of reefal structures along Australia's northeast coast.

- The project has been designed to avoid significant visual impacts on the Great Barrier Reef World Heritage Area by ensuring appropriate setback distances to the shoreline and by ensuring that buildings are predominantly below the height of the existing mature trees on the site. The design, colour palette and construction materials of buildings and infrastructure will also compliment the natural environment (refer to **Attachment 3 – Development Approvals and Approved Plans**).

Criterion (viii): The GBR, extending 2,000 kilometres along Queensland's coast, is a globally outstanding example of an ecosystem that has evolved over millennia. The area has been exposed and flooded by at least four glacial and interglacial cycles, and over the past 15,000 years reefs have grown on the continental shelf *AND* ***Criterion (ix): The globally significant diversity of reef and island morphologies reflects ongoing geomorphic, oceanographic and environmental processes. The complex cross-shelf, longshore and vertical connectivity is influenced by dynamic oceanic currents and ongoing ecological processes such as upwellings, larval dispersal and migration.***

- The project has been designed to avoid significant impacts on the oceanographic and coastal processes of the Great Barrier Reef by ensuring no dredging, managing access to the foreshore and by adopting best practice stormwater management. Conveyance of flows from new areas of development will be done in a way that is sympathetic to the existing drainage characteristics of the island and receiving environment. New drainage networks will also feature elements to remove sediments and nutrients prior to discharge. Such works will be undertaken in accordance with the conditions of the Operational Works approval issued by Council and the Consent Order.

Criterion (x): The enormous size and diversity of the GBR means it is one of the richest and most complex natural ecosystems on earth, and one of the most significant for biodiversity conservation. The amazing diversity supports tens of thousands of marine and terrestrial species, many of which are of global conservation significance.

- *Vegetation* – the project has been assessed against the significant impact guidelines for EPBC Act listed threatened ecological communities and species. The results of this assessment indicate that it is unlikely that the proposed resort development will have a significant impact on matters of national environmental significance (refer to **Attachment 9 – EPBC Act Assessment**). Further, limited clearing is required to facilitate development with the dedication/surrender of key areas of environmental significance and previous clearing activities undertaken in 2006 in accordance with State Government approvals (refer to **Attachment 9 – EPBC Act Assessment**). A Vegetation Management Plan has also been prepared by Logic Environmental (2015) to ensure the successful management of the site's vegetation during the operational works phase of the development (refer to **Attachment 13 – Vegetation Management Plan**); and

- *Fauna* - the project has been assessed against the significant impact guidelines for EPBC Act listed threatened species and migratory species which are known or likely to occur within the vicinity of the resort development. The results of this assessment indicate several threatened species potentially exist within/around the site. It should be noted however that none of these species (including the Yellow Chat or Turtles) were observed during the Fauna Survey and Habitat Assessment (refer to **Attachment 14 – Fauna Survey and Habitat Assessment**). Suitable habitat for the Yellow chat is absent from the resort footprint and the beach fronting the resort site is not a recognised turtle rookery. Notwithstanding this lighting will be located, directed, shielded and specified so as to not spill onto the beach (refer to **Attachment 15 - Lighting Design**). A Fauna Management Plan has also been prepared by Logic Environmental (2015) (refer to **Attachment 16 – Fauna Habitat Management Plan**).

Accordingly, as the project will not have a significant impact on any matter of national environmental significance and given the comprehensive approval framework in place governing the responsible and sensitive development of the site, the proponent submits that the proposed development is not a controlled action under the EPBC Act.

6.3 Proposed action IS a controlled action

	Matters likely to be impacted
	World Heritage values (sections 12 and 15A)
	National Heritage places (sections 15B and 15C)
	Wetlands of international importance (sections 16 and 17B)
	Listed threatened species and communities (sections 18 and 18A)
	Listed migratory species (sections 20 and 20A)
	Protection of the environment from nuclear actions (sections 21 and 22A)
	Commonwealth marine environment (sections 23 and 24A)
	Great Barrier Reef Marine Park (sections 24B and 24C)
	A water resource, in relation to coal seam gas development and large coal mining development (sections 24D and 24E)
	Protection of the environment from actions involving Commonwealth land (sections 26 and 27A)
	Protection of the environment from Commonwealth actions (section 28)
	Commonwealth Heritage places overseas (sections 27B and 27C)

7 Environmental record of the responsible party

		Yes	No
7.1	**Does the party taking the action have a satisfactory record of responsible environmental management?** **Provide details** QRE has a proven record of responsible environmental management of the Curtis Island and has surrendered approximately 32,890 hectares of the original Monte Christo holding has been dedicated to the State for National Park and Conservation Park, including a Vegetation Off-Set area of 18,950 hectares.	X	
7.2	**Has either (a) the party proposing to take the action, or (b) if a permit has been applied for in relation to the action, the person making the application - ever been subject to any proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources?** **If yes, provide details**		X
7.3	**If the party taking the action is a corporation, will the action be taken in accordance with the corporation's environmental policy and planning framework?** **If yes, provide details of environmental policy and planning framework**		X
7.4	**Has the party taking the action previously referred an action under the EPBC Act, or been responsible for undertaking an action referred under the EPBC Act?** **Provide name of proposal and EPBC reference number (if known)**		X

8 Information sources and attachments

(For the information provided above)

8.1 References

Cardno (2015) *EPBC Act Assessment,* Brisbane.

Department of the Environment (DoE), (Accessed 2 March 2015), *EPBC Act Protected Matters Report.* http://www.environment.gov.au/epbc/pmst/

Department of the Environment (May 2014) *EPBC Act Referral Guidelines for the Outstanding Universal Value of the Great Barrier Reef World Heritage Area*.

Department of the Environment (DoE), *Great Barrier Reef Marine Park Act 1975*, Commonwealth of Australia. Accessed 9 March 2015. Available at: www.comlaw.gov.au

Department of the Environment (DoE), (Accessed 9 March 2015). *Littoral Rainforest and Coastal Vine Thickets of Eastern Australia, Species Profiles and Threats Database*, Available from: http://www.environment.gov.au/cgi-bin/sprat/public/publicshowcommunity.pl?id=76

Department of Sustainability, Environment, Water, Population and Communities (2013) *Actions on, or impacting upon, Commonwealth land, and actions by Commonwealth agencies – Significant impact guidelines 1.2. EPBC Act* - http://www.environment.gov.au/system/files/resources/a0af2153-29dc-453c-8f04-3de35bca5264/files/commonwealth-guidelines_1.pdf

Logic Environmental (July 2015), Turtle Street Resort Curtis Island – *Fauna Management Plan*, Brisbane.

Logic Environmental (July 2015), Turtle Street Resort Curtis Island – *Vegetation Management Plan*, Brisbane.

Native Foresters (July 2015), *Fauna Survey and Habitat Assessment (Winter Survey),* Tuchekoi.

Queensland Government Legislation (March 2015). Available at: www.legislation.qld.gov.au.

8.2 Reliability and date of information

The source of information is from detailed desktop assessments, site investigations and local knowledge of the site and area. All reports were prepared by suitably qualified people and are considered accurate and reliable.

8.3 Attachments

		✓ attached	Title of attachment(s)
You must attach	figures, maps or aerial photographs showing the project locality (section 1)	✓	Figure 1 – Regional Context Figure 2 -Site Location
	GIS file delineating the boundary of the referral area (section 1)		
	figures, maps or aerial photographs showing the location of the project in respect to any matters of national environmental significance or important features of the environments (section 3)	✓	Figure 2 -Site Location
If relevant, attach	copies of any state or local government approvals and consent conditions (section 2.5)	✓	Refer to **Attachment 3 – Development Approvals and Approved Plans**
	copies of any completed assessments to meet state or local government approvals and outcomes of public consultations, if available (section 2.6)	✓	Refer to **Attachments 1 – 16**
	copies of any flora and fauna investigations and surveys (section 3)	✓	Refer to **Attachments 9 and 14**
	technical reports relevant to the assessment of impacts on protected matters that support the arguments and conclusions in the referral (section 3 and 4)	✓	Refer to **Attachments 9 and 14**
	report(s) on any public consultations undertaken, including with Indigenous stakeholders (section 3)	✓	Refer to **Attachment 11**

9 Contacts, signatures and declarations

Project title: Turtle Street Beach Resort, Curtis Island

9.1 Person proposing to take action

1. Name and Title:	Tim Reigel, Managing Director
2. Organisation (if applicable):	QRE Pty Ltd Organisation name should match entity identified in ABN/ACN search
3. EPBC Referral Number (if known):	N/A
4: ACN / ABN (if applicable):	ABN 74 067 532 601
5. Postal address	C/- Level 11, 307 Queen St, BRISBANE QLD 4000
6. Telephone:	0011 1 818 766 1524
7. Email:	qre@sbcglobal.net
8. Name of designated proponent (if not the same person at item 1 above and if applicable):	N/A
9. ACN/ABN of designated proponent (if not the same person named at item 1 above):	N/A

COMPLETE THIS SECTION ONLY IF YOU QUALIFY FOR EXEMPTION FROM THE FEE(S) THAT WOULD OTHERWISE BE PAYABLE

I qualify for exemption from fees under section 520(4C)(e)(v) of the EPBC Act because I am:

□ an individual; OR

□ a small business entity (within the meaning given by section 328-110 (other than subsection 328-119(4)) of the *Income Tax Assessment Act 1997*); OR

□ not applicable.

If you are small business entity you must provide the Date/Income Year that you became a small business entity:

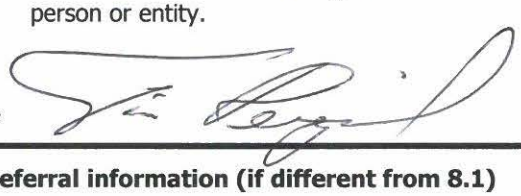
Note: You must advise the Department within 10 business days if you cease to be a small business entity. Failure to notify the Secretary of this is an offence punishable on conviction by a fine (regulation 5.23B(3) *Environment Protection and Biodiversity Conservation Regulations 2000* (Cth)).

COMPLETE THIS SECTION ONLY IF YOU WOULD LIKE TO APPLY FOR A WAIVER

I would like to apply for a waiver of full or partial fees under Schedule 1, 5.21A of the EPBC Regulations. Under sub regulation 5.21A(5), you must include information about the applicant (if not you) the grounds on which the waiver is sought and the reasons why it should be made:	□	not applicable.

Declaration

I declare that to the best of my knowledge the information I have given on, or attached to this form is complete, current and correct.
I understand that giving false or misleading information is a serious offence.
I agree to be the proponent for this action.
I declare that I am not taking the action on behalf of or for the benefit of any other person or entity.

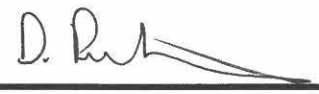
Signature  Date 13-10-15

9.2 Person preparing the referral information (if different from 8.1)

Name	David Perkins
Title	Senior Principal
Organisation	Cardno (QLD) Pty Ltd
	Organisation name should match entity identified in ABN/ACN search
ACN / ABN (if applicable)	57 051 074 992
Postal address	Level 11, 515 St Paul's Terrace, Fortitude Valley QLD 4006
Telephone	07 3310 2354
Email	David.Perkins@cardno.com.au

Declaration

I declare that to the best of my knowledge the information I have given on, or attached to this form is complete, current and correct.
I understand that giving false or misleading information is a serious offence.

Signature  Date 13.10.15

Appendix 1 – Latitude and Longitude

Lot 11 CP860464

ID	X	Y	Lat_DD	Long_DD	Lat_DMS	Long_DMS
1	317477.77	7380546.48	-23.675571	151.210141	23° 40' 32.05" S	151° 12' 36.50" E
2	317495.43	7380606.06	-23.675035	151.210321	23° 40' 30.12" S	151° 12' 37.15" E
3	317610.55	7380994.08	-23.671545	151.211497	23° 40' 17.56" S	151° 12' 41.38" E
4	317741.16	7380943.71	-23.672014	151.212771	23° 40' 19.25" S	151° 12' 45.97" E
5	318021.18	7380868.23	-23.672727	151.215507	23° 40' 21.81" S	151° 12' 55.82" E
6	318240.47	7380821.26	-23.673176	151.217651	23° 40' 23.43" S	151° 13' 03.54" E
7	318390.13	7380779.7	-23.673568	151.219113	23° 40' 24.84" S	151° 13' 08.80" E
8	318372.69	7380714.8	-23.674152	151.218934	23° 40' 26.94" S	151° 13' 08.16" E
9	318369.2	7380702.83	-23.67426	151.218898	23° 40' 27.33" S	151° 13' 08.03" E
10	318355.78	7380680.3	-23.674462	151.218764	23° 40' 28.06" S	151° 13' 07.55" E
11	318355.78	7380648.82	-23.674746	151.21876	23° 40' 29.08" S	151° 13' 07.53" E
12	318354.48	7380634.42	-23.674876	151.218746	23° 40' 29.55" S	151° 13' 07.48" E
13	318346.28	7380624.11	-23.674968	151.218664	23° 40' 29.88" S	151° 13' 07.19" E
14	318302.61	7380599.9	-23.675182	151.218233	23° 40' 30.65" S	151° 13' 05.63" E
15	318269.04	7380568.67	-23.67546	151.2179	23° 40' 31.65" S	151° 13' 04.43" E
16	318260.77	7380536.84	-23.675746	151.217815	23° 40' 32.68" S	151° 13' 04.13" E
17	318276.53	7380515.75	-23.675939	151.217967	23° 40' 33.38" S	151° 13' 04.68" E
18	318295.22	7380495.78	-23.676121	151.218148	23° 40' 34.03" S	151° 13' 05.33" E
19	318312.1	7380472.86	-23.67633	151.21831	23° 40' 34.78" S	151° 13' 05.91" E
20	318320.85	7380447.95	-23.676556	151.218393	23° 40' 35.60" S	151° 13' 06.21" E
21	318317.02	7380408.06	-23.676915	151.218351	23° 40' 36.89" S	151° 13' 06.06" E
22	318312.04	7380386.87	-23.677106	151.218299	23° 40' 37.58" S	151° 13' 05.87" E
23	318301.49	7380360.76	-23.677341	151.218193	23° 40' 38.42" S	151° 13' 05.49" E
24	318297.2	7380334.38	-23.677578	151.218147	23° 40' 39.28" S	151° 13' 05.32" E
25	318283.21	7380306.9	-23.677825	151.218007	23° 40' 40.16" S	151° 13' 04.82" E
26	318282.6	7380276.67	-23.678098	151.217997	23° 40' 41.15" S	151° 13' 04.78" E
27	318296.83	7380254.82	-23.678297	151.218134	23° 40' 41.86" S	151° 13' 05.28" E
28	318301.21	7380230.3	-23.678518	151.218174	23° 40' 42.66" S	151° 13' 05.42" E
29	318302.25	7380179.33	-23.678979	151.218178	23° 40' 44.32" S	151° 13' 05.44" E
30	318338.39	7380135.66	-23.679377	151.218527	23° 40' 45.75" S	151° 13' 06.69" E
31	318345.82	7380113.28	-23.67958	151.218597	23° 40' 46.48" S	151° 13' 06.94" E
32	318353.38	7380069.88	-23.679973	151.218666	23° 40' 47.90" S	151° 13' 07.19" E
33	318399.54	7380001.79	-23.680593	151.21911	23° 40' 50.13" S	151° 13' 08.79" E
34	318415.69	7379961.75	-23.680956	151.219263	23° 40' 51.44" S	151° 13' 09.34" E
35	318440.63	7379885.05	-23.681651	151.219498	23° 40' 53.94" S	151° 13' 10.19" E
36	318467.7	7379864.26	-23.681842	151.219761	23° 40' 54.63" S	151° 13' 11.13" E
37	318500.44	7379794.58	-23.682475	151.220074	23° 40' 56.91" S	151° 13' 12.26" E
38	318524.65	7379761.68	-23.682774	151.220307	23° 40' 57.98" S	151° 13' 13.10" E
39	318518.69	7379700.68	-23.683324	151.220241	23° 40' 59.96" S	151° 13' 12.86" E
40	318526.46	7379672.83	-23.683577	151.220314	23° 41' 00.87" S	151° 13' 13.13" E
41	318534.96	7379665.88	-23.683641	151.220396	23° 41' 01.10" S	151° 13' 13.42" E
42	318504.75	7379649.32	-23.683787	151.220098	23° 41' 01.63" S	151° 13' 12.35" E
43	318145.57	7379646.13	-23.683775	151.216577	23° 41' 01.59" S	151° 12' 59.67" E
44	317981.82	7379693.75	-23.683327	151.214977	23° 40' 59.97" S	151° 12' 53.91" E
45	317867.7	7379788.99	-23.682454	151.21387	23° 40' 56.83" S	151° 12' 49.93" E
46	317867.91	7380083.3	-23.679797	151.213908	23° 40' 47.26" S	151° 12' 50.06" E

ID	X	Y	Lat_DD	Long_DD	Lat_DMS	Long_DMS
47	317456.32	7380474.18	-23.676221	151.209922	23° 40' 34.39" S	151° 12' 35.71" E

Lot 8 CP860464

ID	X	Y	Lat_DD	Long_DD	Lat_DMS	Long_DMS
1	318790.65	7379327.77	-23.686722	151.222862	23° 41' 12.19" S	151° 13' 22.30" E
2	318760.55	7379332.3	-23.686678	151.222567	23° 41' 12.04" S	151° 13' 21.24" E
3	318755.2	7379393.21	-23.686127	151.222522	23° 41' 10.05" S	151° 13' 21.07" E
4	318733.13	7379437.32	-23.685726	151.222311	23° 41' 08.61" S	151° 13' 20.31" E
5	318708.24	7379466.5	-23.68546	151.222071	23° 41' 07.65" S	151° 13' 19.45" E
6	318679.07	7379502.79	-23.685129	151.221789	23° 41' 06.46" S	151° 13' 18.44" E
7	318652.02	7379546.2	-23.684734	151.221529	23° 41' 05.04" S	151° 13' 17.50" E
8	318634.22	7379588.89	-23.684347	151.22136	23° 41' 03.64" S	151° 13' 16.89" E
9	318610.04	7379620.2	-23.684061	151.221127	23° 41' 02.61" S	151° 13' 16.05" E
10	318580.88	7379649.37	-23.683795	151.220844	23° 41' 01.66" S	151° 13' 15.03" E
11	318545.86	7379677.7	-23.683535	151.220505	23° 41' 00.72" S	151° 13' 13.81" E
12	318538.94	7379702.44	-23.683311	151.22044	23° 40' 59.91" S	151° 13' 13.58" E
13	318545.33	7379767.37	-23.682725	151.22051	23° 40' 57.81" S	151° 13' 13.83" E
14	318517.68	7379804.86	-23.682384	151.220244	23° 40' 56.58" S	151° 13' 12.87" E
15	318483.73	7379877.17	-23.681727	151.21992	23° 40' 54.21" S	151° 13' 11.71" E
16	318457.74	7379897.13	-23.681544	151.219668	23° 40' 53.55" S	151° 13' 10.80" E
17	318434.52	7379968.59	-23.680896	151.219449	23° 40' 51.22" S	151° 13' 10.01" E
18	318417.31	7380011.25	-23.680509	151.219285	23° 40' 49.83" S	151° 13' 09.42" E
19	318372.34	7380077.55	-23.679906	151.218852	23° 40' 47.66" S	151° 13' 07.86" E
20	318365.3	7380118.18	-23.679538	151.218788	23° 40' 46.33" S	151° 13' 07.63" E
21	318356.18	7380145.52	-23.67929	151.218702	23° 40' 45.44" S	151° 13' 07.32" E
22	318322.1	7380186.71	-23.678914	151.218373	23° 40' 44.09" S	151° 13' 06.14" E
23	318321.17	7380232.27	-23.678503	151.21837	23° 40' 42.61" S	151° 13' 06.13" E
24	318315.79	7380262.33	-23.678231	151.218321	23° 40' 41.63" S	151° 13' 05.95" E
25	318302.73	7380282.43	-23.678048	151.218195	23° 40' 40.97" S	151° 13' 05.50" E
26	318303.11	7380301.92	-23.677872	151.218201	23° 40' 40.33" S	151° 13' 05.52" E
27	318316.41	7380328.08	-23.677637	151.218335	23° 40' 39.49" S	151° 13' 06.00" E
28	318320.88	7380355.32	-23.677392	151.218382	23° 40' 38.61" S	151° 13' 06.17" E
29	318331.17	7380380.82	-23.677163	151.218486	23° 40' 37.78" S	151° 13' 06.54" E
30	318336.79	7380404.8	-23.676947	151.218544	23° 40' 37.00" S	151° 13' 06.75" E
31	318341.21	7380450.43	-23.676536	151.218593	23° 40' 35.52" S	151° 13' 06.93" E
32	318329.97	7380482.32	-23.676246	151.218487	23° 40' 34.48" S	151° 13' 06.55" E
33	318310.63	7380508.59	-23.676007	151.2183	23° 40' 33.62" S	151° 13' 05.87" E
34	318291.9	7380528.61	-23.675824	151.218119	23° 40' 32.96" S	151° 13' 05.22" E
35	318282.53	7380541.11	-23.67571	151.218029	23° 40' 32.55" S	151° 13' 04.90" E
36	318286.91	7380557.99	-23.675558	151.218074	23° 40' 32.00" S	151° 13' 05.06" E
37	318314.46	7380583.59	-23.67533	151.218347	23° 40' 31.18" S	151° 13' 06.04" E
38	318359.47	7380608.55	-23.67511	151.218791	23° 40' 30.39" S	151° 13' 07.64" E
39	318373.86	7380626.68	-23.674948	151.218935	23° 40' 29.81" S	151° 13' 08.16" E
40	318375.76	7380647.92	-23.674756	151.218956	23° 40' 29.12" S	151° 13' 08.24" E
41	318375.8	7380674.8	-23.674514	151.218959	23° 40' 28.25" S	151° 13' 08.25" E
42	318387.66	7380694.78	-23.674335	151.219078	23° 40' 27.60" S	151° 13' 08.68" E
43	318393.34	7380714.17	-23.67416	151.219136	23° 40' 26.97" S	151° 13' 08.88" E
44	318390.13	7380779.7	-23.673568	151.219113	23° 40' 24.84" S	151° 13' 08.80" E

ID	X	Y	Lat_DD	Long_DD	Lat_DMS	Long_DMS
45	318240.47	7380821.26	-23.673176	151.217651	23° 40' 23.43" S	151° 13' 03.54" E
46	318021.18	7380868.23	-23.672727	151.215507	23° 40' 21.81" S	151° 12' 55.82" E
47	317741.16	7380943.71	-23.672014	151.212771	23° 40' 19.25" S	151° 12' 45.97" E
48	317610.55	7380994.08	-23.671545	151.211497	23° 40' 17.56" S	151° 12' 41.38" E
49	318603.81	7381532.89	-23.666792	151.221299	23° 40' 00.45" S	151° 13' 16.67" E
50	319671.9	7379563.93	-23.684689	151.23153	23° 41' 04.88" S	151° 13' 53.50" E
51	320045.49	7379494.54	-23.685357	151.235184	23° 41' 07.28" S	151° 14' 06.66" E
52	320327.46	7379597.04	-23.684463	151.23796	23° 41' 04.06" S	151° 14' 16.65" E
53	320622.43	7379651.59	-23.684003	151.240858	23° 41' 02.41" S	151° 14' 27.08" E
54	321082.19	7379667.46	-23.683911	151.245368	23° 41' 02.07" S	151° 14' 43.32" E
55	321374.94	7379819.74	-23.682569	151.248256	23° 40' 57.24" S	151° 14' 53.72" E
56	321592.63	7380026.16	-23.680729	151.250415	23° 40' 50.62" S	151° 15' 01.49" E
57	321839.94	7380414.02	-23.677255	151.252886	23° 40' 38.11" S	151° 15' 10.38" E
58	322022.64	7380561.84	-23.675941	151.254694	23° 40' 33.38" S	151° 15' 16.89" E
59	322249.66	7380622.58	-23.675417	151.256927	23° 40' 31.50" S	151° 15' 24.93" E
60	323145.05	7381028.92	-23.671847	151.265753	23° 40' 18.64" S	151° 15' 56.71" E
61	323157.41	7381068.97	-23.671487	151.265879	23° 40' 17.35" S	151° 15' 57.16" E
62	323161.78	7381102.45	-23.671185	151.265926	23° 40' 16.26" S	151° 15' 57.33" E
63	323174.18	7381143.22	-23.670818	151.266052	23° 40' 14.94" S	151° 15' 57.78" E
64	323170.52	7381181.08	-23.670476	151.266021	23° 40' 13.71" S	151° 15' 57.67" E
65	323174.16	7381189.81	-23.670398	151.266057	23° 40' 13.43" S	151° 15' 57.80" E
66	323205.46	7381186.18	-23.670434	151.266364	23° 40' 13.56" S	151° 15' 58.91" E
67	323225.85	7381191.27	-23.67039	151.266564	23° 40' 13.40" S	151° 15' 59.63" E
68	323228.02	7381206.56	-23.670252	151.266587	23° 40' 12.90" S	151° 15' 59.71" E
69	323216.37	7381225.48	-23.67008	151.266475	23° 40' 12.28" S	151° 15' 59.31" E
70	323219.3	7381237.86	-23.669969	151.266506	23° 40' 11.88" S	151° 15' 59.42" E
71	323241.86	7381240.05	-23.669952	151.266727	23° 40' 11.82" S	151° 16' 00.21" E
72	323257.88	7381242.23	-23.669934	151.266884	23° 40' 11.76" S	151° 16' 00.78" E
73	323263.3	7381244.22	-23.669916	151.266938	23° 40' 11.69" S	151° 16' 00.97" E
74	323267.28	7381248.67	-23.669877	151.266977	23° 40' 11.55" S	151° 16' 01.11" E
75	323265.64	7381254.04	-23.669828	151.266962	23° 40' 11.38" S	151° 16' 01.06" E
76	323250.22	7381259.18	-23.66978	151.266811	23° 40' 11.20" S	151° 16' 00.51" E
77	323231.66	7381263.35	-23.66974	151.26663	23° 40' 11.06" S	151° 15' 59.86" E
78	323213.49	7381272.08	-23.669659	151.266453	23° 40' 10.77" S	151° 15' 59.23" E
79	323212.56	7381279.11	-23.669596	151.266445	23° 40' 10.54" S	151° 15' 59.20" E
80	323213.33	7381288.02	-23.669515	151.266453	23° 40' 10.25" S	151° 15' 59.23" E
81	323221.66	7381294.22	-23.66946	151.266535	23° 40' 10.05" S	151° 15' 59.52" E
82	323230.41	7381302.95	-23.669382	151.266622	23° 40' 09.77" S	151° 15' 59.83" E
83	323234.26	7381312.44	-23.669297	151.266661	23° 40' 09.46" S	151° 15' 59.97" E
84	323230.19	7381324.25	-23.66919	151.266623	23° 40' 09.08" S	151° 15' 59.84" E
85	323222.26	7381332.98	-23.66911	151.266546	23° 40' 08.79" S	151° 15' 59.56" E
86	323208.51	7381336.85	-23.669074	151.266412	23° 40' 08.66" S	151° 15' 59.08" E
87	323198.21	7381338.21	-23.669061	151.266311	23° 40' 08.61" S	151° 15' 58.71" E
88	323195.14	7381343.82	-23.66901	151.266281	23° 40' 08.43" S	151° 15' 58.61" E
89	323200.93	7381354.09	-23.668918	151.266339	23° 40' 08.10" S	151° 15' 58.82" E
90	323210.57	7381361.63	-23.668851	151.266435	23° 40' 07.86" S	151° 15' 59.16" E
91	323226.57	7381376.92	-23.668714	151.266593	23° 40' 07.37" S	151° 15' 59.73" E
92	323206.18	7381390.02	-23.668594	151.266395	23° 40' 06.93" S	151° 15' 59.02" E
93	323201.83	7381406.04	-23.668449	151.266354	23° 40' 06.41" S	151° 15' 58.87" E

ID	X	Y	Lat_DD	Long_DD	Lat_DMS	Long_DMS
94	323212.73	7381418.41	-23.668338	151.266463	23° 40' 06.01" S	151° 15' 59.26" E
95	323212.74	7381430.06	-23.668233	151.266464	23° 40' 05.63" S	151° 15' 59.27" E
96	323195.26	7381442.44	-23.668119	151.266294	23° 40' 05.22" S	151° 15' 58.65" E
97	323184.36	7381450.45	-23.668046	151.266188	23° 40' 04.96" S	151° 15' 58.27" E
98	323186.05	7381459.56	-23.667964	151.266206	23° 40' 04.67" S	151° 15' 58.34" E
99	323220.94	7381490.36	-23.667689	151.266552	23° 40' 03.68" S	151° 15' 59.58" E
100	323234.9	7381495.6	-23.667644	151.266689	23° 40' 03.51" S	151° 16' 00.08" E
101	323268.61	7381502.58	-23.667584	151.267021	23° 40' 03.30" S	151° 16' 01.27" E
102	323297.11	7381511.3	-23.667509	151.267301	23° 40' 03.03" S	151° 16' 02.28" E
103	323318.03	7381524.67	-23.66739	151.267508	23° 40' 02.60" S	151° 16' 03.02" E
104	323331.42	7381546.76	-23.667192	151.267641	23° 40' 01.89" S	151° 16' 03.50" E
105	323339.56	7381575.83	-23.666931	151.267725	23° 40' 00.95" S	151° 16' 03.81" E
106	323340.71	7381601.41	-23.6667	151.267739	23° 40' 00.11" S	151° 16' 03.86" E
107	323331.98	7381631.06	-23.666431	151.267657	23° 39' 59.15" S	151° 16' 03.56" E
108	323317.47	7381643.85	-23.666314	151.267516	23° 39' 58.73" S	151° 16' 03.05" E
109	323304.03	7381648.89	-23.666267	151.267385	23° 39' 58.56" S	151° 16' 02.58" E
110	323313.67	7381677.82	-23.666007	151.267483	23° 39' 57.62" S	151° 16' 02.93" E
111	323315.53	7381709.2	-23.665724	151.267505	23° 39' 56.60" S	151° 16' 03.01" E
112	323311.19	7381743.22	-23.665416	151.267467	23° 39' 55.49" S	151° 16' 02.88" E
113	323301.17	7381763.27	-23.665234	151.267371	23° 39' 54.84" S	151° 16' 02.53" E
114	323280.89	7381775.86	-23.665118	151.267173	23° 39' 54.42" S	151° 16' 01.82" E
115	323262.07	7381780.66	-23.665073	151.26699	23° 39' 54.26" S	151° 16' 01.16" E
116	323249.07	7381783.8	-23.665043	151.266862	23° 39' 54.15" S	151° 16' 00.70" E
117	323231.24	7381791.18	-23.664975	151.266689	23° 39' 53.90" S	151° 16' 00.08" E
118	323224.72	7381802.22	-23.664874	151.266626	23° 39' 53.54" S	151° 15' 59.85" E
119	323223.54	7381823.62	-23.664681	151.266617	23° 39' 52.85" S	151° 15' 59.82" E
120	323226.59	7381841.21	-23.664522	151.266649	23° 39' 52.27" S	151° 15' 59.93" E
121	323230.02	7381858.31	-23.664368	151.266685	23° 39' 51.72" S	151° 16' 00.06" E
122	323235.48	7381867.67	-23.664284	151.266739	23° 39' 51.42" S	151° 16' 00.26" E
123	323255.47	7381894.36	-23.664046	151.266938	23° 39' 50.56" S	151° 16' 00.97" E
124	323278.18	7381911.47	-23.663894	151.267163	23° 39' 50.01" S	151° 16' 01.78" E
125	323302.07	7381937.38	-23.663662	151.2674	23° 39' 49.18" S	151° 16' 02.64" E
126	323321.37	7381969.17	-23.663377	151.267593	23° 39' 48.15" S	151° 16' 03.33" E
127	323322.4	7381993.26	-23.66316	151.267606	23° 39' 47.37" S	151° 16' 03.38" E
128	323325.27	7382032.34	-23.662808	151.267639	23° 39' 46.10" S	151° 16' 03.50" E
129	323323.77	7382065.41	-23.662509	151.267628	23° 39' 45.03" S	151° 16' 03.46" E
130	323317.97	7382082.82	-23.662351	151.267573	23° 39' 44.46" S	151° 16' 03.26" E
131	323307.97	7382104.34	-23.662156	151.267478	23° 39' 43.76" S	151° 16' 02.92" E
132	323293.15	7382118.68	-23.662024	151.267334	23° 39' 43.28" S	151° 16' 02.40" E
133	323286.5	7382127.86	-23.661941	151.26727	23° 39' 42.98" S	151° 16' 02.17" E
134	323288.72	7382135.34	-23.661874	151.267293	23° 39' 42.74" S	151° 16' 02.25" E
135	323323.72	7382135.39	-23.661877	151.267636	23° 39' 42.75" S	151° 16' 03.48" E
136	323365.69	7382055.29	-23.662605	151.268038	23° 39' 45.37" S	151° 16' 04.93" E
137	323404.12	7381962.96	-23.663443	151.268404	23° 39' 48.39" S	151° 16' 06.25" E
138	323427.08	7381926.16	-23.663777	151.268624	23° 39' 49.59" S	151° 16' 07.04" E
139	323444.93	7381883.63	-23.664163	151.268794	23° 39' 50.98" S	151° 16' 07.65" E
140	323457.51	7381854.95	-23.664424	151.268914	23° 39' 51.92" S	151° 16' 08.09" E
141	323475.59	7381824.32	-23.664702	151.269088	23° 39' 52.92" S	151° 16' 08.71" E
142	323486.87	7381811.25	-23.664821	151.269197	23° 39' 53.35" S	151° 16' 09.10" E

ID	X	Y	Lat_DD	Long_DD	Lat_DMS	Long_DMS
143	323497.02	7381804.13	-23.664887	151.269295	23° 39' 53.59" S	151° 16' 09.46" E
144	323509.63	7381800.05	-23.664925	151.269418	23° 39' 53.73" S	151° 16' 09.90" E
145	323522.54	7381798.56	-23.66494	151.269545	23° 39' 53.78" S	151° 16' 10.36" E
146	323534.88	7381798.85	-23.664939	151.269666	23° 39' 53.78" S	151° 16' 10.79" E
147	323553.44	7381803.92	-23.664895	151.269848	23° 39' 53.62" S	151° 16' 11.45" E
148	323576.71	7381816.55	-23.664783	151.270078	23° 39' 53.21" S	151° 16' 12.28" E
149	323594.86	7381837.52	-23.664596	151.270258	23° 39' 52.54" S	151° 16' 12.92" E
150	323607.77	7381854.65	-23.664443	151.270387	23° 39' 51.99" S	151° 16' 13.39" E
151	323634.68	7381882.07	-23.664198	151.270654	23° 39' 51.11" S	151° 16' 14.35" E
152	323655.31	7381889.84	-23.66413	151.270857	23° 39' 50.86" S	151° 16' 15.08" E
153	323698.31	7381883.78	-23.66419	151.271278	23° 39' 51.08" S	151° 16' 16.60" E
154	323756.84	7381858.13	-23.664428	151.271848	23° 39' 51.94" S	151° 16' 18.65" E
155	323773.36	7381858.13	-23.664429	151.27201	23° 39' 51.94" S	151° 16' 19.23" E
156	323809.81	7381863.27	-23.664387	151.272368	23° 39' 51.79" S	151° 16' 20.52" E
157	323845.42	7381836.93	-23.664629	151.272714	23° 39' 52.66" S	151° 16' 21.77" E
158	323867.02	7381778.83	-23.665156	151.272919	23° 39' 54.56" S	151° 16' 22.50" E
159	323908.48	7381737.14	-23.665537	151.273321	23° 39' 55.93" S	151° 16' 23.95" E
160	323926.75	7381720.28	-23.665691	151.273498	23° 39' 56.48" S	151° 16' 24.59" E
161	323931.57	7381691.55	-23.665951	151.273541	23° 39' 57.42" S	151° 16' 24.74" E
162	323927.67	7381665.1	-23.666189	151.2735	23° 39' 58.28" S	151° 16' 24.60" E
163	323931.48	7381624.1	-23.66656	151.273533	23° 39' 59.61" S	151° 16' 24.71" E
164	323938.08	7381581.95	-23.666941	151.273592	23° 40' 00.98" S	151° 16' 24.93" E
165	323950.55	7381568.27	-23.667066	151.273713	23° 40' 01.43" S	151° 16' 25.36" E
166	323966.54	7381558.29	-23.667158	151.273868	23° 40' 01.76" S	151° 16' 25.92" E
167	324002.95	7381544.54	-23.667286	151.274224	23° 40' 02.22" S	151° 16' 27.20" E
168	324022.99	7381531.07	-23.66741	151.274419	23° 40' 02.67" S	151° 16' 27.90" E
169	324041.46	7381479.28	-23.667879	151.274593	23° 40' 04.36" S	151° 16' 28.53" E
170	324061.83	7381416.18	-23.668451	151.274786	23° 40' 06.42" S	151° 16' 29.22" E
171	324093.84	7381359.84	-23.668963	151.275093	23° 40' 08.26" S	151° 16' 30.33" E
172	324097.75	7381328.03	-23.669251	151.275127	23° 40' 09.30" S	151° 16' 30.45" E
173	324089.49	7381294.54	-23.669552	151.275042	23° 40' 10.38" S	151° 16' 30.15" E
174	324078.23	7381278.39	-23.669697	151.27493	23° 40' 10.90" S	151° 16' 29.74" E
175	324078.85	7381217.77	-23.670244	151.274929	23° 40' 12.87" S	151° 16' 29.74" E
176	324069.5	7381167.83	-23.670694	151.274831	23° 40' 14.49" S	151° 16' 29.39" E
177	324056.4	7381133.4	-23.671004	151.274699	23° 40' 15.61" S	151° 16' 28.91" E
178	324024.98	7381025.7	-23.671973	151.274378	23° 40' 19.10" S	151° 16' 27.76" E
179	324033.77	7380937.19	-23.672773	151.274454	23° 40' 21.98" S	151° 16' 28.03" E
180	324035.68	7380921.46	-23.672915	151.274471	23° 40' 22.49" S	151° 16' 28.09" E
181	324051.59	7380875.44	-23.673332	151.274621	23° 40' 23.99" S	151° 16' 28.63" E
182	324076.73	7380824.74	-23.673793	151.274862	23° 40' 25.65" S	151° 16' 29.50" E
183	324082.84	7380796.3	-23.67405	151.274918	23° 40' 26.58" S	151° 16' 29.70" E
184	324075.51	7380747.5	-23.67449	151.274841	23° 40' 28.16" S	151° 16' 29.42" E
185	324078.33	7380726.9	-23.674676	151.274866	23° 40' 28.83" S	151° 16' 29.51" E
186	324085.29	7380706.23	-23.674864	151.274931	23° 40' 29.51" S	151° 16' 29.75" E
187	324110.62	7380658.76	-23.675295	151.275174	23° 40' 31.06" S	151° 16' 30.62" E
188	324132.11	7380613.11	-23.675709	151.275379	23° 40' 32.55" S	151° 16' 31.36" E
189	324137.89	7380581.5	-23.675995	151.275432	23° 40' 33.58" S	151° 16' 31.55" E
190	324163.52	7380553.99	-23.676247	151.27568	23° 40' 34.48" S	151° 16' 32.44" E
191	324199.02	7380509.5	-23.676652	151.276023	23° 40' 35.94" S	151° 16' 33.68" E

ID	X	Y	Lat_DD	Long_DD	Lat_DMS	Long_DMS
192	324212.07	7380471.87	-23.676993	151.276147	23° 40' 37.17" S	151° 16' 34.12" E
193	324224.45	7380446.99	-23.677219	151.276265	23° 40' 37.98" S	151° 16' 34.55" E
194	324226.73	7380428.85	-23.677383	151.276285	23° 40' 38.57" S	151° 16' 34.62" E
195	323775.97	7380269.42	-23.678773	151.271847	23° 40' 43.58" S	151° 16' 18.64" E
196	323421.98	7380203.95	-23.679326	151.268369	23° 40' 45.57" S	151° 16' 06.12" E
197	322980.83	7380231.11	-23.679032	151.264048	23° 40' 44.51" S	151° 15' 50.57" E
198	322308.54	7380386.57	-23.677555	151.257476	23° 40' 39.19" S	151° 15' 26.91" E
199	322215.83	7380361.77	-23.677768	151.256564	23° 40' 39.96" S	151° 15' 23.63" E
200	322120.99	7380285.03	-23.678451	151.255625	23° 40' 42.42" S	151° 15' 20.25" E
201	321880.12	7379907.27	-23.681835	151.253219	23° 40' 54.60" S	151° 15' 11.58" E
202	321605.11	7379646.5	-23.684159	151.250491	23° 41' 02.97" S	151° 15' 01.76" E
203	321214.75	7379443.48	-23.685948	151.24664	23° 41' 09.41" S	151° 14' 47.90" E
204	320710.05	7379426.05	-23.686049	151.24169	23° 41' 09.77" S	151° 14' 30.08" E
205	320511.4	7379389.32	-23.686359	151.239738	23° 41' 10.89" S	151° 14' 23.05" E
206	321196.5	7379091.11	-23.689127	151.246419	23° 41' 20.85" S	151° 14' 47.10" E
207	321172.83	7379078.32	-23.68924	151.246185	23° 41' 21.26" S	151° 14' 46.26" E
208	321147.46	7379062.49	-23.68938	151.245935	23° 41' 21.76" S	151° 14' 45.36" E
209	321120.11	7379026.83	-23.689699	151.245662	23° 41' 22.91" S	151° 14' 44.38" E
210	321096.76	7378969.42	-23.690215	151.245426	23° 41' 24.77" S	151° 14' 43.53" E
211	321101.21	7378953.74	-23.690357	151.245468	23° 41' 25.28" S	151° 14' 43.68" E
212	319851.18	7378358.09	-23.695595	151.23314	23° 41' 44.14" S	151° 13' 59.30" E
213	319250.74	7378698.09	-23.692459	151.227295	23° 41' 32.85" S	151° 13' 38.26" E
214	319105.83	7379280.32	-23.687186	151.225946	23° 41' 13.86" S	151° 13' 33.40" E

Hobble Gully Barge Site

ID	X	Y	Lat_DD	Long_DD	Lat_DMS	Long_DMS
1	318793.52	7376844.53	-23.709142	151.222586	23° 42' 32.91" S	151° 13' 21.30" E

Road (Note: The Road Coordinates represent the Eastern Boundary of the Cadastral Parcels 20SP179434 & 22SP179436)

ID	X	Y	Lat_DD	Long_DD	Lat_DMS	Long_DMS
1	318793.52	7376844.53	-23.709142	151.222586	23° 42' 32.91" S	151° 13' 21.30" E
2	318670.97	7376812.02	-23.709421	151.22138	23° 42' 33.91" S	151° 13' 16.96" E
3	318624.06	7376843.38	-23.709133	151.220924	23° 42' 32.87" S	151° 13' 15.32" E
4	318586.53	7376899.79	-23.708619	151.220563	23° 42' 31.02" S	151° 13' 14.02" E
5	318549.31	7376977.82	-23.707911	151.220208	23° 42' 28.47" S	151° 13' 12.74" E
6	318511.09	7377060.21	-23.707163	151.219843	23° 42' 25.78" S	151° 13' 11.43" E
7	318495.29	7377108.89	-23.706721	151.219694	23° 42' 24.19" S	151° 13' 10.89" E
8	318499.76	7377220.45	-23.705715	151.219752	23° 42' 20.57" S	151° 13' 11.10" E
9	318514.4	7377247.76	-23.70547	151.219899	23° 42' 19.69" S	151° 13' 11.63" E
10	318558.14	7377327.01	-23.704759	151.220337	23° 42' 17.13" S	151° 13' 13.21" E
11	318555.95	7377357.55	-23.704483	151.220319	23° 42' 16.13" S	151° 13' 13.14" E
12	318527.02	7377384.4	-23.704237	151.220039	23° 42' 15.25" S	151° 13' 12.14" E
13	318506.04	7377435.32	-23.703775	151.21984	23° 42' 13.59" S	151° 13' 11.42" E
14	318529.47	7377449.8	-23.703647	151.220071	23° 42' 13.12" S	151° 13' 12.25" E
15	318540.3	7377470.43	-23.703462	151.22018	23° 42' 12.46" S	151° 13' 12.64" E
16	318553.29	7377514.93	-23.703062	151.220313	23° 42' 11.02" S	151° 13' 13.12" E

ID	X	Y	Lat_DD	Long_DD	Lat_DMS	Long_DMS
17	318567.62	7377528.63	-23.70294	151.220455	23° 42' 10.58" S	151° 13' 13.63" E
18	318589.27	7377536.16	-23.702874	151.220668	23° 42' 10.34" S	151° 13' 14.40" E
19	318619.77	7377543.08	-23.702815	151.220968	23° 42' 10.13" S	151° 13' 15.48" E
20	318708.67	7377582.8	-23.702467	151.221844	23° 42' 08.88" S	151° 13' 18.63" E
21	318809.42	7377642.31	-23.701941	151.222839	23° 42' 06.98" S	151° 13' 22.22" E
22	318844.04	7377669.21	-23.701702	151.223182	23° 42' 06.12" S	151° 13' 23.45" E
23	318824.44	7377759.79	-23.700882	151.223001	23° 42' 03.17" S	151° 13' 22.80" E
24	318782.32	7377781.34	-23.700683	151.222591	23° 42' 02.45" S	151° 13' 21.32" E
25	318770.89	7377796.87	-23.700541	151.222481	23° 42' 01.94" S	151° 13' 20.93" E
26	318622.33	7377846	-23.700081	151.22103	23° 42' 00.29" S	151° 13' 15.70" E
27	318628.57	7377902.5	-23.699571	151.221098	23° 41' 58.45" S	151° 13' 15.95" E
28	318630.71	7378010.35	-23.698598	151.221132	23° 41' 54.95" S	151° 13' 16.07" E
29	318625.79	7378060.25	-23.698147	151.22109	23° 41' 53.32" S	151° 13' 15.92" E
30	318574.36	7378102.93	-23.697756	151.220591	23° 41' 51.92" S	151° 13' 14.12" E
31	318557.5	7378153.84	-23.697294	151.220432	23° 41' 50.25" S	151° 13' 13.55" E
32	318513.7	7378212.11	-23.696763	151.22001	23° 41' 48.34" S	151° 13' 12.03" E
33	318507.79	7378241.88	-23.696494	151.219956	23° 41' 47.37" S	151° 13' 11.84" E
34	318512.35	7378306.19	-23.695914	151.220008	23° 41' 45.29" S	151° 13' 12.02" E
35	318516.33	7378363.67	-23.695395	151.220054	23° 41' 43.42" S	151° 13' 12.19" E
36	318463.5	7378424.48	-23.69484	151.219544	23° 41' 41.42" S	151° 13' 10.35" E
37	318454.91	7378433.43	-23.694758	151.219461	23° 41' 41.12" S	151° 13' 10.05" E
38	318366.31	7378424.25	-23.694831	151.218591	23° 41' 41.39" S	151° 13' 06.92" E
39	318357.6	7378433.13	-23.69475	151.218506	23° 41' 41.09" S	151° 13' 06.62" E
40	318362.41	7378471.09	-23.694408	151.218558	23° 41' 39.86" S	151° 13' 06.80" E
41	318350.46	7378490.47	-23.694232	151.218444	23° 41' 39.23" S	151° 13' 06.39" E
42	318303.84	7378586.25	-23.693362	151.217998	23° 41' 36.10" S	151° 13' 04.79" E
43	318261.58	7378656.58	-23.692722	151.217593	23° 41' 33.79" S	151° 13' 03.33" E
44	318230.15	7378738.2	-23.691981	151.217294	23° 41' 31.13" S	151° 13' 02.25" E
45	318187.5	7378780.62	-23.691594	151.216881	23° 41' 29.73" S	151° 13' 00.77" E
46	318211.49	7378841.7	-23.691045	151.217124	23° 41' 27.76" S	151° 13' 01.64" E
47	318260.9	7378827.98	-23.691174	151.217607	23° 41' 28.22" S	151° 13' 03.38" E
48	318327.74	7378859.73	-23.690895	151.218266	23° 41' 27.22" S	151° 13' 05.75" E
49	318379.54	7378890.37	-23.690625	151.218778	23° 41' 26.25" S	151° 13' 07.60" E
50	318398.9	7378913.22	-23.69042	151.21897	23° 41' 25.51" S	151° 13' 08.29" E
51	318457.86	7378973.28	-23.689885	151.219556	23° 41' 23.58" S	151° 13' 10.40" E
52	318487.75	7379031.99	-23.689358	151.219856	23° 41' 21.68" S	151° 13' 11.48" E
53	318490.13	7379067.21	-23.68904	151.219884	23° 41' 20.54" S	151° 13' 11.58" E
54	318481	7379090.14	-23.688832	151.219797	23° 41' 19.79" S	151° 13' 11.26" E
55	318471.93	7379137.56	-23.688403	151.219714	23° 41' 18.25" S	151° 13' 10.97" E
56	318466.12	7379252.62	-23.687364	151.219671	23° 41' 14.51" S	151° 13' 10.81" E
57	318494.39	7379305.95	-23.686885	151.219954	23° 41' 12.78" S	151° 13' 11.83" E
58	318487.39	7379322.44	-23.686736	151.219888	23° 41' 12.24" S	151° 13' 11.59" E
59	318491.16	7379350.07	-23.686487	151.219928	23° 41' 11.35" S	151° 13' 11.74" E
60	318504.33	7379365.23	-23.686351	151.220059	23° 41' 10.86" S	151° 13' 12.21" E
61	318515.28	7379371.41	-23.686297	151.220167	23° 41' 10.66" S	151° 13' 12.60" E
62	318519.68	7379400.78	-23.686032	151.220214	23° 41' 09.71" S	151° 13' 12.77" E
63	318530.82	7379417.65	-23.685881	151.220325	23° 41' 09.17" S	151° 13' 13.17" E

ID	X	Y	Lat_DD	Long_DD	Lat_DMS	Long_DMS
64	318537.61	7379446.92	-23.685618	151.220395	23° 41' 08.22" S	151° 13' 13.42" E
65	318529.38	7379474.37	-23.685369	151.220318	23° 41' 07.32" S	151° 13' 13.14" E
66	318536.27	7379498.51	-23.685152	151.220389	23° 41' 06.54" S	151° 13' 13.40" E
67	318532.46	7379530.45	-23.684863	151.220355	23° 41' 05.50" S	151° 13' 13.27" E
68	318536.36	7379565.22	-23.684549	151.220398	23° 41' 04.37" S	151° 13' 13.43" E
69	318520.92	7379592.81	-23.684299	151.22025	23° 41' 03.47" S	151° 13' 12.89" E
70	318504.75	7379649.32	-23.683787	151.220098	23° 41' 01.63" S	151° 13' 12.35" E

List of Figures:

List of Attachments:

Appendix 4 – Protected Matters Search and Updated Assessment

Common Name	Scientific Name	PMST	Data sources							EPBC Migratory	EPBC threatened	Habitat	Potential habitat adjacent to development footprint	Potential habitat present within development footprint
			CEPLA 2002	ALA 2015	NF2015	WN10km	WN Reserves	GPERMP	Logic Env					
Common Sandpiper	*Actitis hypoleucos*	x						x		Ma		Coastal and interior wetlands (Morcombe and Stewart, 2014).	Likely	Unlikely
Fork-Tailed Swift	*Apus pacificus*	x								Ma		Mostly aerial, occur over dry, open inland areas, plains, cliffs, beaches, islands, settled areas, and dry or open habitats, including riparian woodland and tea-tree swamps, low scrub, heathland or saltmarsh, treeless grassland and sand plains (DoE, 2016a).	Unlikely	Unlikely
Ruddy Turnstone	*Arenaria interpres*	x		x		x		x		Ma		Migratory. Occurs on ocean coasts with exposed rocks, stones, reef, mudflat or shelly beaches (Morcombe and Stewart, 2014).	Likely	Unlikely
Sharp-Tailed Sandpiper	*Calidris acuminata*	x					x	x		Ma		Fresh and saltwater wetlands, lagoons, dams, swamps and floodwaters (Morcombe and Stewart, 2014).	Likely	Unlikely
Red Knot	*Calidris canutus*	x					x	x		Ma	E	Sheltered coasts, sandbars, mud flats, harbours and lagoons (Morcombe and Stewart, 2014).	Likely	Unlikely
Curlew Sandpiper	*Calidris ferruginea*	x	x	x		x		x		Ma	CE	Intertidal mudflats in estuaries, bays, inlets and lagoons, and around coastal non-tidal swamps, lakes and lagoons (DoE, 2016b).	Likely	Unlikely
Red-Necked Stint	*Calidris ruficollis*	x		x		x		x		Ma		Sheltered intertidal mudflats and sand banks (Morcombe and Stewart, 2014).	Likely	Unlikely
Great Knot	*Calidris tenuirostris*	x	x	x		x		x		Ma		Sheltered coastal habitats, with large intertidal mudflats or sandflats (DoE, 2016c).	Likely	Unlikely
Double-Banded Plover	*Charadrius bicinctus*	x		x		x		x		Ma		Tidal mudflats, beaches, exposed reefs, saltmarsh, freshwater wetlands (Morcombe and Stewart, 2014).	Likely	Unlikely
Greater Sand Plover	*Charadrius leschenaultii*	x		x		x		x		Ma	V	Intertidal mudflats in estuaries, bays, inlets, sand cays, coral reef (Morcombe and Stewart, 2014).	Likely	Unlikely
Lesser Sand Plover	*Charadrius mongolus*	x		x		x		x		Ma	E	Sandflats, mudflats, beaches, estuaries (Morcombe and Stewart, 2014).	Likely	Unlikely
Coxen's Fig Parrot	*Cyclopsitta diophthalma coxeni*	x									E	Rainforest habitats - subtropical rainforest, dry rainforest, littoral and developing littoral rainforest, and vine forest (DoE, 2016d)	Unlikely	Unlikely
Yellow Chat	*Epthianura crocea macgregori*		x				x				CE	Inhabits marine wetlands that are subject to extensive seasonal inundation and varying degrees of both fresh and saltwater (tidal) influence (DoE, 2016e).	Unlikely	Unlikely

Common Name	Scientific Name	PMST	Data sources							EPBC Migratory	EPBC threatened	Habitat	Potential habitat adjacent to development footprint	Potential habitat present within development footprint
			CEPLA 2002	ALA 2015	NF2015	WN10km	WN Reserves	GPERMP	Logic Env					
Red Goshawk	*Erythrotriorchis radiatus*	x									V	Mix of vegetation types including tall open forest, woodland, lightly treed savannah and the edge of rainforest. In partly cleared parts of eastern Queensland, it is associated with gorge and escarpment country. (DoE, 2016f)	Unlikely	Unlikely
White-Bellied Storm-Petrel	*Fregetta grallaria grallaria*	x									V	Forages over near-shore waters; breeds in offshore islets and rocks, nesting in crevices between rocks, and in burrows excavated in banks (DoE, 2016g).	Unlikely	Unlikely
Latham's Snipe	*Gallinago hardwickii*	x					x	x		Ma		Wetlands with low, dense vegetation comprised of reeds, sedges, heath and saltmarsh (Morcombe and Stewart, 2014)	Likely	Unlikely
Swinhoe's Snipe	*Gallinago megala*	x								Ma		Fresh and brackish wetlands with dense vegetation (DoE, 2016h)	Unlikely	Unlikely
Pin-Tailed Snipe	*Gallinago stenura*	x								Ma		Freshwater swamps, lakes or ponds (DoE, 2016i)	Unlikely	Unlikely
Squatter Pigeon	*Geophaps scripta scripta*	x									V	Grassy woodlands and open forests dominated by Eucalyptus, Corymbia, Acacia or Callitris spp. (DoE, 2016j).	Unlikely	Unlikely
Grey-Tailed Tattler	*Heteroscelus brevipes*	x	x			x		x		Ma		Inter-tidal pools, shallows, mudflats, sandy beaches, rock ledges and reefs (Morcombe and Stewart, 2014).	Likely	Unlikely
White-Throated Needletail	*Hirundapus caudacutus*	x				x	x			Ma		Almost exclusively aerial. Most often recorded overflying wooded areas, including open forest and rainforest (DoE, 2016k)	Likely	Likely
Barn Swallow	*Hirundo rustica*	x								Ma		Summer migrant that occupies open spaces usually near water (Morcombe and Stewart, 2014).	Unlikely	Unlikely
Bar-Tailed Godwit	*Limosa lapponica*	x	x	x		x		x	x	Ma		Coastal mudflats, sandbars, shores of estuaries, saltmarsh (Morcombe and Stewart, 2014).	Likely	Unlikely
Southern Giant Petrel	*Macronectes giganteus*	x								Ma	E	This species is a marine bird that occurs in Antarctic to subtropical waters (DoE, 2016l).	Unlikely	Unlikely
Black-Faced Monarch	*Monarcha melanopsis*	x		x			x			Ma		Rainforests (DoE, 2016m)	Likely	Likely
Spectacled Monarch	*Monarcha trivirgatus*	x					x			Ma		Eucalypt forests, often near wetlands or watercourses (DoE, 2016n)	Likely	Likely
Satin Flycatcher	*Myiagra cyanoleuca*	x		x						Ma		Rainforest and woodland with dense understory, mangroves (DoE, 2015)	Likely	Likely
Star Finch	*Neochmia ruficauda ruficauda*	x									E	Grasslands and grassy woodlands close to fresh water bodies. This species appears to be extinct in SEQ (DoE, 2016o).	Unlikely	Unlikely

Common Name	Scientific Name	PMST	Data sources							EPBC Migratory	EPBC threatened	Habitat	Potential habitat adjacent to development footprint	Potential habitat present within development footprint
			CEPLA 2002	ALA 2015	NF2015	WN10km	WN Reserves	GPERMP	Logic Env					
Eastern Curlew	*Numenius madagascariensis*	x		x		x		x		Ma	CE	Coastal distribution associated with sheltered coasts, especially estuaries, bays, harbours, inlets and coastal lagoons, with large intertidal mudflats or sandflats, often with beds of seagrass (DoE, 2016p).	Likely	Unlikely
Little Whimbrel	*Numenius minutus*	x						x		Ma		Dry grassland and sedge land, seasonally inundated floodplains, open woodlands with grassy understorey, dry saltmarshes, coastal swamps, mudflats or sand flats of estuaries or beaches on sheltered coasts (DoE, 2016q)	Likely	Unlikely
Whimbrel	*Numenius phaeopus*	x	x	x		x	x	x		Ma		Mud flats, estuaries and lagoons with mangroves (Morcombe and Stewart, 2014).	Likely	Unlikely
Osprey	*Pandion haliaetus*	x			x	x	x			Ma		Coastal waters and estuaries; breeds on cliff tops, trees or high rock stacks(Morcombe and Stewart, 2014).	Confirmed	Confirmed
Sooty Albatross	*Phoebetria fusca*	x								Ma	V	This species is marine and pelagic, foraging over coastal kelp beds (DoE, 2016r).	Unlikely	Unlikely
Pacific Golden Plover	*Pluvialis fulva*	x		x			x	x		Ma		Estuaries, mud flats, beaches, reefs, saltmarsh (Morcombe and Stewart, 2014).	Likely	Unlikely
Grey Plover	*Pluvialis squatarola*	x				x		x		Ma		Coastal habitat, estuaries, lagoons, open mudflats, sand bars, beaches, rocky platforms (Morcombe and Stewart, 2014).	Likely	Unlikely
Kermadec Petrel (Western)	*Pterodroma neglecta neglecta*	x									V	Pelagic seabird, not known to breed on Curtis island.	Unlikely	Unlikely
Fresh-Footed Shearwater	*Puffinus carneipes*	x								Ma		Pairs breed on islands in burrows on sloping ground in coastal forest, scrubland, shrubland or grassland (DoE, 2016s)	Unlikely	Unlikely
Rufous Fantail	*Rhipidura rufifrons*	x	x	x		x				Ma		Rainforest, dense wet eucalypt, paperbark and mangrove swamp, riverside vegetation (Morcombe and Stewart, 2014).	Likely	Likely
Little Tern	*Sterna albifrons*	x	x	x		x				Ma		Shallow coastal waters, estuaries, sand bars, lagoons, channels around the entrance to rivers (Morcombe and Stewart, 2014).	Likely	Unlikely
Brown Booby	*Sula leucogaster*		x	x		x				Ma		This species has been recorded in coastal waters, harbours and estuaries and near offshore islands. Nests on ground in rugged rocky terrain (cliffs, steep slopes) on larger islands, to beaches, sand bards, coral rubble and guano flats on cays (DoE, 2016t). Not known to nest on Curtis Island.	Likely	Unlikely
Campbell Albatross	*Thalassarche melanophris impavida*	x								Ma	V	Marine sea bird and non-breeding visitor to Australian waters. Feeds from or just below the sea surface (DoE, 2016u)	Unlikely	Unlikely
Common Greenshank	*Tringa nebularia*		x	x		x	x	x		Ma		Permanent and temporary freshwater and saline wetlands (Morcombe and Stewart, 2014).	Likely	Unlikely

Common Name	Scientific Name	PMST	Data sources							EPBC Migratory	EPBC threatened	Habitat	Potential habitat adjacent to development footprint	Potential habitat present within development footprint
			CEPLA 2002	ALA 2015	NF2015	WN10km	WN Reserves	GPERMP	Logic Env					
Marsh Sandpiper	*Tringa stagnatalis*	x	x	x		x	x	x		Ma		Permanent or ephemeral wetlands including saltmarshes, estuaries, pools on inundated floodplains, and intertidal mudflats (DoE, 2016v)	Likely	Unlikely
Black-Breasted Button-Quail	*Turnix melanogaster*	x									V	Restricted to rainforests and forests, low closed forests, semi-evergreen vine thicket, low microphyll vine forest, araucarian microphyll vine forest and araucarian notophyll vine forest (DoE, 2016w).	Likely	Unlikely
Terek Sandpiper	*Xenus cinereus*	x		x		x		x		Ma		Estuaries, muddy bays, reef, lagoons and saltpans (DoE, 2016x).	Likely	Unlikely

EPBC migratory status Ma=Marine EPBC threatened species status V= Vulnerable, E= Endangered, CE= Critically Endangered

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Department of the Environment, 2016x, Xenus cinereus in Species Profile and Threats Database, Department of the Environment, Canberra

Australian Government

Department of the Environment

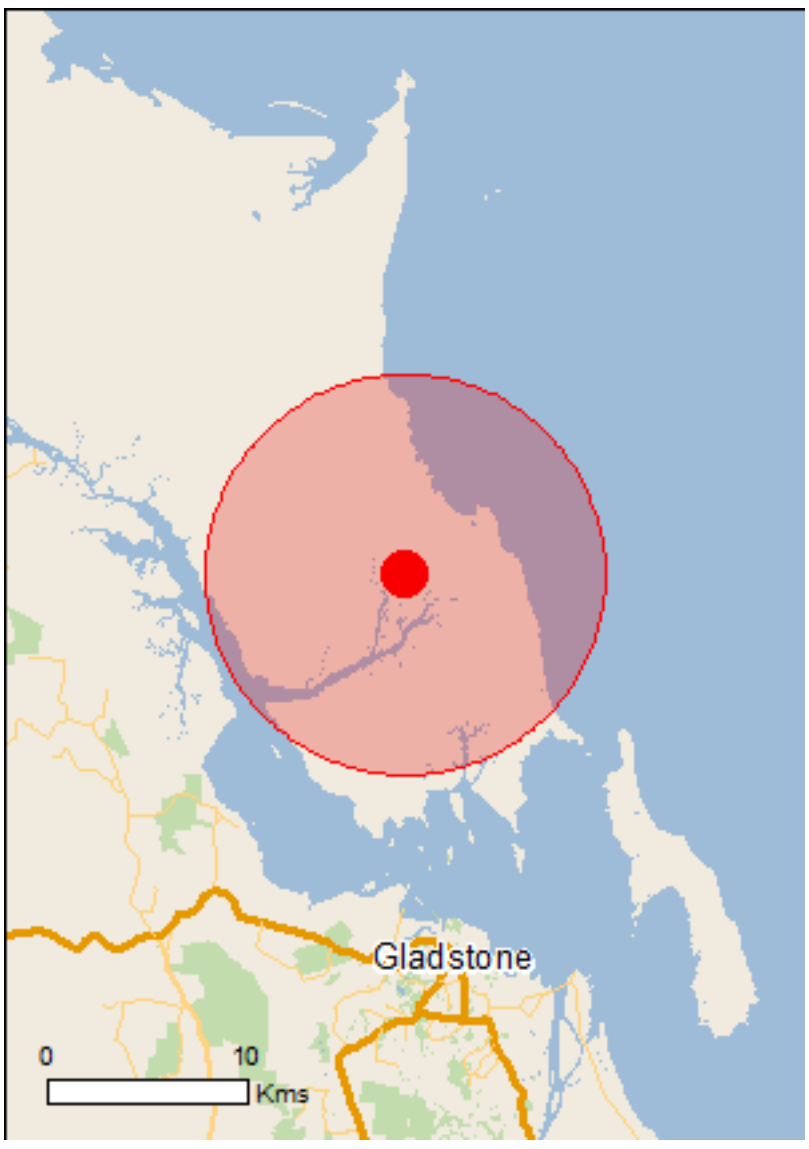
EPBC Act Protected Matters Report

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

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

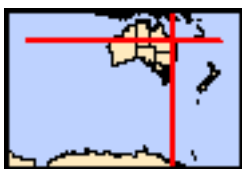
Information is available about Environment Assessments and the EPBC Act including significance guidelines, forms and application process details.

Report created: 25/08/15 11:33:08



Coordinates

Buffer: 10.0Km



Summary

Matters of National Environmental Significance

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

World Heritage Properties:	1
National Heritage Places:	1
Wetlands of International Importance:	None
Great Barrier Reef Marine Park:	4
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	2
Listed Threatened Species:	30
Listed Migratory Species:	55

Other Matters Protected by the EPBC Act

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

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

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

Commonwealth Land:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	96
Whales and Other Cetaceans:	12
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Commonwealth Reserves Marine:	None

Extra Information

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

State and Territory Reserves:	4
Regional Forest Agreements:	None
Invasive Species:	20
Nationally Important Wetlands:	3
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

World Heritage Properties [Resource Information]

Name	State	Status
Great Barrier Reef	QLD	Declared property

National Heritage Properties [Resource Information]

Name	State	Status
Natural		
Great Barrier Reef	QLD	Listed place

Great Barrier Reef Marine Park [Resource Information]

Type	Zone	IUCN
Conservation Park	CP-23-4109	IV
General Use	GU-21-6016	VI
Habitat Protection	HP-23-5367	VI
Marine National Park	MNP-23-1167	II

Listed Threatened Ecological Communities [Resource Information]

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

Name	Status	Type of Presence
Littoral Rainforest and Coastal Vine Thickets of Eastern Australia	Critically Endangered	Community likely to occur within area
Weeping Myall Woodlands	Endangered	Community may occur within area

Listed Threatened Species [Resource Information]

Name	Status	Type of Presence
Birds		
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Roosting known to occur within area
Cyclopsitta diophthalma coxeni Coxen's Fig-Parrot [59714]	Endangered	Species or species habitat may occur within area
Erythrotriorchis radiatus Red Goshawk [942]	Vulnerable	Species or species habitat known to occur within area
Fregetta grallaria grallaria White-bellied Storm-Petrel (Tasman Sea), White-bellied Storm-Petrel (Australasian) [64438]	Vulnerable	Species or species habitat likely to occur within area
Geophaps scripta scripta Squatter Pigeon (southern) [64440]	Vulnerable	Species or species habitat known to occur within area
Macronectes giganteus Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Neochmia ruficauda ruficauda Star Finch (eastern), Star Finch (southern) [26027]	Endangered	Species or species habitat likely to occur

Name	Status	Type of Presence
		within area
Numenius madagascariensis		
Eastern Curlew [847]	Critically Endangered	Roosting known to occur within area
Phoebetria fusca		
Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area
Pterodroma neglecta neglecta		
Kermadec Petrel (western) [64450]	Vulnerable	Foraging, feeding or related behaviour may occur within area
Thalassarche melanophris impavida		
Campbell Albatross [82449]	Vulnerable	Species or species habitat may occur within area
Turnix melanogaster		
Black-breasted Button-quail [923]	Vulnerable	Species or species habitat likely to occur within area
Mammals		
Balaenoptera musculus		
Blue Whale [36]	Endangered	Species or species habitat may occur within area
Megaptera novaeangliae		
Humpback Whale [38]	Vulnerable	Breeding known to occur within area
Xeromys myoides		
Water Mouse, False Water Rat, Yirrkoo [66]	Vulnerable	Species or species habitat likely to occur within area
Other		
Cycas megacarpa		
[55794]	Endangered	Species or species habitat likely to occur within area
Cycas ophiolitica		
[55797]	Endangered	Species or species habitat likely to occur within area
Plants		
Cupaniopsis shirleyana		
Wedge-leaf Tuckeroo [3205]	Vulnerable	Species or species habitat likely to occur within area
Phaius australis		
Lesser Swamp-orchid [5872]	Endangered	Species or species habitat likely to occur within area
Samadera bidwillii		
[29708]	Vulnerable	Species or species habitat likely to occur within area
Reptiles		
Caretta caretta		
Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas		
Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Dermochelys coriacea		
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Eretmochelys imbricata		
Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area
Lepidochelys olivacea		
Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Breeding likely to occur within area

Name	Status	Type of Presence
[Natator depressus](#)		
Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
Sharks		
[Carcharodon carcharias](#)		
Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
[Pristis zijsron](#)		
Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Breeding may occur within area
[Rhincodon typus](#)		
Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area

Listed Migratory Species [Resource Information]

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

Name	Threatened	Type of Presence
Migratory Marine Birds		
[Apus pacificus](#)		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area
[Macronectes giganteus](#)		
Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
[Phoebetria fusca](#)		
Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area
[Puffinus carneipes](#)		
Flesh-footed Shearwater, Fleshy-footed Shearwater [1043]		Species or species habitat likely to occur within area
[Sterna albifrons](#)		
Little Tern [813]		Species or species habitat may occur within area
[Thalassarche impavida](#)		
Campbell Albatross [64459]	Vulnerable*	Species or species habitat may occur within area
Migratory Marine Species		
[Balaenoptera edeni](#)		
Bryde's Whale [35]		Species or species habitat may occur within area
[Balaenoptera musculus](#)		
Blue Whale [36]	Endangered	Species or species habitat may occur within area
[Carcharodon carcharias](#)		
Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
[Caretta caretta](#)		
Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
[Chelonia mydas](#)		
Green Turtle [1765]	Vulnerable	Breeding known to occur within area
[Crocodylus porosus](#)		
Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area
[Dermochelys coriacea](#)		
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area

Name	Threatened	Type of Presence
Dugong dugon Dugong [28]		Species or species habitat known to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat may occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Breeding likely to occur within area
Manta birostris Giant Manta Ray, Chevron Manta Ray, Pacific Manta Ray, Pelagic Manta Ray, Oceanic Manta Ray [84995]		Species or species habitat likely to occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Breeding known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
Orcaella brevirostris Irrawaddy Dolphin [45]		Species or species habitat likely to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Sousa chinensis Indo-Pacific Humpback Dolphin [50]		Breeding known to occur within area
Migratory Terrestrial Species		
Hirundapus caudacutus White-throated Needletail [682]		Species or species habitat likely to occur within area
Hirundo rustica Barn Swallow [662]		Species or species habitat may occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area
Monarcha trivirgatus Spectacled Monarch [610]		Species or species habitat known to occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper [59309]		Roosting known to occur within area

Name	Threatened	Type of Presence
Ardea alba Great Egret, White Egret [59541]		Species or species habitat likely to occur within area
Arenaria interpres Ruddy Turnstone [872]		Roosting known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Roosting known to occur within area
Calidris canutus Red Knot, Knot [855]		Roosting known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Roosting known to occur within area
Calidris ruficollis Red-necked Stint [860]		Roosting known to occur within area
Calidris tenuirostris Great Knot [862]		Roosting known to occur within area
Charadrius bicinctus Double-banded Plover [895]		Roosting known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]		Roosting known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]		Roosting known to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Roosting may occur within area
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area
Heteroscelus brevipes Grey-tailed Tattler [59311]		Roosting known to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew [847]	Critically Endangered	Roosting known to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area
Numenius phaeopus Whimbrel [849]		Roosting known to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Roosting known to occur within area
Pluvialis squatarola Grey Plover [865]		Roosting known to occur within area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area
Xenus cinereus Terek Sandpiper [59300]		Roosting known to occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species		[Resource Information]
* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.		
Name	Threatened	Type of Presence
Birds		
Actitis hypoleucos Common Sandpiper [59309]		Roosting known to occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea alba Great Egret, White Egret [59541]		Species or species habitat likely to occur within area
Arenaria interpres Ruddy Turnstone [872]		Roosting known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Roosting known to occur within area
Calidris canutus Red Knot, Knot [855]		Roosting known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Roosting known to occur within area
Calidris ruficollis Red-necked Stint [860]		Roosting known to occur within area
Calidris tenuirostris Great Knot [862]		Roosting known to occur within area
Charadrius bicinctus Double-banded Plover [895]		Roosting known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]		Roosting known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]		Roosting known to occur within area
Charadrius ruficapillus Red-capped Plover [881]		Roosting known to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Roosting may occur within area
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Heteroscelus brevipes Grey-tailed Tattler [59311]		Roosting known to occur within area
Himantopus himantopus Black-winged Stilt [870]		Roosting known to occur within area
Hirundapus caudacutus White-throated Needletail [682]		Species or species

Name	Threatened	Type of Presence
		habitat likely to occur within area
Hirundo rustica Barn Swallow [662]		Species or species habitat may occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Macronectes giganteus Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area
Monarcha trivirgatus Spectacled Monarch [610]		Species or species habitat known to occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew [847]	Critically Endangered	Roosting known to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area
Numenius phaeopus Whimbrel [849]		Roosting known to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Roosting known to occur within area
Pluvialis squatarola Grey Plover [865]		Roosting known to occur within area
Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [1043]		Species or species habitat likely to occur within area
Recurvirostra novaehollandiae Red-necked Avocet [871]		Roosting known to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area
Sterna albifrons Little Tern [813]		Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross [64459]	Vulnerable*	Species or species habitat may occur within area

Name	Threatened	Type of Presence
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area
Xenus cinereus Terek Sandpiper [59300]		Roosting known to occur within area
Fish		
Acentronura tentaculata Shortpouch Pygmy Pipehorse [66187]		Species or species habitat may occur within area
Campichthys tryoni Tryon's Pipefish [66193]		Species or species habitat may occur within area
Choeroichthys brachysoma Pacific Short-bodied Pipefish, Short-bodied Pipefish [66194]		Species or species habitat may occur within area
Corythoichthys amplexus Fijian Banded Pipefish, Brown-banded Pipefish [66199]		Species or species habitat may occur within area
Corythoichthys flavofasciatus Reticulate Pipefish, Yellow-banded Pipefish, Network Pipefish [66200]		Species or species habitat may occur within area
Corythoichthys haematopterus Reef-top Pipefish [66201]		Species or species habitat may occur within area
Corythoichthys intestinalis Australian Messmate Pipefish, Banded Pipefish [66202]		Species or species habitat may occur within area
Corythoichthys ocellatus Orange-spotted Pipefish, Ocellated Pipefish [66203]		Species or species habitat may occur within area
Corythoichthys paxtoni Paxton's Pipefish [66204]		Species or species habitat may occur within area
Corythoichthys schultzi Schultz's Pipefish [66205]		Species or species habitat may occur within area
Doryrhamphus excisus Bluestripe Pipefish, Indian Blue-stripe Pipefish, Pacific Blue-stripe Pipefish [66211]		Species or species habitat may occur within area
Festucalex cinctus Girdled Pipefish [66214]		Species or species habitat may occur within area
Filicampus tigris Tiger Pipefish [66217]		Species or species habitat may occur within area
Halicampus dunckeri Red-hair Pipefish, Duncker's Pipefish [66220]		Species or species habitat may occur within area
Halicampus grayi Mud Pipefish, Gray's Pipefish [66221]		Species or species habitat may occur within area
Halicampus nitidus Glittering Pipefish [66224]		Species or species habitat may occur within area
Halicampus spinirostris Spiny-snout Pipefish [66225]		Species or species

Name	Threatened	Type of Presence
		habitat may occur within area
[Hippichthys cyanospilos](#) Blue-speckled Pipefish, Blue-spotted Pipefish [66228]		Species or species habitat may occur within area
[Hippichthys heptagonus](#) Madura Pipefish, Reticulated Freshwater Pipefish [66229]		Species or species habitat may occur within area
[Hippichthys penicillus](#) Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area
[Hippocampus bargibanti](#) Pygmy Seahorse [66721]		Species or species habitat may occur within area
[Hippocampus kuda](#) Spotted Seahorse, Yellow Seahorse [66237]		Species or species habitat may occur within area
[Hippocampus planifrons](#) Flat-face Seahorse [66238]		Species or species habitat may occur within area
[Hippocampus zebra](#) Zebra Seahorse [66241]		Species or species habitat may occur within area
[Lissocampus runa](#) Javelin Pipefish [66251]		Species or species habitat may occur within area
[Micrognathus andersonii](#) Anderson's Pipefish, Shortnose Pipefish [66253]		Species or species habitat may occur within area
[Micrognathus brevirostris](#) thorntail Pipefish, Thorn-tailed Pipefish [66254]		Species or species habitat may occur within area
[Nannocampus pictus](#) Painted Pipefish, Reef Pipefish [66263]		Species or species habitat may occur within area
[Solegnathus hardwickii](#) Pallid Pipehorse, Hardwick's Pipehorse [66272]		Species or species habitat may occur within area
[Solenostomus cyanopterus](#) Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area
[Solenostomus paegnius](#) Rough-snout Ghost Pipefish [68425]		Species or species habitat may occur within area
[Solenostomus paradoxus](#) Ornate Ghostpipefish, Harlequin Ghost Pipefish, Ornate Ghost Pipefish [66184]		Species or species habitat may occur within area
[Syngnathoides biaculeatus](#) Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
[Trachyrhamphus bicoarctatus](#) Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area
Mammals		
[Dugong dugon](#) Dugong [28]		Species or species

Name	Threatened	Type of Presence
		habitat known to occur within area
Reptiles		
Acalyptophis peronii Horned Seasnake [1114]		Species or species habitat may occur within area
Aipysurus duboisii Dubois' Seasnake [1116]		Species or species habitat may occur within area
Aipysurus eydouxii Spine-tailed Seasnake [1117]		Species or species habitat may occur within area
Aipysurus laevis Olive Seasnake [1120]		Species or species habitat may occur within area
Astrotia stokesii Stokes' Seasnake [1122]		Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Disteira kingii Spectacled Seasnake [1123]		Species or species habitat may occur within area
Disteira major Olive-headed Seasnake [1124]		Species or species habitat may occur within area
Emydocephalus annulatus Turtle-headed Seasnake [1125]		Species or species habitat may occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area
Hydrophis elegans Elegant Seasnake [1104]		Species or species habitat may occur within area
Lapemis hardwickii Spine-bellied Seasnake [1113]		Species or species habitat may occur within area
Laticauda colubrina a sea krait [1092]		Species or species habitat may occur within area
Laticauda laticaudata a sea krait [1093]		Species or species habitat may occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Breeding likely to occur within area

Name	Threatened	Type of Presence
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
Pelamis platurus Yellow-bellied Seasnake [1091]		Species or species habitat may occur within area

Whales and other Cetaceans [Resource Information]

Name	Status	Type of Presence
Mammals		
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat may occur within area
Delphinus delphis Common Dophin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Breeding known to occur within area
Orcaella brevirostris Irrawaddy Dolphin [45]		Species or species habitat likely to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Sousa chinensis Indo-Pacific Humpback Dolphin [50]		Breeding known to occur within area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area

Extra Information

State and Territory Reserves [Resource Information]

Name	State
Curtis Island	QLD
Curtis Island	QLD
Curtis Island	QLD
Southend	QLD

Invasive Species [Resource Information]

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

Name	Status	Type of Presence
Birds		
Acridotheres tristis Common Myna, Indian Myna [387]		Species or species habitat likely to occur within area
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Passer domesticus House Sparrow [405]		Species or species habitat likely to occur within area
Sturnus vulgaris Common Starling [389]		Species or species habitat likely to occur within area
Frogs		
Rhinella marina Cane Toad [83218]		Species or species habitat likely to occur within area
Mammals		
Bos taurus Domestic Cattle [16]		Species or species habitat likely to occur within area
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Capra hircus Goat [2]		Species or species habitat likely to occur within area
Equus caballus Horse [5]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Sus scrofa Pig [6]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Acacia nilotica subsp. indica Prickly Acacia [6196]		Species or species

Name	Status	Type of Presence
		habitat may occur within area
Chrysanthemoides monilifera Bitou Bush, Boneseed [18983]		Species or species habitat may occur within area
Cryptostegia grandiflora Rubber Vine, Rubbervine, India Rubber Vine, India Rubbervine, Palay Rubbervine, Purple Allamanda [18913]		Species or species habitat likely to occur within area
Eichhornia crassipes Water Hyacinth, Water Orchid, Nile Lily [13466]		Species or species habitat likely to occur within area
Jatropha gossypifolia Cotton-leaved Physic-Nut, Bellyache Bush, Cotton-leaf Physic Nut, Cotton-leaf Jatropha, Black Physic Nut [7507]		Species or species habitat likely to occur within area
Lantana camara Lantana, Common Lantana, Kamara Lantana, Large-leaf Lantana, Pink Flowered Lantana, Red Flowered Lantana, Red-Flowered Sage, White Sage, Wild Sage [10892]		Species or species habitat likely to occur within area
Opuntia spp. Prickly Pears [82753]		Species or species habitat likely to occur within area
Vachellia nilotica Prickly Acacia, Blackthorn, Prickly Mimosa, Black Piquant, Babul [84351]		Species or species habitat likely to occur within area

Nationally Important Wetlands [Resource Information]

Name	State
Great Barrier Reef Marine Park	QLD
Port Curtis	QLD
The Narrows	QLD

Caveat

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

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

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

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

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 following provisions of the EPBC Act have been mapped:

- migratory and
- marine

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

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

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

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

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

Coordinates

-23.69059 151.23471

Acknowledgements

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

-Department of Environment, Climate Change and Water, New South Wales
-Department of Sustainability and Environment, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment and Natural Resources, South Australia
-Parks and Wildlife Service NT, NT Dept of Natural Resources, Environment and the Arts
-Environmental and Resource Management, Queensland
-Department of Environment and Conservation, Western Australia
-Department of the Environment, Climate Change, Energy and Water
-Birds Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-SA Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Atherton and Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
-State Forests of NSW
-Geoscience Australia
-CSIRO
-Other groups and individuals

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

Please feel free to provide feedback via the Contact Us page.

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Appendix 5 – Wildnet Database Search

Queensland Government

Wildlife Online Extract

Search Criteria: Species List for a Specified Point
Species: All
Type: All
Status: All
Records: All
Date: All
Latitude: -23.6905
Longitude: 151.2347
Distance: 10
Email: nathanfraz@gmail.com
Date submitted: Monday 17 Oct 2016 11:43:42
Date extracted: Monday 17 Oct 2016 11:50:03

The number of records retrieved = 915

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	amphibians	Bufonidae	*Rhinella marina*	cane toad	Y			4
animals	amphibians	Hylidae	*Litoria rothii*	northern laughing treefrog		C		1
animals	amphibians	Hylidae	*Litoria dentata*	bleating treefrog		C		1
animals	amphibians	Hylidae	*Litoria inermis*	bumpy rocketfrog		C		1
animals	amphibians	Hylidae	*Litoria rubella*	ruddy treefrog		C		2/1
animals	amphibians	Hylidae	*Litoria caerulea*	common green treefrog		C		2
animals	amphibians	Hylidae	*Litoria gracilenta*	graceful treefrog		C		1
animals	amphibians	Hylidae	*Litoria latopalmata*	broad palmed rocketfrog		C		1
animals	amphibians	Hylidae	*Litoria fallax*	eastern sedgefrog		C		1
animals	amphibians	Hylidae	*Litoria nasuta*	striped rocketfrog		C		1
animals	amphibians	Limnodynastidae	*Limnodynastes peronii*	striped marshfrog		C		1
animals	amphibians	Limnodynastidae	*Platyplectrum ornatum*	ornate burrowing frog		C		1
animals	amphibians	Limnodynastidae	*Limnodynastes tasmaniensis*	spotted grassfrog		C		1
animals	amphibians	Limnodynastidae	*Limnodynastes terraereginae*	scarlet sided pobblebonk		C		1
animals	amphibians	Myobatrachidae	*Uperoleia rugosa*	chubby gungan		C		1
animals	amphibians	Myobatrachidae	*Pseudophryne raveni*	copper backed broodfrog		C		1/1
animals	birds	Acanthizidae	*Sericornis frontalis*	white-browed scrubwren		C		2
animals	birds	Accipitridae	*Haliaeetus leucogaster*	white-bellied sea-eagle		C		4
animals	birds	Accipitridae	*Haliastur sphenurus*	whistling kite		C		1
animals	birds	Accipitridae	*Pandion cristatus*	eastern osprey		SL		3
animals	birds	Accipitridae	*Haliastur indus*	brahminy kite		C		8
animals	birds	Aegothelidae	*Aegotheles cristatus*	Australian owlet-nightjar		C		1
animals	birds	Anatidae	*Anas castanea*	chestnut teal		C		1
animals	birds	Anatidae	*Anas superciliosa*	Pacific black duck		C		2
animals	birds	Anatidae	*Tadorna radjah*	radjah shelduck		C		1
animals	birds	Anatidae	*Chenonetta jubata*	Australian wood duck		C		1
animals	birds	Anhingidae	*Anhinga novaehollandiae*	Australasian darter		C		2
animals	birds	Anseranatidae	*Anseranas semipalmata*	magpie goose		C		1
animals	birds	Apodidae	*Hirundapus caudacutus*	white-throated needletail		SL		1
animals	birds	Ardeidae	*Egretta novaehollandiae*	white-faced heron		C		5
animals	birds	Ardeidae	*Ardea alba modesta*	eastern great egret		C		3
animals	birds	Ardeidae	*Butorides striata*	striated heron		C		2
animals	birds	Ardeidae	*Ardea intermedia*	intermediate egret		C		1
animals	birds	Ardeidae	*Egretta sacra*	eastern reef egret		C		7
animals	birds	Ardeidae	*Egretta garzetta*	little egret		C		5
animals	birds	Artamidae	*Artamus leucorynchus*	white-breasted woodswallow		C		1
animals	birds	Artamidae	*Cracticus tibicen*	Australian magpie		C		5
animals	birds	Artamidae	*Cracticus nigrogularis*	pied butcherbird		C		1
animals	birds	Burhinidae	*Burhinus grallarius*	bush stone-curlew		C		1
animals	birds	Burhinidae	*Esacus magnirostris*	beach stone-curlew		V		4
animals	birds	Cacatuidae	*Cacatua galerita*	sulphur-crested cockatoo		C		2
animals	birds	Cacatuidae	*Calyptorhynchus banksii*	red-tailed black-cockatoo		C		2
animals	birds	Cacatuidae	*Eolophus roseicapillus*	galah		C		1
animals	birds	Campephagidae	*Coracina tenuirostris*	cicadabird		C		1
animals	birds	Campephagidae	*Lalage leucomela*	varied triller		C		2
animals	birds	Campephagidae	*Coracina novaehollandiae*	black-faced cuckoo-shrike		C		3

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	birds	Casuariidae	*Dromaius novaehollandiae*	emu		C		1
animals	birds	Charadriidae	*Charadrius bicinctus*	double-banded plover		SL		1
animals	birds	Charadriidae	*Pluvialis squatarola*	grey plover		SL		1
animals	birds	Charadriidae	*Charadrius ruficapillus*	red-capped plover		C		5
animals	birds	Charadriidae	*Charadrius leschenaultii*	greater sand plover		SL	V	1
animals	birds	Charadriidae	*Vanellus miles novaehollandiae*	masked lapwing (southern subspecies)		C		2
animals	birds	Charadriidae	*Vanellus miles*	masked lapwing		C		3
animals	birds	Charadriidae	*Charadrius mongolus*	lesser sand plover		SL	E	5
animals	birds	Columbidae	*Lopholaimus antarcticus*	topknot pigeon		C		1
animals	birds	Columbidae	*Leucosarcia melanoleuca*	wonga pigeon		C		2
animals	birds	Columbidae	*Geopelia humeralis*	bar-shouldered dove		C		4
animals	birds	Columbidae	*Ptilinopus regina*	rose-crowned fruit-dove		C		1
animals	birds	Columbidae	*Phaps chalcoptera*	common bronzewing		C		2
animals	birds	Columbidae	*Ocyphaps lophotes*	crested pigeon		C		1
animals	birds	Columbidae	*Geopelia striata*	peaceful dove		C		1
animals	birds	Coraciidae	*Eurystomus orientalis*	dollarbird		C		1
animals	birds	Corcoracidae	*Corcorax melanorhamphos*	white-winged chough		C		2
animals	birds	Corvidae	*Corvus orru*	Torresian crow		C		9
animals	birds	Cuculidae	*Eudynamys orientalis*	eastern koel		C		2
animals	birds	Cuculidae	*Cacomantis pallidus*	pallid cuckoo		C		1
animals	birds	Cuculidae	*Centropus phasianinus*	pheasant coucal		C		4
animals	birds	Dicruridae	*Dicrurus bracteatus*	spangled drongo		C		1
animals	birds	Estrildidae	*Taeniopygia bichenovii*	double-barred finch		C		2
animals	birds	Falconidae	*Falco berigora*	brown falcon		C		1
animals	birds	Falconidae	*Falco cenchroides*	nankeen kestrel		C		3
animals	birds	Haematopodidae	*Haematopus fuliginosus*	sooty oystercatcher		C		5
animals	birds	Haematopodidae	*Haematopus longirostris*	Australian pied oystercatcher		C		14
animals	birds	Halcyonidae	*Todiramphus macleayii*	forest kingfisher		C		2
animals	birds	Halcyonidae	*Dacelo novaeguineae*	laughing kookaburra		C		7
animals	birds	Halcyonidae	*Dacelo leachii*	blue-winged kookaburra		C		1
animals	birds	Hirundinidae	*Hirundo neoxena*	welcome swallow		C		7
animals	birds	Laridae	*Thalasseus bengalensis*	lesser crested tern		C		1
animals	birds	Laridae	*Gelochelidon nilotica*	gull-billed tern		SL		7
animals	birds	Laridae	*Sternula albifrons*	little tern		SL		3
animals	birds	Laridae	*Hydroprogne caspia*	Caspian tern		SL		9
animals	birds	Laridae	*Chroicocephalus novaehollandiae*	silver gull		C		7
animals	birds	Laridae	*Thalasseus bergii*	crested tern		SL		12
animals	birds	Maluridae	*Malurus melanocephalus*	red-backed fairy-wren		C		1
animals	birds	Megapodiidae	*Alectura lathami*	Australian brush-turkey		C		2
animals	birds	Meliphagidae	*Lichmera indistincta*	brown honeyeater		C		1
animals	birds	Meliphagidae	*Melithreptus gularis*	black-chinned honeyeater		C		1
animals	birds	Meliphagidae	*Philemon corniculatus*	noisy friarbird		C		6
animals	birds	Meliphagidae	*Manorina melanocephala*	noisy miner		C		2
animals	birds	Meliphagidae	*Meliphaga lewinii*	Lewin's honeyeater		C		2
animals	birds	Meliphagidae	*Gavicalis fasciogularis*	mangrove honeyeater		C		1
animals	birds	Meliphagidae	*Melithreptus albogularis*	white-throated honeyeater		C		4

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	birds	Meliphagidae	*Myzomela obscura*	dusky honeyeater		C		1
animals	birds	Meliphagidae	*Entomyzon cyanotis*	blue-faced honeyeater		C		2
animals	birds	Meliphagidae	*Myzomela sanguinolenta*	scarlet honeyeater		C		3
animals	birds	Meropidae	*Merops ornatus*	rainbow bee-eater		C		2
animals	birds	Monarchidae	*Myiagra rubecula*	leaden flycatcher		C		2
animals	birds	Nectariniidae	*Dicaeum hirundinaceum*	mistletoebird		C		1
animals	birds	Oriolidae	*Sphecotheres vieilloti*	Australasian figbird		C		1
animals	birds	Pachycephalidae	*Pachycephala rufiventris*	rufous whistler		C		1
animals	birds	Pardalotidae	*Pardalotus striatus*	striated pardalote		C		2
animals	birds	Pelecanidae	*Pelecanus conspicillatus*	Australian pelican		C		5
animals	birds	Phalacrocoracidae	*Phalacrocorax sulcirostris*	little black cormorant		C		2
animals	birds	Phalacrocoracidae	*Microcarbo melanoleucos*	little pied cormorant		C		3
animals	birds	Phalacrocoracidae	*Phalacrocorax varius*	pied cormorant		C		4
animals	birds	Podargidae	*Podargus strigoides*	tawny frogmouth		C		1
animals	birds	Pomatostomidae	*Pomatostomus temporalis*	grey-crowned babbler		C		2
animals	birds	Psittacidae	*Trichoglossus haematodus moluccanus*	rainbow lorikeet		C		5
animals	birds	Psittacidae	*Trichoglossus chlorolepidotus*	scaly-breasted lorikeet		C		3
animals	birds	Psittacidae	*Platycercus adscitus*	pale-headed rosella		C		1
animals	birds	Rhipiduridae	*Rhipidura albiscapa*	grey fantail		C		2
animals	birds	Rhipiduridae	*Rhipidura rufifrons*	rufous fantail		SL		1
animals	birds	Rhipiduridae	*Rhipidura leucophrys*	willie wagtail		C		2
animals	birds	Scolopacidae	*Numenius phaeopus*	whimbrel		SL		10
animals	birds	Scolopacidae	*Tringa nebularia*	common greenshank		SL		5
animals	birds	Scolopacidae	*Arenaria interpres*	ruddy turnstone		SL		2
animals	birds	Scolopacidae	*Tringa stagnatilis*	marsh sandpiper		SL		1
animals	birds	Scolopacidae	*Calidris ferruginea*	curlew sandpiper		SL	CE	3
animals	birds	Scolopacidae	*Calidris ruficollis*	red-necked stint		SL		7
animals	birds	Scolopacidae	*Calidris tenuirostris*	great knot		SL	CE	5
animals	birds	Scolopacidae	*Limosa lapponica baueri*	Western Alaskan bar-tailed godwit		SL	V	11
animals	birds	Scolopacidae	*Numenius madagascariensis*	eastern curlew		V	CE	14
animals	birds	Scolopacidae	*Limosa sp.*					1
animals	birds	Scolopacidae	*Tringa incana*	wandering tattler		SL		1
animals	birds	Scolopacidae	*Xenus cinereus*	terek sandpiper		SL		3
animals	birds	Scolopacidae	*Tringa brevipes*	grey-tailed tattler		SL		6
animals	birds	Sulidae	*Sula leucogaster*	brown booby		SL		2
animals	birds	Threskiornithidae	*Platalea regia*	royal spoonbill		C		2
animals	birds	Threskiornithidae	*Threskiornis molucca*	Australian white ibis		C		1
animals	birds	Threskiornithidae	*Threskiornis spinicollis*	straw-necked ibis		C		1
animals	mammals	Bovidae	*Bos taurus*	European cattle	Y			1
animals	mammals	Canidae	*Canis lupus familiaris*	dog	Y			1
animals	mammals	Canidae	*Canis lupus dingo*	dingo				1
animals	mammals	Canidae	*Vulpes vulpes*	red fox	Y			1
animals	mammals	Equidae	*Equus caballus*	horse	Y			1
animals	mammals	Leporidae	*Oryctolagus cuniculus*	rabbit	Y			1
animals	mammals	Leporidae	*Lepus europaeus*	European brown hare	Y			2
animals	mammals	Macropodidae	*Macropus giganteus*	eastern grey kangaroo		C		4

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	mammals	Miniopteridae	*Miniopterus australis*	little bent-wing bat		C		1
animals	mammals	Miniopteridae	*Miniopterus schreibersii oceanensis*	eastern bent-wing bat		C		1
animals	mammals	Molossidae	*Mormopterus lumsdenae*	northern free-tailed bat		C		1
animals	mammals	Molossidae	*Tadarida australis*	white-striped freetail bat		C		2
animals	mammals	Muridae	*Mus musculus*	house mouse	Y			1
animals	mammals	Muridae	*Melomys cervinipes*	fawn-footed melomys		C		1
animals	mammals	Muridae	*Xeromys myoides*	water mouse		V	V	5
animals	mammals	Petauridae	*Petaurus breviceps*	sugar glider		C		2
animals	mammals	Phalangeridae	*Trichosurus vulpecula*	common brushtail possum		C		3
animals	mammals	Potoroidae	*Aepyprymnus rufescens*	rufous bettong		C		1
animals	mammals	Pseudocheiridae	*Petauroides volans*	greater glider		C	V	2
animals	mammals	Pteropodidae	*Pteropus scapulatus*	little red flying-fox		C		1
animals	mammals	Suidae	*Sus scrofa*	pig	Y			2
animals	mammals	Vespertilionidae	*Scotorepens greyii*	little broad-nosed bat		C		1
animals	mammals	Vespertilionidae	*Scoteanax rueppellii*	greater broad-nosed bat		C		1
animals	reptiles	Agamidae	*Chlamydosaurus kingii*	frilled lizard		C		1
animals	reptiles	Cheloniidae	*Natator depressus*	flatback turtle		V	V	2
animals	reptiles	Diplodactylidae	*Amalosia rhombifer*	zig-zag gecko		C		2
animals	reptiles	Diplodactylidae	*Diplodactylus vittatus*	wood gecko		C		1
animals	reptiles	Elapidae	*Pseudechis porphyriacus*	red-bellied black snake		C		1
animals	reptiles	Elapidae	*Pseudechis australis*	king brown snake		C		1
animals	reptiles	Elapidae	*Pseudonaja textilis*	eastern brown snake		C		1
animals	reptiles	Elapidae	*Demansia vestigiata*	lesser black whipsnake		C		1
animals	reptiles	Gekkonidae	*Heteronotia binoei*	Bynoe's gecko		C		1
animals	reptiles	Gekkonidae	*Gehyra dubia*	dubious dtella		C		1
animals	reptiles	Pygopodidae	*Lialis burtonis*	Burton's legless lizard		C		1
animals	reptiles	Scincidae	*Lygisaurus foliorum*	tree-base litter-skink		C		3
animals	reptiles	Scincidae	*Ctenotus taeniolatus*	copper-tailed skink		C		2
animals	reptiles	Scincidae	*Morethia taeniopleura*	fire-tailed skink		C		2
animals	reptiles	Scincidae	*Carlia pectoralis sensu lato*			C		1
animals	reptiles	Scincidae	*Cryptoblepharus virgatus sensu lato*			C		3
animals	reptiles	Scincidae	*Ctenotus sp.*					1
animals	reptiles	Scincidae	*Bellatorias frerei*	major skink		C		1
animals	reptiles	Scincidae	*Menetia greyii*	common dwarf skink		C		1
animals	reptiles	Scincidae	*Lerista fragilis*	eastern mulch slider		C		1
animals	reptiles	Scincidae	*Carlia schmeltzii*	robust rainbow-skink		C		1
animals	reptiles	Scincidae	*Carlia vivax*	tussock rainbow-skink		C		1
animals	reptiles	Varanidae	*Varanus gouldii*	sand monitor		C		1
plants	ferns	Adiantaceae	*Adiantum aethiopicum*			C		1
plants	ferns	Adiantaceae	*Adiantum hispidulum*			C		1
plants	ferns	Adiantaceae	*Cheilanthes*			C		1
plants	ferns	Adiantaceae	*Adiantum hispidulum var. hispidulum*			C		1
plants	ferns	Adiantaceae	*Cheilanthes nudiuscula*			C		4/2
plants	ferns	Adiantaceae	*Doryopteris concolor*			C		1
plants	ferns	Adiantaceae	*Cheilanthes distans*	bristly cloak fern		C		2/2
plants	ferns	Adiantaceae	*Cheilanthes sieberi*			C		6

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	ferns	Aspleniaceae	*Asplenium paleaceum*	scaly asplenium		C		1
plants	ferns	Blechnaceae	*Blechnum patersonii*			C		1
plants	ferns	Blechnaceae	*Doodia australis*			C		1/1
plants	ferns	Gleicheniaceae	*Dicranopteris linearis*			C		3
plants	ferns	Lindsaeaceae	*Lindsaea ensifolia*			C		5
plants	ferns	Marsileaceae	*Marsilea crenata*			C		2/1
plants	ferns	Polypodiaceae	*Microsorum punctatum*			C		1
plants	ferns	Polypodiaceae	*Drynaria rigidula*			C		2
plants	ferns	Schizaeaceae	*Lygodium microphyllum*	snake fern		C		1
plants	ferns	Schizaeaceae	*Lygodium flexuosum*			C		2
plants	ferns	Thelypteridaceae	*Cyclosorus interruptus*			C		3
plants	higher dicots	Acanthaceae	*Brunoniella acaulis*			C		3/1
plants	higher dicots	Acanthaceae	*Brunoniella*			C		4
plants	higher dicots	Acanthaceae	*Brunoniella australis*	blue trumpet		C		10/1
plants	higher dicots	Acanthaceae	*Hygrophila angustifolia*			C		1
plants	higher dicots	Acanthaceae	*Pseuderanthemum variabile*	pastel flower		C		2
plants	higher dicots	Acanthaceae	*Brunoniella acaulis subsp. ciliata*			C		2/1
plants	higher dicots	Aizoaceae	*Sesuvium portulacastrum*	sea purslane		C		6/1
plants	higher dicots	Aizoaceae	*Carpobrotus glaucescens*	pigface		C		4/2
plants	higher dicots	Amaranthaceae	*Amaranthus viridis*	green amaranth	Y			1/1
plants	higher dicots	Amaranthaceae	*Achyranthes aspera*			C		7/1
plants	higher dicots	Amaranthaceae	*Alternanthera pungens*	khaki weed	Y			1/1
plants	higher dicots	Amaranthaceae	*Gomphrena celosioides*	gomphrena weed	Y			5/2
plants	higher dicots	Anacardiaceae	*Euroschinus falcatus var. falcatus*			C		1
plants	higher dicots	Anacardiaceae	*Pleiogynium timorense*	Burdekin plum		C		4
plants	higher dicots	Anacardiaceae	*Euroschinus falcatus*			C		1
plants	higher dicots	Apiaceae	*Platysace linearifolia*			C		3/2
plants	higher dicots	Apiaceae	*Centella asiatica*			C		6/1
plants	higher dicots	Apocynaceae	*Alyxia ruscifolia*			C		12
plants	higher dicots	Apocynaceae	*Hoya australis*			C		5
plants	higher dicots	Apocynaceae	*Alyxia spicata*			C		5/1
plants	higher dicots	Apocynaceae	*Carissa ovata*	currantbush		C		6
plants	higher dicots	Apocynaceae	*Cascabela thevetia*	yellow oleander	Y			2/1
plants	higher dicots	Apocynaceae	*Marsdenia rostrata*			C		1/1
plants	higher dicots	Apocynaceae	*Parsonsia velutina*	hairy silkpod		C		1
plants	higher dicots	Apocynaceae	*Secamone elliptica*			C		5/1
plants	higher dicots	Apocynaceae	*Catharanthus roseus*	pink periwinkle	Y			2
plants	higher dicots	Apocynaceae	*Parsonsia straminea*	monkey rope		C		4
plants	higher dicots	Apocynaceae	*Marsdenia microlepis*			C		4/1
plants	higher dicots	Apocynaceae	*Sarcostemma viminale subsp. brunonianum*					6
plants	higher dicots	Apocynaceae	*Cynanchum viminale subsp. brunonianum*			C		1/1
plants	higher dicots	Apocynaceae	*Parsonsia lanceolata*	northern silkpod		C		1
plants	higher dicots	Apocynaceae	*Gomphocarpus physocarpus*	balloon cottonbush	Y			4
plants	higher dicots	Apocynaceae	*Parsonsia eucalyptophylla*	gargaloo		C		3
plants	higher dicots	Apocynaceae	*Sarcostemma viminale*					1
plants	higher dicots	Apocynaceae	*Parsonsia*			C		1

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plants	higher dicots	Apocynaceae	*Melodinus*			C		1
plants	higher dicots	Apocynaceae	*Cryptostegia grandiflora*	rubber vine	Y			6
plants	higher dicots	Apocynaceae	*Parsonsia plaesiophylla*			C		2
plants	higher dicots	Apocynaceae	*Marsdenia viridiflora*			C		1/1
plants	higher dicots	Apocynaceae	*Asclepias curassavica*	red-head cottonbush	Y			4
plants	higher dicots	Araliaceae	*Polyscias elegans*	celery wood		C		1
plants	higher dicots	Araliaceae	*Schefflera actinophylla*	umbrella tree		C		1
plants	higher dicots	Asteraceae	*Sphaeromorphaea australis*			C		5
plants	higher dicots	Asteraceae	*Pseudognaphalium luteoalbum*	Jersey cudweed		C		2/1
plants	higher dicots	Asteraceae	*Apowollastonia spilanthoides*			C		1/1
plants	higher dicots	Asteraceae	*Peripleura hispidula var. setosa*			C		4/1
plants	higher dicots	Asteraceae	*Emilia sonchifolia var. sonchifolia*		Y			1/1
plants	higher dicots	Asteraceae	*Acmella grandiflora var. brachyglossa*			C		2/2
plants	higher dicots	Asteraceae	*Pterocaulon serrulatum var. serrulatum*			C		1/1
plants	higher dicots	Asteraceae	*Picris angustifolia subsp. carolorum-henricorum*			C		1
plants	higher dicots	Asteraceae	*Conyza*					2
plants	higher dicots	Asteraceae	*Ageratum*			C		1
plants	higher dicots	Asteraceae	*Helichrysum*			C		4
plants	higher dicots	Asteraceae	*Bidens pilosa*		Y			4
plants	higher dicots	Asteraceae	*Blumea mollis*			C		1/1
plants	higher dicots	Asteraceae	*Tagetes minuta*	stinking roger	Y			1
plants	higher dicots	Asteraceae	*Centipeda minima*			C		2/2
plants	higher dicots	Asteraceae	*Conyza leucantha*					1/1
plants	higher dicots	Asteraceae	*Eclipta prostrata*	white eclipta	Y			1
plants	higher dicots	Asteraceae	*Sonchus oleraceus*	common sowthistle	Y			5/1
plants	higher dicots	Asteraceae	*Tridax procumbens*	tridax daisy	Y			7/1
plants	higher dicots	Asteraceae	*Camptacra gracilis*			C		1
plants	higher dicots	Asteraceae	*Conyza bonariensis*					2
plants	higher dicots	Asteraceae	*Conyza sumatrensis*	tall fleabane				1
plants	higher dicots	Asteraceae	*Coronidium cymosum*			C		1/1
plants	higher dicots	Asteraceae	*Emilia sonchifolia*		Y			15
plants	higher dicots	Asteraceae	*Ageratum conyzoides*	billygoat weed	Y			3
plants	higher dicots	Asteraceae	*Coronidium rupicola*			C		5/1
plants	higher dicots	Asteraceae	*Wollastonia biflora*			C		3
plants	higher dicots	Asteraceae	*Calyptocarpus vialis*	creeping cinderella weed	Y			2/1
plants	higher dicots	Asteraceae	*Centipeda nidiformis*			C		1/1
plants	higher dicots	Asteraceae	*Coronidium boormanii*			C		3
plants	higher dicots	Asteraceae	*Galinsoga parviflora*	yellow weed	Y			2
plants	higher dicots	Asteraceae	*Peripleura hispidula*			C		2
plants	higher dicots	Asteraceae	*Pterocaulon redolens*			C		8
plants	higher dicots	Asteraceae	*Coronidium glutinosum*			C		2/1
plants	higher dicots	Asteraceae	*Cyanthillium cinereum*			C		16/1
plants	higher dicots	Asteraceae	*Hypochaeris albiflora*		Y			1/1
plants	higher dicots	Asteraceae	*Podolepis longipedata*	tall copper-wire daisy		C		5/2
plants	higher dicots	Asteraceae	*Coronidium lanuginosum*			C		7/4
plants	higher dicots	Asteraceae	*Sigesbeckia orientalis*	Indian weed		C		3

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	higher dicots	Asteraceae	*Xerochrysum bracteatum*	golden everlasting daisy		C		6/1
plants	higher dicots	Asteraceae	*Gamochaeta pensylvanica*		Y			2
plants	higher dicots	Asteraceae	*Coronidium newcastlianum*			C		1
plants	higher dicots	Asteraceae	*Chrysocephalum apiculatum*	yellow buttons		C		1
plants	higher dicots	Bignoniaceae	*Pandorea*			C		1
plants	higher dicots	Bignoniaceae	*Pandorea pandorana*	wonga vine		C		2
plants	higher dicots	Boraginaceae	*Heliotropium pauciflorum*			C		1
plants	higher dicots	Brassicaceae	*Lepidium bonariense*	Argentine peppercress	Y			2/1
plants	higher dicots	Byttneriaceae	*Keraudrenia*			C		1
plants	higher dicots	Byttneriaceae	*Seringia lanceolata*			C		1/1
plants	higher dicots	Byttneriaceae	*Keraudrenia lanceolata*					1
plants	higher dicots	Cactaceae	*Opuntia stricta*		Y			11
plants	higher dicots	Cactaceae	*Opuntia*			C		7
plants	higher dicots	Caesalpiniaceae	*Chamaecrista nomame*			C		1
plants	higher dicots	Caesalpiniaceae	*Chamaecrista mimosoides*	dwarf cassia		C		2
plants	higher dicots	Caesalpiniaceae	*Senna pendula var. glabrata*	Easter cassia	Y			1/1
plants	higher dicots	Caesalpiniaceae	*Bauhinia variegata*		Y			1/1
plants	higher dicots	Caesalpiniaceae	*Senna*			C		1
plants	higher dicots	Caesalpiniaceae	*Senna surattensis*			C		2/1
plants	higher dicots	Campanulaceae	*Wahlenbergia gracilis*	sprawling bluebell		C		1/1
plants	higher dicots	Campanulaceae	*Lobelia anceps*			C		3/2
plants	higher dicots	Campanulaceae	*Lobelia*			C		1
plants	higher dicots	Capparaceae	*Capparis canescens*			C		5
plants	higher dicots	Capparaceae	*Capparis*			C		2
plants	higher dicots	Capparaceae	*Capparis arborea*	brush caper berry		C		2
plants	higher dicots	Casuarinaceae	*Allocasuarina torulosa*			C		18
plants	higher dicots	Casuarinaceae	*Casuarina equisetifolia*			C		7
plants	higher dicots	Casuarinaceae	*Allocasuarina littoralis*			C		11
plants	higher dicots	Casuarinaceae	*Allocasuarina luehmannii*	bull oak		C		16/2
plants	higher dicots	Casuarinaceae	*Casuarina equisetifolia subsp. incana*			C		5/1
plants	higher dicots	Casuarinaceae	*Casuarina glauca*	swamp she-oak		C		2
plants	higher dicots	Celastraceae	*Denhamia disperma*			C		2
plants	higher dicots	Celastraceae	*Hippocratea barbata*	knotvine		C		1
plants	higher dicots	Chenopodiaceae	*Tecticornia indica*			C		2
plants	higher dicots	Chenopodiaceae	*Suaeda australis*			C		4
plants	higher dicots	Chenopodiaceae	*Enchylaena tomentosa*			C		3/1
plants	higher dicots	Chenopodiaceae	*Dysphania glomulifera*			C		1
plants	higher dicots	Chenopodiaceae	*Tecticornia pergranulata*			C		2
plants	higher dicots	Chenopodiaceae	*Einadia nutans subsp. linifolia*			C		1
plants	higher dicots	Chenopodiaceae	*Enchylaena tomentosa var. glabra*			C		1/1
plants	higher dicots	Chenopodiaceae	*Tecticornia indica subsp. leiostachya*			C		2
plants	higher dicots	Chenopodiaceae	*Sarcocornia quinqueflora subsp. quinqueflora*			C		1
plants	higher dicots	Chenopodiaceae	*Tecticornia pergranulata subsp. queenslandica*			C		2/1
plants	higher dicots	Chenopodiaceae	*Dysphania littoralis*	red crumbweed		C		2/1
plants	higher dicots	Chenopodiaceae	*Salsola australis*			C		1/1
plants	higher dicots	Chenopodiaceae	*Einadia hastata*			C		1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	higher dicots	Combretaceae	*Lumnitzera racemosa*			C		3
plants	higher dicots	Convolvulaceae	*Ipomoea littoralis*			C		2/2
plants	higher dicots	Convolvulaceae	*Evolvulus alsinoides*			C		8/1
plants	higher dicots	Convolvulaceae	*Jacquemontia paniculata*			C		3/2
plants	higher dicots	Convolvulaceae	*Ipomoea violacea*			C		2
plants	higher dicots	Convolvulaceae	*Cuscuta*			C		1
plants	higher dicots	Convolvulaceae	*Polymeria pusilla*			C		1
plants	higher dicots	Convolvulaceae	*Ipomoea plebeia*	bellvine		C		1
plants	higher dicots	Convolvulaceae	*Ipomoea pes-caprae subsp. brasiliensis*	goatsfoot		C		5
plants	higher dicots	Crassulaceae	*Bryophyllum delagoense*		Y			2
plants	higher dicots	Crassulaceae	*Bryophyllum x houghtonii*		Y			3/1
plants	higher dicots	Dilleniaceae	*Hibbertia stricta*			C		2/1
plants	higher dicots	Dilleniaceae	*Hibbertia scandens*			C		4
plants	higher dicots	Dilleniaceae	*Hibbertia linearis var. obtusifolia*			C		2
plants	higher dicots	Dilleniaceae	*Hibbertia linearis*			C		2/1
plants	higher dicots	Droseraceae	*Drosera finlaysoniana*			C		1/1
plants	higher dicots	Droseraceae	*Drosera*			C		3/1
plants	higher dicots	Ebenaceae	*Diospyros geminata*	scaly ebony		C		15/1
plants	higher dicots	Ebenaceae	*Diospyros*			C		1
plants	higher dicots	Ebenaceae	*Diospyros fasciculosa*	grey ebony		C		6
plants	higher dicots	Ebenaceae	*Diospyros australis*	black plum		C		1
plants	higher dicots	Ericaceae	*Monotoca scoparia*	prickly broom heath		C		2
plants	higher dicots	Erythroxylaceae	*Erythroxylum sp. (Splityard Creek L.Pedley 5360)*			C		1
plants	higher dicots	Euphorbiaceae	*Euphorbia cyathophora*	dwarf poinsettia	Y			3/2
plants	higher dicots	Euphorbiaceae	*Mallotus philippensis*	red kamala		C		7
plants	higher dicots	Euphorbiaceae	*Euphorbia mitchelliana*			C		1
plants	higher dicots	Euphorbiaceae	*Ricinocarpos ledifolius*	scrub wedding bush		C		1
plants	higher dicots	Euphorbiaceae	*Ricinocarpos pinifolius*	wedding bush		C		4/2
plants	higher dicots	Euphorbiaceae	*Euphorbia tannensis subsp. tannensis*			C		1/1
plants	higher dicots	Euphorbiaceae	*Euphorbia mitchelliana var. mitchelliana*			C		1/1
plants	higher dicots	Euphorbiaceae	*Excoecaria agallocha*	milky mangrove		C		5
plants	higher dicots	Euphorbiaceae	*Alchornea ilicifolia*	native holly		C		1
plants	higher dicots	Euphorbiaceae	*Macaranga tanarius*	macaranga		C		2
plants	higher dicots	Euphorbiaceae	*Baloghia inophylla*	scrub bloodwood		C		2
plants	higher dicots	Euphorbiaceae	*Mallotus discolor*	white kamala		C		6
plants	higher dicots	Euphorbiaceae	*Croton insularis*	Queensland cascarilla		C		1
plants	higher dicots	Euphorbiaceae	*Euphorbia tannensis*			C		2
plants	higher dicots	Fabaceae	*Zornia*			C		1
plants	higher dicots	Fabaceae	*Glycine*			C		6
plants	higher dicots	Fabaceae	*Desmodium*			C		4
plants	higher dicots	Fabaceae	*Swainsona*			C		1
plants	higher dicots	Fabaceae	*Crotalaria*			C		2
plants	higher dicots	Fabaceae	*Vigna marina*	dune bean		C		3
plants	higher dicots	Fabaceae	*Canavalia rosea*	coastal jack bean		C		5/1
plants	higher dicots	Fabaceae	*Glycine tabacina*	glycine pea		C		9
plants	higher dicots	Fabaceae	*Tephrosia juncea*			C		1

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plants	higher dicots	Fabaceae	*Canavalia sericea*			C		1
plants	higher dicots	Fabaceae	*Clitoria ternatea*	butterfly pea	Y			1/1
plants	higher dicots	Fabaceae	*Crotalaria brevis*			C		2/1
plants	higher dicots	Fabaceae	*Mirbelia aotoides*			C		1
plants	higher dicots	Fabaceae	*Rhynchosia minima*			C		2
plants	higher dicots	Fabaceae	*Sophora tomentosa*			C		3
plants	higher dicots	Fabaceae	*Crotalaria montana*			C		11
plants	higher dicots	Fabaceae	*Crotalaria pallida*		Y			3
plants	higher dicots	Fabaceae	*Glycine tomentella*	woolly glycine		C		6
plants	higher dicots	Fabaceae	*Indigofera baileyi*			C		1/1
plants	higher dicots	Fabaceae	*Indigofera hirsuta*	hairy indigo		C		10
plants	higher dicots	Fabaceae	*Indigofera linnaei*	Birdsville indigo		C		4/1
plants	higher dicots	Fabaceae	*Indigofera tryonii*			C		1
plants	higher dicots	Fabaceae	*Jacksonia scoparia*			C		31/2
plants	higher dicots	Fabaceae	*Sesbania cannabina*			C		4
plants	higher dicots	Fabaceae	*Zornia dyctiocarpa*			C		4
plants	higher dicots	Fabaceae	*Cajanus reticulatus*			C		1
plants	higher dicots	Fabaceae	*Desmodium triflorum*		Y			1
plants	higher dicots	Fabaceae	*Galactia tenuiflora*			C		4
plants	higher dicots	Fabaceae	*Glycine clandestina*			C		1
plants	higher dicots	Fabaceae	*Stylosanthes scabra*		Y			2/1
plants	higher dicots	Fabaceae	*Swainsona phacoides*	dwarf swainsona		C		4
plants	higher dicots	Fabaceae	*Tephrosia barbatala*			C		1/1
plants	higher dicots	Fabaceae	*Desmodium gangeticum*			C		1/1
plants	higher dicots	Fabaceae	*Flemingia parviflora*	flemingia		C		8/1
plants	higher dicots	Fabaceae	*Indigofera linifolia*			C		2/1
plants	higher dicots	Fabaceae	*Isotropis filicaulis*			C		5/2
plants	higher dicots	Fabaceae	*Pycnospora lutescens*	pycnospora		C		6/1
plants	higher dicots	Fabaceae	*Stylosanthes humilis*	Townsville stylo	Y			1/1
plants	higher dicots	Fabaceae	*Chorizema parviflorum*	eastern flame pea		C		7/4
plants	higher dicots	Fabaceae	*Erythrina vespertilio*			C		2
plants	higher dicots	Fabaceae	*Gompholobium pinnatum*	poor mans gold		C		3
plants	higher dicots	Fabaceae	*Gompholobium virgatum*			C		1
plants	higher dicots	Fabaceae	*Hardenbergia violacea*			C		6
plants	higher dicots	Fabaceae	*Tephrosia dietrichiae*			C		1
plants	higher dicots	Fabaceae	*Crotalaria medicaginea*	trefoil rattlepod		C		1
plants	higher dicots	Fabaceae	*Desmodium heterocarpon*			C		1
plants	higher dicots	Fabaceae	*Stylosanthes guianensis*		Y			1/1
plants	higher dicots	Fabaceae	*Desmodium rhytidophyllum*			C		9
plants	higher dicots	Fabaceae	*Macroptilium lathyroides*		Y			1/1
plants	higher dicots	Fabaceae	*Macroptilium atropurpureum*	siratro	Y			2/1
plants	higher dicots	Fabaceae	*Crotalaria incana subsp. incana*		Y			2/2
plants	higher dicots	Fabaceae	*Crotalaria pallida var. obovata*		Y			2/2
plants	higher dicots	Fabaceae	*Tephrosia purpurea var. sericea*			C		2
plants	higher dicots	Fabaceae	*Galactia tenuiflora var. villosa*			C		1/1
plants	higher dicots	Fabaceae	*Tephrosia filipes subsp. filipes*			C		5/1

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plants	higher dicots	Fabaceae	*Zornia dyctiocarpa var. filifolia*			C		1
plants	higher dicots	Fabaceae	*Sophora tomentosa subsp. australis*			C		6
plants	higher dicots	Fabaceae	*Zornia muriculata subsp. angustata*			C		3/2
plants	higher dicots	Fabaceae	*Crotalaria medicaginea var. neglecta*			C		1/1
plants	higher dicots	Fabaceae	*Crotalaria montana var. angustifolia*			C		1/1
plants	higher dicots	Fabaceae	*Desmodium heterocarpon var. strigosum*			C		2/2
plants	higher dicots	Flacourtiaceae	*Scolopia braunii*	flintwood		C		1
plants	higher dicots	Gentianaceae	*Centaurium erythraea*	common centaury	Y			2
plants	higher dicots	Gentianaceae	*Schenkia australis*			C		1
plants	higher dicots	Goodeniaceae	*Brunonia australis*	blue pincushion		C		5
plants	higher dicots	Goodeniaceae	*Goodenia hederacea*			C		2
plants	higher dicots	Goodeniaceae	*Velleia paradoxa*	spur velleia		C		3
plants	higher dicots	Goodeniaceae	*Scaevola taccada*	Cardwell cabbage		C		4
plants	higher dicots	Goodeniaceae	*Goodenia glabra*			C		2/2
plants	higher dicots	Goodeniaceae	*Velleia spathulata*	wild pansies		C		2
plants	higher dicots	Haloragaceae	*Myriophyllum*			C		1
plants	higher dicots	Haloragaceae	*Gonocarpus chinensis subsp. verrucosus*			C		1/1
plants	higher dicots	Haloragaceae	*Gonocarpus micranthus*			C		1
plants	higher dicots	Lamiaceae	*Vitex trifolia var. subtrisecta*			C		2/1
plants	higher dicots	Lamiaceae	*Vitex trifolia var. trifolia*			C		1
plants	higher dicots	Lamiaceae	*Plectranthus graveolens*	flea bush		C		1
plants	higher dicots	Lamiaceae	*Clerodendrum inerme*	coastal lolly bush		C		2
plants	higher dicots	Lamiaceae	*Vitex lignum-vitae*			C		2
plants	higher dicots	Lamiaceae	*Salvia coccinea*	red salvia	Y			4
plants	higher dicots	Lamiaceae	*Clerodendrum*			C		1
plants	higher dicots	Lamiaceae	*Salvia*			C		1/1
plants	higher dicots	Lamiaceae	*Vitex trifolia*			C		6
plants	higher dicots	Lamiaceae	*Clerodendrum floribundum*			C		5/1
plants	higher dicots	Lecythidaceae	*Planchonia careya*	cockatoo apple		C		31
plants	higher dicots	Loranthaceae	*Dendrophthoe glabrescens*			C		2
plants	higher dicots	Loranthaceae	*Lysiana subfalcata*			C		1
plants	higher dicots	Loranthaceae	*Lysiana maritima*			C		1/1
plants	higher dicots	Loranthaceae	*Diplatia furcata*			C		2/2
plants	higher dicots	Lythraceae	*Ammannia multiflora*	jerry-jerry		C		2
plants	higher dicots	Malvaceae	*Hibiscus tiliaceus*	cotton tree		C		7/2
plants	higher dicots	Malvaceae	*Hibiscus heterophyllus*			C		3/2
plants	higher dicots	Malvaceae	*Malvastrum coromandelianum*	prickly malvastrum	Y			3/1
plants	higher dicots	Malvaceae	*Malvastrum americanum var. americanum*		Y			1
plants	higher dicots	Malvaceae	*Malvastrum coromandelianum subsp. coromandelianum*		Y			1/1
plants	higher dicots	Malvaceae	*Malvastrum americanum*		Y			1
plants	higher dicots	Malvaceae	*Hibiscus diversifolius*	swamp hibiscus		C		1
plants	higher dicots	Malvaceae	*Thespesia populnea*			C		4/2
plants	higher dicots	Malvaceae	*Hibiscus divaricatus*			C		3
plants	higher dicots	Malvaceae	*Hibiscus meraukensis*	Merauke hibiscus		C		1
plants	higher dicots	Malvaceae	*Hibiscus splendens*	pink hibiscus		C		1
plants	higher dicots	Malvaceae	*Abutilon oxycarpum*			C		2/1

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plants	higher dicots	Malvaceae	*Abutilon albescens*			C		1
plants	higher dicots	Malvaceae	*Sida rhombifolia*		Y			8/1
plants	higher dicots	Malvaceae	*Sida hackettiana*			C		9
plants	higher dicots	Malvaceae	*Sida cordifolia*		Y			15/2
plants	higher dicots	Malvaceae	*Sida acuta*	spinyhead sida	Y			1
plants	higher dicots	Malvaceae	*Abutilon*			C		2
plants	higher dicots	Malvaceae	*Sida*			C		1
plants	higher dicots	Melastomataceae	*Melastoma malabathricum subsp. malabathricum*			C		3/2
plants	higher dicots	Meliaceae	*Turraea pubescens*	native honeysuckle		C		1
plants	higher dicots	Meliaceae	*Xylocarpus moluccensis*			C		1
plants	higher dicots	Menyanthaceae	*Nymphoides*			C		1
plants	higher dicots	Mimosaceae	*Acacia salicina*	doolan		C		4
plants	higher dicots	Mimosaceae	*Acacia amblygona*	fan-leaf wattle		C		19/4
plants	higher dicots	Mimosaceae	*Acacia leiocalyx*			C		25/1
plants	higher dicots	Mimosaceae	*Acacia concurrens*			C		1
plants	higher dicots	Mimosaceae	*Acacia flavescens*	toothed wattle		C		5
plants	higher dicots	Mimosaceae	*Acacia juncifolia*			C		3
plants	higher dicots	Mimosaceae	*Acacia leptocarpa*	north coast wattle		C		14/3
plants	higher dicots	Mimosaceae	*Acacia aulacocarpa*			C		55
plants	higher dicots	Mimosaceae	*Acacia penninervis*			C		1/1
plants	higher dicots	Mimosaceae	*Acacia sparsiflora*			C		4
plants	higher dicots	Mimosaceae	*Acacia fasciculifera*	scaly bark		C		1
plants	higher dicots	Mimosaceae	*Acacia crassa subsp. longicoma*			C		10/3
plants	higher dicots	Mimosaceae	*Acacia spirorbis subsp. solandri*			C		1/1
plants	higher dicots	Mimosaceae	*Acacia leiocalyx subsp. leiocalyx*			C		2
plants	higher dicots	Mimosaceae	*Acacia julifera subsp. curvinervia*			C		2
plants	higher dicots	Mimosaceae	*Acacia disparrima subsp. disparrima*			C		9/2
plants	higher dicots	Mimosaceae	*Acacia*			C		7
plants	higher dicots	Mimosaceae	*Acacia decora*	pretty wattle		C		3
plants	higher dicots	Mimosaceae	*Acacia storyi*			NT		1/1
plants	higher dicots	Mimosaceae	*Acacia cretata*			C		2/1
plants	higher dicots	Mimosaceae	*Acacia falcata*	sickle wattle		C		3
plants	higher dicots	Mimosaceae	*Acacia conferta*			C		21/1
plants	higher dicots	Mimosaceae	*Acacia julifera*			C		32/1
plants	higher dicots	Mimosaceae	*Acacia maidenii*	Maiden's wattle		C		5
plants	higher dicots	Molluginaceae	*Glinus oppositifolius*			C		2/1
plants	higher dicots	Moraceae	*Ficus microcarpa*			C		1/1
plants	higher dicots	Moraceae	*Ficus*			C		7
plants	higher dicots	Moraceae	*Ficus rubiginosa forma glabrescens*			C		1/1
plants	higher dicots	Moraceae	*Trophis scandens subsp. scandens*			C		9
plants	higher dicots	Moraceae	*Ficus microcarpa var. hillii*			C		1
plants	higher dicots	Moraceae	*Ficus virens var. virens*			C		3/1
plants	higher dicots	Moraceae	*Trophis scandens*			C		2
plants	higher dicots	Moraceae	*Ficus racemosa*			C		1
plants	higher dicots	Moraceae	*Ficus opposita*			C		14
plants	higher dicots	Moraceae	*Ficus henneana*			C		1

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plants	higher dicots	Moraceae	*Ficus obliqua*			C		7/1
plants	higher dicots	Moraceae	*Ficus virens*			C		1
plants	higher dicots	Myrsinaceae	*Aegiceras corniculatum*	river mangrove		C		2
plants	higher dicots	Myrsinaceae	*Myrsine variabilis*			C		4
plants	higher dicots	Myrtaceae	*Eucalyptus moluccana*	gum-topped box		C		14
plants	higher dicots	Myrtaceae	*Corymbia clarksoniana*			C		28/2
plants	higher dicots	Myrtaceae	*Eucalyptus acmenoides*			C		3
plants	higher dicots	Myrtaceae	*Eugenia reinwardtiana*	beach cherry		C		1
plants	higher dicots	Myrtaceae	*Lophostemon confertus*	brush box		C		5
plants	higher dicots	Myrtaceae	*Melaleuca leucadendra*	broad-leaved tea-tree		C		5
plants	higher dicots	Myrtaceae	*Melaleuca viridiflora*			C		3
plants	higher dicots	Myrtaceae	*Corymbia erythrophloia*	variable-barked bloodwood		C		3
plants	higher dicots	Myrtaceae	*Leptospermum neglectum*			C		4
plants	higher dicots	Myrtaceae	*Lophostemon suaveolens*	swamp box		C		40
plants	higher dicots	Myrtaceae	*Eucalyptus latisinensis*			C		3/2
plants	higher dicots	Myrtaceae	*Eucalyptus tereticornis*			C		42/1
plants	higher dicots	Myrtaceae	*Melaleuca quinquenervia*	swamp paperbark		C		14/4
plants	higher dicots	Myrtaceae	*Eucalyptus drepanophylla*			C		1
plants	higher dicots	Myrtaceae	*Leptospermum polygalifolium*	tantoon		C		3/2
plants	higher dicots	Myrtaceae	*Eucalyptus fibrosa subsp. fibrosa*			C		7/3
plants	higher dicots	Myrtaceae	*Corymbia citriodora subsp. citriodora*			C		4/1
plants	higher dicots	Myrtaceae	*Eucalyptus tereticornis subsp. tereticornis*			C		1/1
plants	higher dicots	Myrtaceae	*Corymbia tessellaris*	Moreton Bay ash		C		32
plants	higher dicots	Myrtaceae	*Melaleuca viminalis*			C		3/2
plants	higher dicots	Myrtaceae	*Corymbia intermedia*	pink bloodwood		C		35
plants	higher dicots	Myrtaceae	*Corymbia citriodora*	spotted gum		C		30/1
plants	higher dicots	Myrtaceae	*Osbornia octodonta*	myrtle mangrove		C		1
plants	higher dicots	Myrtaceae	*Melaleuca dealbata*	swamp tea-tree		C		3
plants	higher dicots	Myrtaceae	*Lithomyrtus obtusa*			C		13/2
plants	higher dicots	Myrtaceae	*Eucalyptus fibrosa*			C		10
plants	higher dicots	Myrtaceae	*Eucalyptus exserta*	Queensland peppermint		C		42/2
plants	higher dicots	Myrtaceae	*Corymbia polycarpa*	long-fruited bloodwood		C		2
plants	higher dicots	Myrtaceae	*Corymbia gummifera*	red bloodwood		C		1
plants	higher dicots	Myrtaceae	*Melaleuca nervosa*			C		44/2
plants	higher dicots	Myrtaceae	*Eucalyptus crebra*	narrow-leaved red ironbark		C		45/4
plants	higher dicots	Myrtaceae	*Gossia bidwillii*			C		2
plants	higher dicots	Myrtaceae	*Melaleuca*			C		4
plants	higher dicots	Myrtaceae	*Leptospermum*			C		2
plants	higher dicots	Oleaceae	*Jasminum didymum subsp. didymum*			C		5
plants	higher dicots	Oleaceae	*Jasminum simplicifolium subsp. australiense*			C		4
plants	higher dicots	Oleaceae	*Jasminum simplicifolium*			C		10
plants	higher dicots	Oleaceae	*Chionanthus ramiflorus*	northern olive		C		1
plants	higher dicots	Oleaceae	*Jasminum didymum*			C		8
plants	higher dicots	Oleaceae	*Olea paniculata*			C		1
plants	higher dicots	Onagraceae	*Ludwigia peploides subsp. montevidensis*			C		2
plants	higher dicots	Onagraceae	*Ludwigia octovalvis*	willow primrose		C		4

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plants	higher dicots	Orobanchaceae	*Buchnera ramosissima*			C		1/1
plants	higher dicots	Oxalidaceae	*Oxalis*			C		1
plants	higher dicots	Oxalidaceae	*Oxalis perennans*			C		1
plants	higher dicots	Passifloraceae	*Passiflora foetida*		Y			7/2
plants	higher dicots	Passifloraceae	*Passiflora suberosa*	corky passion flower	Y			50/1
plants	higher dicots	Petiveriaceae	*Rivina humilis*		Y			1
plants	higher dicots	Phyllanthaceae	*Glochidion ferdinandi*			C		2
plants	higher dicots	Phyllanthaceae	*Breynia oblongifolia*			C		27
plants	higher dicots	Phyllanthaceae	*Phyllanthus virgatus*			C		13/2
plants	higher dicots	Phyllanthaceae	*Flueggea*					1
plants	higher dicots	Phyllanthaceae	*Phyllanthus*			C		1
plants	higher dicots	Phyllanthaceae	*Glochidion lobocarpum*			C		5
plants	higher dicots	Phyllanthaceae	*Glochidion sumatranum*	umbrella cheese tree		C		1
plants	higher dicots	Phyllanthaceae	*Poranthera microphylla*	small poranthera		C		1
plants	higher dicots	Phyllanthaceae	*Bridelia leichhardtii*			C		4
plants	higher dicots	Picrodendraceae	*Pseudanthus orientalis*			C		2
plants	higher dicots	Picrodendraceae	*Petalostigma pubescens*	quinine tree		C		42
plants	higher dicots	Pittosporaceae	*Pittosporum venulosum*			C		3
plants	higher dicots	Pittosporaceae	*Pittosporum ferrugineum subsp. linifolium*			C		1/1
plants	higher dicots	Pittosporaceae	*Auranticarpa rhombifolia*			C		1/1
plants	higher dicots	Pittosporaceae	*Pittosporum ferrugineum*			C		10
plants	higher dicots	Pittosporaceae	*Pittosporum spinescens*			C		1
plants	higher dicots	Pittosporaceae	*Pittosporum revolutum*	yellow pittosporum		C		1
plants	higher dicots	Pittosporaceae	*Bursaria incana*			C		1
plants	higher dicots	Plantaginaceae	*Scoparia dulcis*	scoparia	Y			2/1
plants	higher dicots	Plantaginaceae	*Bacopa floribunda*			C		1
plants	higher dicots	Plantaginaceae	*Mecardonia procumbens*		Y			1
plants	higher dicots	Plumbaginaceae	*Aegialitis annulata*	club mangrove		C		6/1
plants	higher dicots	Plumbaginaceae	*Limonium solanderi*			C		1
plants	higher dicots	Polygalaceae	*Polygala linariifolia*			C		2
plants	higher dicots	Polygonaceae	*Persicaria*			C		1/1
plants	higher dicots	Polygonaceae	*Polygonum aviculare*	wireweed	Y			1
plants	higher dicots	Portulacaceae	*Portulaca*			C		1
plants	higher dicots	Portulacaceae	*Portulaca pilosa*		Y			1
plants	higher dicots	Portulacaceae	*Portulaca oleracea*	pigweed	Y			1
plants	higher dicots	Proteaceae	*Banksia integrifolia*			C		12
plants	higher dicots	Putranjivaceae	*Drypetes deplanchei*	grey boxwood		C		10
plants	higher dicots	Rhamnaceae	*Alphitonia excelsa*	soap tree		C		43/1
plants	higher dicots	Rhamnaceae	*Ventilago pubiflora*			C		1
plants	higher dicots	Rhizophoraceae	*Bruguiera gymnorhiza*	large-fruited orange mangrove		C		1
plants	higher dicots	Rhizophoraceae	*Ceriops tagal*	yellow mangrove		C		4
plants	higher dicots	Rhizophoraceae	*Rhizophora stylosa*	spotted mangrove		C		8
plants	higher dicots	Rubiaceae	*Psydrax*			C		1/1
plants	higher dicots	Rubiaceae	*Morinda*			C		1
plants	higher dicots	Rubiaceae	*Timonius timon*			C		1
plants	higher dicots	Rubiaceae	*Psychotria daphnoides var. pubescens*			C		1

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plants	higher dicots	Rubiaceae	*Oldenlandia mitrasacmoides*			C		1
plants	higher dicots	Rubiaceae	*Timonius timon var. timon*			C		1
plants	higher dicots	Rubiaceae	*Cyclophyllum coprosmoides*			C		10
plants	higher dicots	Rubiaceae	*Spermacoce*			C		2/1
plants	higher dicots	Rubiaceae	*Aidia racemosa*			C		2
plants	higher dicots	Rubiaceae	*Oldenlandia mitrasacmoides subsp. trachymenoides*			C		2/2
plants	higher dicots	Rubiaceae	*Dentella repens*	dentella		C		2
plants	higher dicots	Rubiaceae	*Psydrax odorata*			C		2
plants	higher dicots	Rubiaceae	*Psydrax oleifolia*			C		1
plants	higher dicots	Rubiaceae	*Ixora queenslandica*			C		2
plants	higher dicots	Rubiaceae	*Oldenlandia galioides*			C		1
plants	higher dicots	Rubiaceae	*Psychotria daphnoides*			C		1
plants	higher dicots	Rubiaceae	*Spermacoce multicaulis*			C		5/2
plants	higher dicots	Rubiaceae	*Psychotria loniceroides*	hairy psychotria		C		2
plants	higher dicots	Rubiaceae	*Coelospermum reticulatum*			C		52
plants	higher dicots	Rutaceae	*Acronychia laevis*	glossy acronychia		C		7
plants	higher dicots	Rutaceae	*Micromelum minutum*	clusterberry		C		3
plants	higher dicots	Rutaceae	*Acronychia imperforata*	beach acronychia		C		8/2
plants	higher dicots	Rutaceae	*Flindersia australis*	crow's ash		C		2
plants	higher dicots	Rutaceae	*Geijera salicifolia*	brush wilga		C		3
plants	higher dicots	Santalaceae	*Exocarpos latifolius*			C		18
plants	higher dicots	Sapindaceae	*Alectryon*			C		1
plants	higher dicots	Sapindaceae	*Alectryon connatus*	grey birds-eye		C		10
plants	higher dicots	Sapindaceae	*Jagera pseudorhus*			C		9
plants	higher dicots	Sapindaceae	*Dodonaea viscosa*			C		7
plants	higher dicots	Sapindaceae	*Cupaniopsis wadsworthii*			C		3/1
plants	higher dicots	Sapindaceae	*Alectryon diversifolius*	scrub boonaree		C		1
plants	higher dicots	Sapindaceae	*Alectryon tomentosus*			C		3
plants	higher dicots	Sapindaceae	*Dodonaea lanceolata*			C		8
plants	higher dicots	Sapindaceae	*Arytera divaricata*	coogera		C		3
plants	higher dicots	Sapindaceae	*Elattostachys xylocarpa*	white tamarind		C		2
plants	higher dicots	Sapindaceae	*Mischocarpus pyriformis*			C		1
plants	higher dicots	Sapindaceae	*Dodonaea lanceolata var. subsessilifolia*			C		6/4
plants	higher dicots	Sapindaceae	*Rhysotoechia bifoliolata*			C		1
plants	higher dicots	Sapindaceae	*Cupaniopsis anacardioides*	tuckeroo		C		19
plants	higher dicots	Sapindaceae	*Dodonaea viscosa subsp. burmanniana*			C		1/1
plants	higher dicots	Sapotaceae	*Planchonella cotinifolia var. pubescens*			C		1
plants	higher dicots	Sapotaceae	*Planchonella pohlmaniana*			C		1
plants	higher dicots	Sapotaceae	*Sersalisia sericea*			C		9
plants	higher dicots	Scrophulariaceae	*Myoporum*			C		1
plants	higher dicots	Scrophulariaceae	*Myoporum boninense subsp. australe*			C		1/1
plants	higher dicots	Scrophulariaceae	*Myoporum acuminatum*	coastal boobialla		C		1
plants	higher dicots	Scrophulariaceae	*Eremophila debilis*	winter apple		C		5/1
plants	higher dicots	Solanaceae	*Solanum seaforthianum*	Brazilian nightshade	Y			6
plants	higher dicots	Solanaceae	*Solanum nodiflorum*		Y			1
plants	higher dicots	Solanaceae	*Physalis peruviana*		Y			3

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plants	higher dicots	Solanaceae	*Solanum torvum*	devil's fig	Y			3/2
plants	higher dicots	Solanaceae	*Solanum nigrum*		Y			5/1
plants	higher dicots	Solanaceae	*Solanum ellipticum*	potato bush		C		1
plants	higher dicots	Sparrmanniaceae	*Triumfetta rhomboidea*	chinese burr	Y			10
plants	higher dicots	Sparrmanniaceae	*Grewia retusifolia*			C		5/1
plants	higher dicots	Sparrmanniaceae	*Triumfetta repens*			C		6
plants	higher dicots	Sparrmanniaceae	*Grewia latifolia*	dysentery plant		C		2
plants	higher dicots	Stackhousiaceae	*Stackhousia monogyna*	creamy candles		C		3
plants	higher dicots	Stylidiaceae	*Stylidium rotundifolium*			C		1/1
plants	higher dicots	Stylidiaceae	*Stylidium eglandulosum*			C		1
plants	higher dicots	Stylidiaceae	*Stylidium*			C		1
plants	higher dicots	Thymelaeaceae	*Wikstroemia indica*	tie bush		C		3/1
plants	higher dicots	Thymelaeaceae	*Pimelea linifolia*			C		4
plants	higher dicots	Ulmaceae	*Trema tomentosa*			C		2
plants	higher dicots	Ulmaceae	*Aphananthe philippinensis*			C		1
plants	higher dicots	Ulmaceae	*Celtis paniculata*	native celtis		C		3
plants	higher dicots	Verbenaceae	*Lantana montevidensis*	creeping lantana	Y			4/2
plants	higher dicots	Verbenaceae	*Stachytarpheta jamaicensis*	Jamaica snakeweed	Y			3/2
plants	higher dicots	Verbenaceae	*Verbena incompta*		Y			1/1
plants	higher dicots	Verbenaceae	*Phyla nodiflora*	carpetweed		C		4
plants	higher dicots	Verbenaceae	*Lantana camara*	lantana	Y			35/3
plants	higher dicots	Violaceae	*Viola hederacea*			C		1
plants	higher dicots	Violaceae	*Hybanthus enneaspermus*			C		3
plants	higher dicots	Viscaceae	*Viscum articulatum*	flat mistletoe		C		3/3
plants	higher dicots	Vitaceae	*Cissus oblonga*			C		1
plants	lower dicots	Annonaceae	*Melodorum leichhardtii*			C		1
plants	lower dicots	Annonaceae	*Polyalthia nitidissima*	polyalthia		C		9
plants	lower dicots	Aristolochiaceae	*Aristolochia elegans*	calico-flower	Y			3/3
plants	lower dicots	Avicenniaceae	*Avicennia marina subsp. australasica*			C		2
plants	lower dicots	Avicenniaceae	*Avicennia marina*			C		2
plants	lower dicots	Lauraceae	*Cassytha*			C		9
plants	lower dicots	Lauraceae	*Cassytha pubescens*	downy devil's twine		C		10
plants	lower dicots	Lauraceae	*Neolitsea dealbata*	white bolly gum		C		1
plants	lower dicots	Lauraceae	*Cassytha filiformis*	dodder laurel		C		2
plants	lower dicots	Lauraceae	*Cryptocarya triplinervis*			C		3
plants	lower dicots	Linderniaceae	*Lindernia anagallis*			C		1
plants	lower dicots	Menispermaceae	*Hypserpa decumbens*			C		1
plants	lower dicots	Menispermaceae	*Stephania japonica*			C		4
plants	lower dicots	Menispermaceae	*Pleogyne australis*	wiry grape		C		1
plants	lower dicots	Menispermaceae	*Stephania japonica var. discolor*			C		3
plants	lower dicots	Nymphaeaceae	*Nymphaea caerulea*		Y			1
plants	lower dicots	Nymphaeaceae	*Nymphaea*			C		2
plants	lower dicots	Nymphaeaceae	*Nymphaea violacea*			C		1
plants	lower dicots	Piperaceae	*Peperomia*			C		1
plants	lower dicots	Piperaceae	*Peperomia blanda var. floribunda*			C		3
plants	monocots	Amaryllidaceae	*Crinum pedunculatum*	river lily		C		1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	monocots	Amaryllidaceae	*Crinum*			C		4
plants	monocots	Araceae	*Lemna*					3
plants	monocots	Arecaceae	*Livistona decora*			C		13
plants	monocots	Arecaceae	*Livistona*			C		1
plants	monocots	Commelinaceae	*Murdannia graminea*	murdannia		C		6
plants	monocots	Commelinaceae	*Commelina ensifolia*	scurvy grass		C		2
plants	monocots	Cyperaceae	*Schoenus apogon*			C		1/1
plants	monocots	Cyperaceae	*Cyperus gracilis*			C		2
plants	monocots	Cyperaceae	*Fuirena ciliaris*			C		5
plants	monocots	Cyperaceae	*Baumea articulata*	jointed twigrush		C		1
plants	monocots	Cyperaceae	*Baumea rubiginosa*	soft twigrush		C		4/3
plants	monocots	Cyperaceae	*Carex breviculmis*			C		1
plants	monocots	Cyperaceae	*Cyperus flaccidus*			C		1
plants	monocots	Cyperaceae	*Cyperus javanicus*			C		2/2
plants	monocots	Cyperaceae	*Cyperus scariosus*			C		1/1
plants	monocots	Cyperaceae	*Cyperus trinervis*			C		3/3
plants	monocots	Cyperaceae	*Cyperus*			C		4
plants	monocots	Cyperaceae	*Scleria*			C		2
plants	monocots	Cyperaceae	*Fimbristylis*			C		7
plants	monocots	Cyperaceae	*Carex inversa*	knob sedge		C		1
plants	monocots	Cyperaceae	*Gahnia aspera*			C		10/1
plants	monocots	Cyperaceae	*Eleocharis dulcis*			C		1
plants	monocots	Cyperaceae	*Isolepis fluitans*	floating club rush		C		2
plants	monocots	Cyperaceae	*Schoenus falcatus*			C		1
plants	monocots	Cyperaceae	*Schoenus sparteus*			C		5
plants	monocots	Cyperaceae	*Abildgaardia ovata*			C		4/1
plants	monocots	Cyperaceae	*Cyperus leiocaulon*			C		3/2
plants	monocots	Cyperaceae	*Cyperus squarrosus*	bearded flatsedge		C		2/1
plants	monocots	Cyperaceae	*Cyperus tenuispica*			C		1
plants	monocots	Cyperaceae	*Cyperus brevifolius*	Mullumbimby couch	Y			1
plants	monocots	Cyperaceae	*Cyperus perangustus*			C		1
plants	monocots	Cyperaceae	*Cyperus tetracarpus*			C		1/1
plants	monocots	Cyperaceae	*Cyperus pedunculatus*			C		1
plants	monocots	Cyperaceae	*Cyperus polystachyos*			C		5
plants	monocots	Cyperaceae	*Lepironia articulata*			C		1
plants	monocots	Cyperaceae	*Scleria mackaviensis*			C		6
plants	monocots	Cyperaceae	*Abildgaardia vaginata*			C		2/1
plants	monocots	Cyperaceae	*Cyperus alopecuroides*			C		4
plants	monocots	Cyperaceae	*Eleocharis geniculata*			C		1
plants	monocots	Cyperaceae	*Cyperus stradbrokensis*			C		1/1
plants	monocots	Cyperaceae	*Fimbristylis dichotoma*	common fringe-rush		C		10/5
plants	monocots	Cyperaceae	*Fimbristylis aestivalis*			C		3/3
plants	monocots	Cyperaceae	*Fimbristylis ferruginea*			C		3/2
plants	monocots	Cyperaceae	*Fimbristylis microcarya*			C		2/1
plants	monocots	Cyperaceae	*Fimbristylis pauciflora*			C		2/1
plants	monocots	Cyperaceae	*Schoenoplectiella erecta*		Y			1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	monocots	Cyperaceae	*Fimbristylis bisumbellata*			C		1
plants	monocots	Cyperaceae	*Rhynchospora heterochaeta*			C		1
plants	monocots	Cyperaceae	*Fimbristylis polytrichoides*			C		5/1
plants	monocots	Cyperaceae	*Schoenus apogon var. apogon*			C		1/1
plants	monocots	Cyperaceae	*Trachystylis stradbrokensis*			C		4
plants	monocots	Cyperaceae	*Cyperus conicus var. conicus*			C		2/1
plants	monocots	Cyperaceae	*Schoenoplectiella lateriflora*			C		1
plants	monocots	Cyperaceae	*Cyperus gunnii subsp. novae-hollandiae*			C		1/1
plants	monocots	Cyperaceae	*Cyperus polystachyos var. polystachyos*			C		1
plants	monocots	Cyperaceae	*Cyperus dietrichiae var. brevibracteatus*			C		3
plants	monocots	Cyperaceae	*Cyperus enervis*			C		4/1
plants	monocots	Cyperaceae	*Cyperus fulvus*			C		2/1
plants	monocots	Cyperaceae	*Cyperus scaber*			C		1
plants	monocots	Hemerocallidaceae	*Dianella congesta*			C		1/1
plants	monocots	Hemerocallidaceae	*Dianella brevipedunculata*			C		1
plants	monocots	Hemerocallidaceae	*Dianella*			C		10
plants	monocots	Hemerocallidaceae	*Dianella rara*			C		7/3
plants	monocots	Hemerocallidaceae	*Dianella caerulea*			C		24
plants	monocots	Hemerocallidaceae	*Dianella caerulea var. vannata*			C		1
plants	monocots	Hemerocallidaceae	*Dianella revoluta*			C		5/2
plants	monocots	Hemerocallidaceae	*Dianella longifolia*			C		10/3
plants	monocots	Hemerocallidaceae	*Geitonoplesium cymosum*	scrambling lily		C		2
plants	monocots	Hydrocharitaceae	*Halophila ovalis*			C		3
plants	monocots	Hydrocharitaceae	*Vallisneria*			C		1
plants	monocots	Johnsoniaceae	*Tricoryne elatior*	yellow autumn lily		C		4
plants	monocots	Juncaceae	*Juncus polyanthemus*			C		3/2
plants	monocots	Juncaceae	*Juncus*			C		1
plants	monocots	Juncaceae	*Juncus continuus*			C		2
plants	monocots	Laxmanniaceae	*Laxmannia gracilis*	slender wire lily		C		1
plants	monocots	Laxmanniaceae	*Lomandra longifolia*			C		13/1
plants	monocots	Laxmanniaceae	*Lomandra multiflora*			C		2
plants	monocots	Laxmanniaceae	*Thysanotus tuberosus*			C		2
plants	monocots	Laxmanniaceae	*Lomandra*			C		2
plants	monocots	Laxmanniaceae	*Lomandra confertifolia*			C		10
plants	monocots	Laxmanniaceae	*Lomandra confertifolia subsp. pallida*			C		10/2
plants	monocots	Laxmanniaceae	*Lomandra multiflora subsp. multiflora*			C		6/3
plants	monocots	Laxmanniaceae	*Eustrephus latifolius*	wombat berry		C		40/1
plants	monocots	Najadaceae	*Najas tenuifolia*	water nymph		C		1
plants	monocots	Orchidaceae	*Caladenia*			C		2
plants	monocots	Orchidaceae	*Dipodium punctatum*			C		2
plants	monocots	Orchidaceae	*Cymbidium canaliculatum*			C		2/1
plants	monocots	Orchidaceae	*Geodorum densiflorum*	pink nodding orchid		C		4
plants	monocots	Orchidaceae	*Dockrillia teretifolia*	rat's tail orchid		C		1
plants	monocots	Orchidaceae	*Dipodium variegatum*			C		2/2
plants	monocots	Pandanaceae	*Pandanus*			C		3
plants	monocots	Pandanaceae	*Pandanus tectorius*			C		3

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	monocots	Philydraceae	*Philydrum lanuginosum*	frogsmouth		C		4
plants	monocots	Poaceae	*Bothriochloa bladhii*			C		2
plants	monocots	Poaceae	*Cymbopogon refractus*	barbed-wire grass		C		10/1
plants	monocots	Poaceae	*Digitaria longiflora*			C		2/1
plants	monocots	Poaceae	*Digitaria parviflora*			C		10
plants	monocots	Poaceae	*Digitaria violascens*	bastard summergrass	Y			3/2
plants	monocots	Poaceae	*Enneapogon nigricans*	niggerheads		C		1
plants	monocots	Poaceae	*Ottochloa gracillima*	pademelon grass		C		1
plants	monocots	Poaceae	*Phragmites australis*	common reed		C		4
plants	monocots	Poaceae	*Sporobolus elongatus*			C		4/2
plants	monocots	Poaceae	*Chionachne cyathopoda*	river grass		C		1/1
plants	monocots	Poaceae	*Cymbopogon bombycinus*	silky oilgrass		C		4
plants	monocots	Poaceae	*Digitaria breviglumis*			C		1
plants	monocots	Poaceae	*Eragrostis interrupta*			C		3
plants	monocots	Poaceae	*Poaceae*			C		1
plants	monocots	Poaceae	*Themeda*					1
plants	monocots	Poaceae	*Aristida*			C		40
plants	monocots	Poaceae	*Eriachne*			C		2
plants	monocots	Poaceae	*Digitaria*			C		4
plants	monocots	Poaceae	*Eriochloa*			C		3
plants	monocots	Poaceae	*Ischaemum*			C		2
plants	monocots	Poaceae	*Ottochloa*			C		1
plants	monocots	Poaceae	*Eragrostis*			C		20/2
plants	monocots	Poaceae	*Paspalidium*			C		3
plants	monocots	Poaceae	*Eriachne rara*			C		1
plants	monocots	Poaceae	*Eulalia aurea*	silky browntop		C		1
plants	monocots	Poaceae	*Melinis repens*	red natal grass	Y			9/2
plants	monocots	Poaceae	*Panicum simile*			C		2
plants	monocots	Poaceae	*Setaria pumila*		Y			1
plants	monocots	Poaceae	*Aristida vagans*			C		1
plants	monocots	Poaceae	*Chloris inflata*	purpletop chloris	Y			11/4
plants	monocots	Poaceae	*Diplachne fusca*					1
plants	monocots	Poaceae	*Eleusine indica*	crowsfoot grass	Y			3/2
plants	monocots	Poaceae	*Lepturus repens*	stalky grass		C		1
plants	monocots	Poaceae	*Panicum effusum*			C		9
plants	monocots	Poaceae	*Setaria surgens*			C		8/1
plants	monocots	Poaceae	*Sorghum nitidum*			C		3
plants	monocots	Poaceae	*Cynodon dactylon*		Y			2
plants	monocots	Poaceae	*Digitaria fumida*			C		1/1
plants	monocots	Poaceae	*Eragrostis minor*	smaller stinkgrass	Y			4/1
plants	monocots	Poaceae	*Ottochloa nodosa*			C		2
plants	monocots	Poaceae	*Sporobolus laxus*			C		1
plants	monocots	Poaceae	*Themeda triandra*	kangaroo grass		C		51/2
plants	monocots	Poaceae	*Triraphis mollis*	purple plumegrass		C		4
plants	monocots	Poaceae	*Urochloa foliosa*			C		1/1
plants	monocots	Poaceae	*Zoysia macrantha*	prickly couch		C		2

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	monocots	Poaceae	*Aristida contorta*	bunched kerosene grass		C		2/1
plants	monocots	Poaceae	*Chloris pectinata*	comb chloris		C		1/1
plants	monocots	Poaceae	*Digitaria diffusa*			C		6
plants	monocots	Poaceae	*Dinebra decipiens*			C		2/1
plants	monocots	Poaceae	*Entolasia stricta*	wiry panic		C		11
plants	monocots	Poaceae	*Eragrostis pilosa*	soft lovegrass	Y			1
plants	monocots	Poaceae	*Eriochloa procera*	slender cupgrass		C		2
plants	monocots	Poaceae	*Panicum paludosum*	swamp panic		C		1
plants	monocots	Poaceae	*Spinifex sericeus*	beach spinifex		C		3
plants	monocots	Poaceae	*Cenchrus echinatus*	Mossman River grass	Y			7/1
plants	monocots	Poaceae	*Chrysopogon fallax*			C		11/1
plants	monocots	Poaceae	*Digitaria bicornis*			C		1/1
plants	monocots	Poaceae	*Digitaria ciliaris*	summer grass	Y			2/1
plants	monocots	Poaceae	*Echinochloa colona*	awnless barnyard grass	Y			1/1
plants	monocots	Poaceae	*Eragrostis brownii*	Brown's lovegrass		C		5/1
plants	monocots	Poaceae	*Eragrostis curvula*		Y			1/1
plants	monocots	Poaceae	*Eragrostis sororia*			C		4/2
plants	monocots	Poaceae	*Oplismenus aemulus*	creeping shade grass		C		8
plants	monocots	Poaceae	*Paspalidium gausum*			C		1
plants	monocots	Poaceae	*Paspalum distichum*	water couch		C		1
plants	monocots	Poaceae	*Digitaria ammophila*	silky umbrella grass		C		2/1
plants	monocots	Poaceae	*Digitaria didactyla*	Queensland blue couch	Y			3/1
plants	monocots	Poaceae	*Eragrostis elongata*			C		5
plants	monocots	Poaceae	*Eriachne pallescens*			C		5
plants	monocots	Poaceae	*Imperata cylindrica*	blady grass		C		28/1
plants	monocots	Poaceae	*Paspalidium distans*	shotgrass		C		10/3
plants	monocots	Poaceae	*Eragrostis leptocarpa*	drooping lovegrass		C		2/1
plants	monocots	Poaceae	*Eragrostis parviflora*	weeping lovegrass		C		1
plants	monocots	Poaceae	*Eremochloa bimaculata*	poverty grass		C		6/2
plants	monocots	Poaceae	*Heteropogon contortus*	black speargrass		C		43/2
plants	monocots	Poaceae	*Schizachyrium fragile*	firegrass		C		3
plants	monocots	Poaceae	*Setaria oplismenoides*			C		1
plants	monocots	Poaceae	*Sporobolus virginicus*	sand couch		C		9
plants	monocots	Poaceae	*Alloteropsis semialata*	cockatoo grass		C		8/4
plants	monocots	Poaceae	*Arundinella nepalensis*	reedgrass		C		4
plants	monocots	Poaceae	*Digitaria leucostachya*			C		1
plants	monocots	Poaceae	*Echinochloa crus-galli*	barnyard grass	Y			1
plants	monocots	Poaceae	*Paspalidium criniforme*			C		1/1
plants	monocots	Poaceae	*Paspalidium disjunctum*			C		1
plants	monocots	Poaceae	*Paspalum scrobiculatum*	ditch millet		C		7/1
plants	monocots	Poaceae	*Urochloa mosambicensis*	sabi grass	Y			1
plants	monocots	Poaceae	*Urochloa subquadripara*		Y			3
plants	monocots	Poaceae	*Eragrostis leptostachya*			C		2
plants	monocots	Poaceae	*Eragrostis spartinoides*			C		6/1
plants	monocots	Poaceae	*Polypogon monspeliensis*	annual beardgrass	Y			1
plants	monocots	Poaceae	*Capillipedium spicigerum*	spicytop		C		1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	monocots	Poaceae	*Dactyloctenium aegyptium*	coast button grass	Y			6/1
plants	monocots	Poaceae	*Enneapogon robustissimus*			C		2/1
plants	monocots	Poaceae	*Paspalidium albovillosum*			C		1
plants	monocots	Poaceae	*Capillipedium parviflorum*	scented top		C		2/1
plants	monocots	Poaceae	*Digitaria divaricatissima*	spreading umbrella grass		C		2/1
plants	monocots	Poaceae	*Diplachne fusca var. fusca*			C		1/1
plants	monocots	Poaceae	*Schizachyrium pachyarthron*			C		1/1
plants	monocots	Poaceae	*Schizachyrium pseudeulalia*			C		1
plants	monocots	Poaceae	*Hyparrhenia rufa subsp. rufa*		Y			1/1
plants	monocots	Poaceae	*Aristida calycina var. calycina*			C		5/2
plants	monocots	Poaceae	*Dinebra decipiens var. peacockii*			C		2
plants	monocots	Poaceae	*Chloris divaricata var. divaricata*	slender chloris		C		5/1
plants	monocots	Poaceae	*Setaria pumila subsp. subtesselata*		Y			2
plants	monocots	Poaceae	*Bothriochloa bladhii subsp. bladhii*			C		3/2
plants	monocots	Poaceae	*Megathyrsus maximus var. pubiglumis*		Y			4/1
plants	monocots	Poaceae	*Dichanthium sericeum subsp. sericeum*			C		2/1
plants	monocots	Poaceae	*Bothriochloa decipiens var. decipiens*			C		1
plants	monocots	Poaceae	*Aristida queenslandica var. dissimilis*			C		5/2
plants	monocots	Poaceae	*Panicum decompositum var. decompositum*			C		1
plants	monocots	Poaceae	*Aristida queenslandica var. queenslandica*			C		1
plants	monocots	Pontederiaceae	*Monochoria cyanea*			C		4
plants	monocots	Ruppiaceae	*Ruppia maritima*	sea tassel		C		1
plants	monocots	Smilacaceae	*Smilax australis*	barbed-wire vine		C		3
plants	monocots	Typhaceae	*Typha domingensis*			C		1
plants	monocots	Xanthorrhoeaceae	*Xanthorrhoea latifolia subsp. latifolia*			C		44/3
plants	monocots	Xanthorrhoeaceae	*Xanthorrhoea pumilio*			C		8/3
plants	monocots	Xanthorrhoeaceae	*Xanthorrhoea*			C		13/1
plants	monocots	Xanthorrhoeaceae	*Xanthorrhoea fulva*	swamp grasstree		C		3/2
plants	uncertain	Indet.	*Indet.*			C		3
protists	brown algae	Phaeophyceae	*Sargassum parvifolium*			C		1/1
protists	green algae	Chlorophyceae	*Caulerpa cupressoides*			C		1/1
protists	red algae	Rhodophyceae	*Galaxaura*			C		1/1
protists	red algae	Rhodophyceae	*Polysiphonia*			C		3/3
protists	red algae	Rhodophyceae	*Chondria armata*			C		1/1
protists	red algae	Rhodophyceae	*Liagora ceranoides*			C		1/1
protists	red algae	Rhodophyceae	*Scinaia tsinglanensis*			C		1/1
protists	red algae	Rhodophyceae	*Botryocladia leptopoda*			C		1/1
protists	red algae	Rhodophyceae	*Chamaebotrys boergesenii*			C		1/1
protists	red algae	Rhodophyceae	*Ceramium*			C		2/2
protists	red algae	Rhodophyceae	*Scinaia*			C		2/2
protists	red algae	Rhodophyceae	*Ganonema samaense*			C		1/1

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 Extinct in the Wild (PE), Endangered (E), Vulnerable (V), Near Threatened (NT), Least Concern (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).

Records – The first number indicates the total number of records of the taxon for the record option selected (i.e. All, Confirmed or Specimens).
This number is output as 99999 if it equals or exceeds this value. The second number located after the / indicates the number of specimen records for the taxon.
This number is output as 999 if it equals or exceeds this value.

Queensland Government

Wildlife Online Extract

Search Criteria: Species List for a Selected Area
Species: All
Type: All
Status: All
Records: All
Area: Curtis Island State Forest
Email: nathan.frazier@cardno.com.au
Date submitted: Thursday 20 Oct 2016 17:42:41
Date extracted: Thursday 20 Oct 2016 17:50:06

The number of records retrieved = 513

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	amphibians	Hylidae	*Litoria fallax*	eastern sedgefrog		C		1
animals	birds	Accipitridae	*Haliastur indus*	brahminy kite		C		1
animals	birds	Ardeidae	*Ardea alba modesta*	eastern great egret		C		1
animals	birds	Ardeidae	*Egretta novaehollandiae*	white-faced heron		C		1
animals	birds	Cacatuidae	*Calyptorhynchus banksii*	red-tailed black-cockatoo		C		2
animals	birds	Ciconiidae	*Ephippiorhynchus asiaticus*	black-necked stork		C		1
animals	birds	Columbidae	*Geopelia striata*	peaceful dove		C		2
animals	birds	Eurostopodidae	*Eurostopodus mystacalis*	white-throated nightjar		C		2
animals	birds	Haematopodidae	*Haematopus fuliginosus*	sooty oystercatcher		C		1
animals	birds	Halcyonidae	*Todiramphus sordidus*	Torresian kingfisher		C		1
animals	birds	Halcyonidae	*Dacelo novaeguineae*	laughing kookaburra		C		1
animals	birds	Laridae	*Gelochelidon nilotica*	gull-billed tern		SL		1
animals	birds	Laridae	*Thalasseus bergii*	crested tern		SL		1
animals	birds	Maluridae	*Malurus melanocephalus*	red-backed fairy-wren		C		1
animals	birds	Meliphagidae	*Lichmera indistincta*	brown honeyeater		C		2
animals	birds	Meliphagidae	*Gavicalis fasciogularis*	mangrove honeyeater		C		1
animals	birds	Meliphagidae	*Philemon corniculatus*	noisy friarbird		C		1
animals	birds	Meliphagidae	*Philemon citreogularis*	little friarbird		C		1
animals	birds	Meliphagidae	*Entomyzon cyanotis*	blue-faced honeyeater		C		1
animals	birds	Monarchidae	*Myiagra rubecula*	leaden flycatcher		C		1
animals	birds	Oriolidae	*Oriolus sagittatus*	olive-backed oriole		C		1
animals	birds	Pardalotidae	*Pardalotus striatus*	striated pardalote		C		2
animals	birds	Psittacidae	*Trichoglossus chlorolepidotus*	scaly-breasted lorikeet		C		1
animals	birds	Psittacidae	*Trichoglossus haematodus moluccanus*	rainbow lorikeet		C		1
animals	birds	Psittacidae	*Platycercus adscitus*	pale-headed rosella		C		1
animals	birds	Scolopacidae	*Calidris canutus*	red knot		SL	E	1
animals	mammals	Macropodidae	*Macropus giganteus*	eastern grey kangaroo		C		1
animals	mammals	Petauridae	*Petaurus australis australis*	yellow-bellied glider (southern subspecies)		C		2
animals	mammals	Phalangeridae	*Trichosurus vulpecula*	common brushtail possum		C		2
animals	reptiles	Cheloniidae	*Natator depressus*	flatback turtle		V	V	10/10
animals	reptiles	Pygopodidae	*Lialis burtonis*	Burton's legless lizard		C		1
animals	reptiles	Scincidae	*Carlia munda*	shaded-litter rainbow-skink		C		2
animals	reptiles	Varanidae	*Varanus varius*	lace monitor		C		1
plants	ferns	Adiantaceae	*Adiantum aethiopicum*			C		1
plants	ferns	Adiantaceae	*Doryopteris concolor*			C		1
plants	ferns	Adiantaceae	*Adiantum formosum*			C		1
plants	ferns	Adiantaceae	*Cheilanthes nudiuscula*			C		2/1
plants	ferns	Adiantaceae	*Cheilanthes sieberi*			C		3
plants	ferns	Adiantaceae	*Cheilanthes distans*	bristly cloak fern		C		2/2
plants	ferns	Adiantaceae	*Adiantum hispidulum*			C		2
plants	ferns	Gleicheniaceae	*Dicranopteris linearis*			C		2
plants	ferns	Lindsaeaceae	*Lindsaea ensifolia*			C		2
plants	ferns	Marsileaceae	*Marsilea crenata*			C		1
plants	ferns	Polypodiaceae	*Drynaria rigidula*			C		1
plants	ferns	Polypodiaceae	*Drynaria sparsisora*			C		2

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plants	ferns	Polypodiaceae	*Microsorum punctatum*			C		3
plants	ferns	Schizaeaceae	*Lygodium flexuosum*			C		1
plants	ferns	Schizaeaceae	*Lygodium microphyllum*	snake fern		C		1
plants	ferns	Thelypteridaceae	*Cyclosorus interruptus*			C		2
plants	higher dicots	Acanthaceae	*Pseuderanthemum variabile*	pastel flower		C		2
plants	higher dicots	Acanthaceae	*Brunoniella australis*	blue trumpet		C		1
plants	higher dicots	Acanthaceae	*Brunoniella acaulis*			C		1
plants	higher dicots	Acanthaceae	*Brunoniella acaulis subsp. ciliata*			C		1
plants	higher dicots	Acanthaceae	*Brunoniella*			C		2
plants	higher dicots	Aizoaceae	*Sesuvium portulacastrum*	sea purslane		C		2
plants	higher dicots	Aizoaceae	*Carpobrotus glaucescens*	pigface		C		1
plants	higher dicots	Amaranthaceae	*Achyranthes aspera*			C		2
plants	higher dicots	Amaranthaceae	*Gomphrena celosioides*	gomphrena weed	Y			1
plants	higher dicots	Anacardiaceae	*Euroschinus falcatus*			C		1
plants	higher dicots	Anacardiaceae	*Pleiogynium timorense*	Burdekin plum		C		3
plants	higher dicots	Apiaceae	*Centella asiatica*			C		1
plants	higher dicots	Apocynaceae	*Asclepias curassavica*	red-head cottonbush	Y			2
plants	higher dicots	Apocynaceae	*Parsonsia straminea*	monkey rope		C		3
plants	higher dicots	Apocynaceae	*Secamone elliptica*			C		1
plants	higher dicots	Apocynaceae	*Marsdenia viridiflora*			C		1/1
plants	higher dicots	Apocynaceae	*Hoya australis*			C		4
plants	higher dicots	Apocynaceae	*Marsdenia microlepis*			C		2/1
plants	higher dicots	Apocynaceae	*Sarcostemma viminale subsp. brunonianum*					3
plants	higher dicots	Apocynaceae	*Alyxia spicata*			C		1
plants	higher dicots	Apocynaceae	*Melodinus*			C		1
plants	higher dicots	Apocynaceae	*Parsonsia plaesiophylla*			C		1
plants	higher dicots	Apocynaceae	*Carissa ovata*	currantbush		C		1
plants	higher dicots	Apocynaceae	*Cryptostegia grandiflora*	rubber vine	Y			2
plants	higher dicots	Apocynaceae	*Parsonsia velutina*	hairy silkpod		C		1
plants	higher dicots	Apocynaceae	*Alyxia ruscifolia*			C		4
plants	higher dicots	Apocynaceae	*Parsonsia eucalyptophylla*	gargaloo		C		2
plants	higher dicots	Araliaceae	*Polyscias elegans*	celery wood		C		3
plants	higher dicots	Asteraceae	*Centipeda nidiformis*			C		1/1
plants	higher dicots	Asteraceae	*Sphaeromorphaea australis*			C		2
plants	higher dicots	Asteraceae	*Conyza bonariensis*					2
plants	higher dicots	Asteraceae	*Centipeda minima*			C		1/1
plants	higher dicots	Asteraceae	*Coronidium glutinosum*			C		2/1
plants	higher dicots	Asteraceae	*Conyza sumatrensis*	tall fleabane				1
plants	higher dicots	Asteraceae	*Podolepis longipedata*	tall copper-wire daisy		C		2
plants	higher dicots	Asteraceae	*Pterocaulon redolens*			C		2
plants	higher dicots	Asteraceae	*Coronidium rupicola*			C		1
plants	higher dicots	Asteraceae	*Peripleura hispidula var. setosa*			C		1
plants	higher dicots	Asteraceae	*Conyza leucantha*					1/1
plants	higher dicots	Asteraceae	*Ageratum*			C		1
plants	higher dicots	Asteraceae	*Coronidium boormanii*			C		1
plants	higher dicots	Asteraceae	*Cyanthillium cinereum*			C		6

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plants	higher dicots	Asteraceae	*Wollastonia biflora*			C		1
plants	higher dicots	Asteraceae	*Tridax procumbens*	tridax daisy	Y			1
plants	higher dicots	Asteraceae	*Pterocaulon sphacelatum*	applebush		C		1/1
plants	higher dicots	Asteraceae	*Chrysocephalum apiculatum*	yellow buttons		C		1
plants	higher dicots	Asteraceae	*Emilia sonchifolia*		Y			2
plants	higher dicots	Asteraceae	*Xerochrysum bracteatum*	golden everlasting daisy		C		1
plants	higher dicots	Asteraceae	*Coronidium lanuginosum*			C		1
plants	higher dicots	Asteraceae	*Tagetes minuta*	stinking roger	Y			1
plants	higher dicots	Asteraceae	*Sonchus oleraceus*	common sowthistle	Y			1
plants	higher dicots	Bignoniaceae	*Pandorea*			C		1
plants	higher dicots	Bignoniaceae	*Pandorea pandorana*	wonga vine		C		2
plants	higher dicots	Boraginaceae	*Heliotropium pauciflorum*			C		1
plants	higher dicots	Brassicaceae	*Lepidium bonariense*	Argentine peppercress	Y			1
plants	higher dicots	Cactaceae	*Opuntia*			C		1
plants	higher dicots	Caesalpiniaceae	*Chamaecrista mimosoides*	dwarf cassia		C		1
plants	higher dicots	Campanulaceae	*Lobelia anceps*			C		1
plants	higher dicots	Campanulaceae	*Lobelia*			C		1
plants	higher dicots	Capparaceae	*Capparis canescens*			C		1
plants	higher dicots	Casuarinaceae	*Casuarina equisetifolia subsp. incana*			C		1
plants	higher dicots	Casuarinaceae	*Allocasuarina torulosa*			C		5
plants	higher dicots	Casuarinaceae	*Casuarina glauca*	swamp she-oak		C		1
plants	higher dicots	Casuarinaceae	*Allocasuarina littoralis*			C		2
plants	higher dicots	Casuarinaceae	*Allocasuarina luehmannii*	bull oak		C		2
plants	higher dicots	Casuarinaceae	*Casuarina equisetifolia*			C		1
plants	higher dicots	Celastraceae	*Hippocratea barbata*	knotvine		C		1
plants	higher dicots	Celastraceae	*Denhamia disperma*			C		2
plants	higher dicots	Celastraceae	*Elaeodendron melanocarpum*			C		1
plants	higher dicots	Chenopodiaceae	*Sarcocornia quinqueflora subsp. quinqueflora*			C		1
plants	higher dicots	Chenopodiaceae	*Tecticornia indica*			C		1
plants	higher dicots	Chenopodiaceae	*Dysphania littoralis*	red crumbweed		C		1
plants	higher dicots	Chenopodiaceae	*Suaeda australis*			C		2
plants	higher dicots	Chenopodiaceae	*Tecticornia pergranulata subsp. queenslandica*			C		1
plants	higher dicots	Chenopodiaceae	*Enchylaena tomentosa*			C		1
plants	higher dicots	Chenopodiaceae	*Einadia nutans subsp. linifolia*			C		1
plants	higher dicots	Chenopodiaceae	*Dysphania glomulifera*			C		1
plants	higher dicots	Combretaceae	*Lumnitzera racemosa*			C		1
plants	higher dicots	Convolvulaceae	*Jacquemontia paniculata*			C		2/2
plants	higher dicots	Convolvulaceae	*Ipomoea pes-caprae subsp. brasiliensis*	goatsfoot		C		2
plants	higher dicots	Convolvulaceae	*Evolvulus alsinoides*			C		1
plants	higher dicots	Convolvulaceae	*Cuscuta*			C		1
plants	higher dicots	Dilleniaceae	*Hibbertia scandens*			C		2
plants	higher dicots	Dilleniaceae	*Hibbertia linearis var. obtusifolia*			C		1
plants	higher dicots	Droseraceae	*Drosera*			C		1
plants	higher dicots	Ebenaceae	*Diospyros fasciculosa*	grey ebony		C		3
plants	higher dicots	Ebenaceae	*Diospyros geminata*	scaly ebony		C		7/1
plants	higher dicots	Elaeocarpaceae	*Elaeocarpus obovatus*	blueberry ash		C		1

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plants	higher dicots	Ericaceae	*Monotoca scoparia*	prickly broom heath		C		1
plants	higher dicots	Euphorbiaceae	*Mallotus discolor*	white kamala		C		1
plants	higher dicots	Euphorbiaceae	*Macaranga tanarius*	macaranga		C		1
plants	higher dicots	Euphorbiaceae	*Mallotus philippensis*	red kamala		C		4
plants	higher dicots	Euphorbiaceae	*Ricinocarpos pinifolius*	wedding bush		C		1
plants	higher dicots	Euphorbiaceae	*Alchornea*					1
plants	higher dicots	Euphorbiaceae	*Euphorbia mitchelliana*			C		1
plants	higher dicots	Euphorbiaceae	*Croton insularis*	Queensland cascarilla		C		1
plants	higher dicots	Euphorbiaceae	*Acalypha*			C		1
plants	higher dicots	Euphorbiaceae	*Ricinocarpos ledifolius*	scrub wedding bush		C		1
plants	higher dicots	Fabaceae	*Zornia dyctiocarpa var. filifolia*			C		1
plants	higher dicots	Fabaceae	*Indigofera pratensis*			C		1
plants	higher dicots	Fabaceae	*Hardenbergia violacea*			C		2
plants	higher dicots	Fabaceae	*Erythrina vespertilio*			C		1
plants	higher dicots	Fabaceae	*Indigofera tryonii*			C		1
plants	higher dicots	Fabaceae	*Glycine*			C		3
plants	higher dicots	Fabaceae	*Vigna marina*	dune bean		C		1
plants	higher dicots	Fabaceae	*Pycnospora lutescens*	pycnospora		C		2
plants	higher dicots	Fabaceae	*Mirbelia aotoides*			C		1
plants	higher dicots	Fabaceae	*Sesbania cannabina*			C		2
plants	higher dicots	Fabaceae	*Indigofera linnaei*	Birdsville indigo		C		2
plants	higher dicots	Fabaceae	*Glycine tabacina*	glycine pea		C		1
plants	higher dicots	Fabaceae	*Crotalaria pallida*		Y			1
plants	higher dicots	Fabaceae	*Desmodium gangeticum*			C		1/1
plants	higher dicots	Fabaceae	*Isotropis filicaulis*			C		1
plants	higher dicots	Fabaceae	*Jacksonia scoparia*			C		5
plants	higher dicots	Fabaceae	*Indigofera hirsuta*	hairy indigo		C		3
plants	higher dicots	Fabaceae	*Galactia tenuiflora*			C		2
plants	higher dicots	Fabaceae	*Desmodium rhytidophyllum*			C		1
plants	higher dicots	Fabaceae	*Canavalia rosea*	coastal jack bean		C		2
plants	higher dicots	Fabaceae	*Desmodium*			C		2
plants	higher dicots	Fabaceae	*Canavalia sericea*			C		1
plants	higher dicots	Fabaceae	*Zornia dyctiocarpa*			C		1
plants	higher dicots	Fabaceae	*Tephrosia dietrichiae*			C		1
plants	higher dicots	Fabaceae	*Rhynchosia minima*			C		1
plants	higher dicots	Fabaceae	*Tephrosia filipes subsp. filipes*			C		1
plants	higher dicots	Fabaceae	*Indigofera linifolia*			C		1
plants	higher dicots	Fabaceae	*Glycine tomentella*	woolly glycine		C		2
plants	higher dicots	Fabaceae	*Swainsona*			C		3
plants	higher dicots	Fabaceae	*Swainsona phacoides*	dwarf swainsona		C		2
plants	higher dicots	Fabaceae	*Zornia muriculata subsp. angustata*			C		1
plants	higher dicots	Fabaceae	*Sophora tomentosa subsp. australis*			C		2
plants	higher dicots	Fabaceae	*Crotalaria montana*			C		3
plants	higher dicots	Fabaceae	*Desmodium heterocarpon*			C		1
plants	higher dicots	Gentianaceae	*Centaurium erythraea*	common centaury	Y			1
plants	higher dicots	Goodeniaceae	*Scaevola taccada*	Cardwell cabbage		C		2

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plants	higher dicots	Goodeniaceae	*Brunonia australis*	blue pincushion		C		3
plants	higher dicots	Goodeniaceae	*Goodenia hederacea*			C		1
plants	higher dicots	Goodeniaceae	*Velleia paradoxa*	spur velleia		C		1
plants	higher dicots	Haloragaceae	*Myriophyllum*			C		1
plants	higher dicots	Lamiaceae	*Plectranthus*			C		1
plants	higher dicots	Lamiaceae	*Plectranthus parviflorus*			C		1/1
plants	higher dicots	Lamiaceae	*Glossocarya hemiderma*			C		2
plants	higher dicots	Lamiaceae	*Plectranthus graveolens*	flea bush		C		1
plants	higher dicots	Lamiaceae	*Vitex trifolia*			C		1
plants	higher dicots	Lamiaceae	*Salvia coccinea*	red salvia	Y			2
plants	higher dicots	Lamiaceae	*Clerodendrum inerme*	coastal lolly bush		C		1
plants	higher dicots	Lamiaceae	*Vitex trifolia var. subtrisecta*			C		1
plants	higher dicots	Lamiaceae	*Vitex lignum-vitae*			C		1
plants	higher dicots	Lamiaceae	*Clerodendrum*			C		1
plants	higher dicots	Lamiaceae	*Vitex trifolia var. trifolia*			C		1
plants	higher dicots	Lecythidaceae	*Planchonia careya*	cockatoo apple		C		3
plants	higher dicots	Loranthaceae	*Lysiana subfalcata*			C		1
plants	higher dicots	Malvaceae	*Hibiscus heterophyllus*			C		2/1
plants	higher dicots	Malvaceae	*Sida rhombifolia*		Y			1
plants	higher dicots	Malvaceae	*Sida cordifolia*		Y			3
plants	higher dicots	Malvaceae	*Thespesia populnea*			C		1
plants	higher dicots	Malvaceae	*Hibiscus tiliaceus*	cotton tree		C		1
plants	higher dicots	Malvaceae	*Abutilon albescens*			C		1
plants	higher dicots	Malvaceae	*Abutilon*			C		1
plants	higher dicots	Malvaceae	*Abutilon oxycarpum*			C		1/1
plants	higher dicots	Malvaceae	*Hibiscus*			C		1
plants	higher dicots	Meliaceae	*Xylocarpus moluccensis*			C		1
plants	higher dicots	Menyanthaceae	*Nymphoides*			C		1
plants	higher dicots	Mimosaceae	*Acacia leiocalyx*			C		6
plants	higher dicots	Mimosaceae	*Acacia*			C		4
plants	higher dicots	Mimosaceae	*Acacia fasciculifera*	scaly bark		C		4
plants	higher dicots	Mimosaceae	*Acacia juncifolia*			C		1
plants	higher dicots	Mimosaceae	*Acacia decora*	pretty wattle		C		3
plants	higher dicots	Mimosaceae	*Acacia maidenii*	Maiden's wattle		C		4
plants	higher dicots	Mimosaceae	*Acacia conferta*			C		9
plants	higher dicots	Mimosaceae	*Vachellia bidwillii*			C		1
plants	higher dicots	Mimosaceae	*Acacia storyi*			NT		1/1
plants	higher dicots	Mimosaceae	*Acacia crassa subsp. longicoma*			C		5
plants	higher dicots	Mimosaceae	*Acacia leptocarpa*	north coast wattle		C		2
plants	higher dicots	Mimosaceae	*Acacia podalyriifolia*	Queensland silver wattle		C		1
plants	higher dicots	Mimosaceae	*Acacia aulacocarpa*			C		14
plants	higher dicots	Mimosaceae	*Acacia salicina*	doolan		C		2
plants	higher dicots	Mimosaceae	*Acacia julifera subsp. curvinervia*			C		1
plants	higher dicots	Mimosaceae	*Archidendropsis thozetiana*			C		1
plants	higher dicots	Mimosaceae	*Acacia falcata*	sickle wattle		C		2
plants	higher dicots	Mimosaceae	*Acacia julifera*			C		1/1

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plants	higher dicots	Mimosaceae	*Acacia amblygona*	fan-leaf wattle		C		4
plants	higher dicots	Mimosaceae	*Acacia cretata*			C		2/1
plants	higher dicots	Mimosaceae	*Acacia sparsiflora*			C		2
plants	higher dicots	Molluginaceae	*Glinus oppositifolius*			C		1
plants	higher dicots	Moraceae	*Ficus microcarpa*			C		1/1
plants	higher dicots	Moraceae	*Trophis scandens subsp. scandens*			C		4
plants	higher dicots	Moraceae	*Ficus*			C		3
plants	higher dicots	Moraceae	*Streblus brunonianus*	whalebone tree		C		2
plants	higher dicots	Moraceae	*Ficus virens var. virens*			C		1
plants	higher dicots	Moraceae	*Ficus opposita*			C		4
plants	higher dicots	Moraceae	*Ficus racemosa var. racemosa*			C		1
plants	higher dicots	Moraceae	*Ficus obliqua*			C		2/1
plants	higher dicots	Myrsinaceae	*Aegiceras corniculatum*	river mangrove		C		1
plants	higher dicots	Myrsinaceae	*Myrsine variabilis*			C		2
plants	higher dicots	Myrsinaceae	*Embelia australiana*	embelia		C		1
plants	higher dicots	Myrtaceae	*Melaleuca dealbata*	swamp tea-tree		C		1
plants	higher dicots	Myrtaceae	*Corymbia polycarpa*	long-fruited bloodwood		C		1
plants	higher dicots	Myrtaceae	*Lophostemon suaveolens*	swamp box		C		8
plants	higher dicots	Myrtaceae	*Eucalyptus exserta*	Queensland peppermint		C		10
plants	higher dicots	Myrtaceae	*Eucalyptus acmenoides*			C		1
plants	higher dicots	Myrtaceae	*Lophostemon confertus*	brush box		C		5
plants	higher dicots	Myrtaceae	*Eucalyptus fibrosa*			C		3
plants	higher dicots	Myrtaceae	*Melaleuca viminalis*			C		1/1
plants	higher dicots	Myrtaceae	*Corymbia intermedia*	pink bloodwood		C		12
plants	higher dicots	Myrtaceae	*Corymbia clarksoniana*			C		2
plants	higher dicots	Myrtaceae	*Leptospermum*			C		1
plants	higher dicots	Myrtaceae	*Melaleuca viridiflora*			C		1
plants	higher dicots	Myrtaceae	*Melaleuca quinquenervia*	swamp paperbark		C		4
plants	higher dicots	Myrtaceae	*Eucalyptus fibrosa subsp. fibrosa*			C		2
plants	higher dicots	Myrtaceae	*Melaleuca nervosa*			C		4
plants	higher dicots	Myrtaceae	*Eucalyptus tereticornis*			C		9
plants	higher dicots	Myrtaceae	*Eugenia reinwardtiana*	beach cherry		C		1
plants	higher dicots	Myrtaceae	*Melaleuca fluviatilis*			C		1
plants	higher dicots	Myrtaceae	*Eucalyptus moluccana*	gum-topped box		C		6
plants	higher dicots	Myrtaceae	*Eucalyptus crebra*	narrow-leaved red ironbark		C		15/1
plants	higher dicots	Myrtaceae	*Gossia bidwillii*			C		2
plants	higher dicots	Myrtaceae	*Corymbia citriodora*	spotted gum		C		13
plants	higher dicots	Myrtaceae	*Corymbia tessellaris*	Moreton Bay ash		C		5
plants	higher dicots	Oleaceae	*Jasminum simplicifolium subsp. australiense*			C		1
plants	higher dicots	Oleaceae	*Jasminum didymum*			C		3
plants	higher dicots	Onagraceae	*Ludwigia octovalvis*	willow primrose		C		2
plants	higher dicots	Onagraceae	*Ludwigia peploides subsp. montevidensis*			C		1
plants	higher dicots	Passifloraceae	*Passiflora foetida*		Y			1
plants	higher dicots	Passifloraceae	*Passiflora suberosa*	corky passion flower	Y			10
plants	higher dicots	Phyllanthaceae	*Bridelia leichhardtii*			C		2
plants	higher dicots	Phyllanthaceae	*Phyllanthus*			C		1

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plants	higher dicots	Phyllanthaceae	*Breynia oblongifolia*			C		9
plants	higher dicots	Phyllanthaceae	*Glochidion sumatranum*	umbrella cheese tree		C		1
plants	higher dicots	Phyllanthaceae	*Phyllanthus virgatus*			C		1
plants	higher dicots	Phyllanthaceae	*Glochidion ferdinandi*			C		1
plants	higher dicots	Picrodendraceae	*Pseudanthus orientalis*			C		1
plants	higher dicots	Picrodendraceae	*Petalostigma pubescens*	quinine tree		C		4
plants	higher dicots	Pittosporaceae	*Pittosporum spinescens*			C		1
plants	higher dicots	Pittosporaceae	*Pittosporum ferrugineum*			C		4
plants	higher dicots	Pittosporaceae	*Pittosporum venulosum*			C		2
plants	higher dicots	Plantaginaceae	*Scoparia dulcis*	scoparia	Y			1/1
plants	higher dicots	Plumbaginaceae	*Limonium solanderi*			C		1
plants	higher dicots	Plumbaginaceae	*Aegialitis annulata*	club mangrove		C		1
plants	higher dicots	Polygalaceae	*Polygala linariifolia*			C		1
plants	higher dicots	Polygonaceae	*Polygonum aviculare*	wireweed	Y			1
plants	higher dicots	Portulacaceae	*Portulaca oleracea*	pigweed	Y			1
plants	higher dicots	Proteaceae	*Banksia integrifolia*			C		1
plants	higher dicots	Putranjivaceae	*Drypetes deplanchei*	grey boxwood		C		4
plants	higher dicots	Rhamnaceae	*Alphitonia excelsa*	soap tree		C		10
plants	higher dicots	Rhizophoraceae	*Rhizophora stylosa*	spotted mangrove		C		2
plants	higher dicots	Rhizophoraceae	*Ceriops tagal*	yellow mangrove		C		2
plants	higher dicots	Rubiaceae	*Oldenlandia galioides*			C		1
plants	higher dicots	Rubiaceae	*Aidia racemosa*			C		1
plants	higher dicots	Rubiaceae	*Spermacoce multicaulis*			C		1
plants	higher dicots	Rubiaceae	*Psychotria*			C		1
plants	higher dicots	Rubiaceae	*Psydrax oleifolia*			C		2
plants	higher dicots	Rubiaceae	*Coelospermum reticulatum*			C		15
plants	higher dicots	Rubiaceae	*Dentella repens*	dentella		C		1
plants	higher dicots	Rubiaceae	*Psychotria daphnoides var. pubescens*			C		1
plants	higher dicots	Rubiaceae	*Oldenlandia mitrasacmoides*			C		1
plants	higher dicots	Rubiaceae	*Spermacoce*			C		1
plants	higher dicots	Rubiaceae	*Cyclophyllum coprosmoides*			C		3
plants	higher dicots	Rubiaceae	*Timonius timon var. timon*			C		2
plants	higher dicots	Rubiaceae	*Psydrax odorata*			C		2
plants	higher dicots	Rubiaceae	*Psychotria daphnoides*			C		2
plants	higher dicots	Rutaceae	*Acronychia imperforata*	beach acronychia		C		1
plants	higher dicots	Rutaceae	*Micromelum minutum*	clusterberry		C		2
plants	higher dicots	Rutaceae	*Murraya paniculata*			C		2
plants	higher dicots	Rutaceae	*Geijera salicifolia*	brush wilga		C		2
plants	higher dicots	Rutaceae	*Acronychia laevis*	glossy acronychia		C		2
plants	higher dicots	Santalaceae	*Exocarpos latifolius*			C		4
plants	higher dicots	Sapindaceae	*Alectryon tomentosus*			C		3
plants	higher dicots	Sapindaceae	*Dodonaea*			C		1
plants	higher dicots	Sapindaceae	*Cupaniopsis wadsworthii*			C		4
plants	higher dicots	Sapindaceae	*Alectryon*			C		1
plants	higher dicots	Sapindaceae	*Arytera*			C		1
plants	higher dicots	Sapindaceae	*Dodonaea lanceolata var. subsessilifolia*			C		1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	higher dicots	Sapindaceae	*Jagera pseudorhus*			C		4
plants	higher dicots	Sapindaceae	*Elattostachys xylocarpa*	white tamarind		C		1
plants	higher dicots	Sapindaceae	*Arytera divaricata*	coogera		C		1
plants	higher dicots	Sapindaceae	*Cupaniopsis anacardioides*	tuckeroo		C		2
plants	higher dicots	Sapindaceae	*Dodonaea viscosa*			C		2
plants	higher dicots	Sapindaceae	*Alectryon connatus*	grey birds-eye		C		3
plants	higher dicots	Sapindaceae	*Dodonaea lanceolata*			C		1
plants	higher dicots	Sapotaceae	*Sersalisia sericea*			C		3
plants	higher dicots	Scrophulariaceae	*Eremophila debilis*	winter apple		C		2
plants	higher dicots	Solanaceae	*Solanum stelligerum*	devil's needles		C		1
plants	higher dicots	Solanaceae	*Solanum nigrum*		Y			1/1
plants	higher dicots	Solanaceae	*Solanum seaforthianum*	Brazilian nightshade	Y			4
plants	higher dicots	Sparrmanniaceae	*Triumfetta rhomboidea*	chinese burr	Y			2
plants	higher dicots	Sparrmanniaceae	*Grewia retusifolia*			C		3
plants	higher dicots	Sparrmanniaceae	*Triumfetta repens*			C		3
plants	higher dicots	Stackhousiaceae	*Stackhousia monogyna*	creamy candles		C		2
plants	higher dicots	Sterculiaceae	*Sterculia quadrifida*	peanut tree		C		2
plants	higher dicots	Stylidiaceae	*Stylidium eglandulosum*			C		1
plants	higher dicots	Thymelaeaceae	*Wikstroemia indica*	tie bush		C		1
plants	higher dicots	Thymelaeaceae	*Pimelea linifolia*			C		2
plants	higher dicots	Ulmaceae	*Trema tomentosa*			C		1
plants	higher dicots	Verbenaceae	*Phyla nodiflora*	carpetweed		C		2
plants	higher dicots	Verbenaceae	*Lantana camara*	lantana	Y			6
plants	higher dicots	Violaceae	*Hybanthus enneaspermus*			C		2
plants	higher dicots	Vitaceae	*Tetrastigma nitens*	shining grape		C		2
plants	higher dicots	Vitaceae	*Cissus antarctica*			C		1
plants	higher dicots	Vitaceae	*Cissus oblonga*			C		2
plants	lower dicots	Annonaceae	*Melodorum leichhardtii*			C		1
plants	lower dicots	Annonaceae	*Polyalthia nitidissima*	polyalthia		C		2
plants	lower dicots	Aristolochiaceae	*Aristolochia elegans*	calico-flower	Y			3/3
plants	lower dicots	Avicenniaceae	*Avicennia marina subsp. australasica*			C		1
plants	lower dicots	Lauraceae	*Cryptocarya vulgaris*			C		1/1
plants	lower dicots	Lauraceae	*Cassytha pubescens*	downy devil's twine		C		2
plants	lower dicots	Lauraceae	*Cryptocarya bidwillii*	yellow laurel		C		1
plants	lower dicots	Lauraceae	*Cryptocarya triplinervis*			C		3
plants	lower dicots	Linderniaceae	*Lindernia anagallis*			C		1
plants	lower dicots	Menispermaceae	*Stephania japonica var. discolor*			C		1
plants	lower dicots	Menispermaceae	*Pleogyne australis*	wiry grape		C		3
plants	lower dicots	Menispermaceae	*Stephania japonica*			C		1
plants	lower dicots	Nymphaeaceae	*Nymphaea violacea*			C		1
plants	lower dicots	Nymphaeaceae	*Nymphaea caerulea*		Y			1
plants	lower dicots	Nymphaeaceae	*Nymphaea*			C		1
plants	lower dicots	Piperaceae	*Peperomia*			C		2
plants	lower dicots	Piperaceae	*Piper hederaceum*			C		1
plants	monocots	Araceae	*Lemna*					1
plants	monocots	Arecaceae	*Livistona*			C		1

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plants	monocots	Arecaceae	*Livistona decora*			C		1
plants	monocots	Commelinaceae	*Murdannia graminea*	murdannia		C		2
plants	monocots	Commelinaceae	*Commelina ensifolia*	scurvy grass		C		1
plants	monocots	Cyperaceae	*Cyperus perangustus*			C		1
plants	monocots	Cyperaceae	*Cyperus squarrosus*	bearded flatsedge		C		1
plants	monocots	Cyperaceae	*Cyperus javanicus*			C		2/2
plants	monocots	Cyperaceae	*Schoenoplectiella lateriflora*			C		1
plants	monocots	Cyperaceae	*Schoenus falcatus*			C		1
plants	monocots	Cyperaceae	*Fimbristylis dichotoma*	common fringe-rush		C		2
plants	monocots	Cyperaceae	*Cyperus trinervis*			C		1/1
plants	monocots	Cyperaceae	*Cyperus enervis*			C		2/1
plants	monocots	Cyperaceae	*Rhynchospora heterochaeta*			C		1
plants	monocots	Cyperaceae	*Fimbristylis polytrichoides*			C		2
plants	monocots	Cyperaceae	*Fuirena ciliaris*			C		2
plants	monocots	Cyperaceae	*Cyperus dietrichiae var. brevibracteatus*			C		1
plants	monocots	Cyperaceae	*Scleria*			C		1
plants	monocots	Cyperaceae	*Cyperus conicus var. conicus*			C		1
plants	monocots	Cyperaceae	*Cyperus stradbrokensis*			C		1/1
plants	monocots	Cyperaceae	*Baumea articulata*	jointed twigrush		C		1
plants	monocots	Cyperaceae	*Fimbristylis microcarya*			C		1
plants	monocots	Cyperaceae	*Baumea rubiginosa*	soft twigrush		C		3/3
plants	monocots	Cyperaceae	*Abildgaardia vaginata*			C		1
plants	monocots	Cyperaceae	*Abildgaardia ovata*			C		1
plants	monocots	Cyperaceae	*Cyperus gunnii subsp. novae-hollandiae*			C		1/1
plants	monocots	Cyperaceae	*Cyperus*			C		3
plants	monocots	Cyperaceae	*Fimbristylis pauciflora*			C		1
plants	monocots	Cyperaceae	*Cyperus fulvus*			C		1
plants	monocots	Cyperaceae	*Cyperus leiocaulon*			C		1
plants	monocots	Cyperaceae	*Cyperus alopecuroides*			C		2
plants	monocots	Cyperaceae	*Isolepis fluitans*	floating club rush		C		1
plants	monocots	Cyperaceae	*Gahnia aspera*			C		2
plants	monocots	Cyperaceae	*Schoenoplectiella erecta*		Y			1
plants	monocots	Cyperaceae	*Cyperus polystachyos*			C		2
plants	monocots	Cyperaceae	*Fimbristylis*			C		1
plants	monocots	Cyperaceae	*Cyperus polystachyos var. polystachyos*			C		1
plants	monocots	Cyperaceae	*Fimbristylis aestivalis*			C		3/3
plants	monocots	Cyperaceae	*Scleria mackaviensis*			C		8
plants	monocots	Cyperaceae	*Fimbristylis ferruginea*			C		1
plants	monocots	Cyperaceae	*Eleocharis dulcis*			C		1
plants	monocots	Cyperaceae	*Eleocharis geniculata*			C		1
plants	monocots	Dioscoreaceae	*Dioscorea transversa*	native yam		C		2
plants	monocots	Hemerocallidaceae	*Dianella brevipedunculata*			C		1
plants	monocots	Hemerocallidaceae	*Dianella*			C		5
plants	monocots	Hemerocallidaceae	*Dianella caerulea*			C		7
plants	monocots	Hemerocallidaceae	*Dianella caerulea var. vannata*			C		1
plants	monocots	Hemerocallidaceae	*Geitonoplesium cymosum*	scrambling lily		C		3

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	monocots	Hydrocharitaceae	*Vallisneria*			C		1
plants	monocots	Hydrocharitaceae	*Halophila ovalis*			C		1
plants	monocots	Juncaceae	*Juncus continuus*			C		1
plants	monocots	Juncaceae	*Juncus polyanthemus*			C		1
plants	monocots	Laxmanniaceae	*Lomandra*			C		1
plants	monocots	Laxmanniaceae	*Lomandra confertifolia subsp. pallida*			C		4
plants	monocots	Laxmanniaceae	*Thysanotus tuberosus*			C		1
plants	monocots	Laxmanniaceae	*Eustrephus latifolius*	wombat berry		C		14
plants	monocots	Laxmanniaceae	*Lomandra confertifolia*			C		1
plants	monocots	Laxmanniaceae	*Lomandra longifolia*			C		2
plants	monocots	Najadaceae	*Najas tenuifolia*	water nymph		C		1
plants	monocots	Orchidaceae	*Caladenia*			C		1
plants	monocots	Orchidaceae	*Dockrillia teretifolia*	rat's tail orchid		C		1
plants	monocots	Orchidaceae	*Geodorum densiflorum*	pink nodding orchid		C		3
plants	monocots	Orchidaceae	*Dipodium punctatum*			C		1
plants	monocots	Pandanaceae	*Pandanus*			C		2
plants	monocots	Philydraceae	*Philydrum lanuginosum*	frogsmouth		C		1
plants	monocots	Poaceae	*Enneapogon robustissimus*			C		1
plants	monocots	Poaceae	*Digitaria*			C		1
plants	monocots	Poaceae	*Aristida queenslandica var. dissimilis*			C		1
plants	monocots	Poaceae	*Echinochloa colona*	awnless barnyard grass	Y			1/1
plants	monocots	Poaceae	*Paspalum scrobiculatum*	ditch millet		C		2
plants	monocots	Poaceae	*Eulalia aurea*	silky browntop		C		1
plants	monocots	Poaceae	*Eragrostis leptostachya*			C		1
plants	monocots	Poaceae	*Eragrostis minor*	smaller stinkgrass	Y			2/1
plants	monocots	Poaceae	*Eragrostis brownii*	Brown's lovegrass		C		2
plants	monocots	Poaceae	*Echinochloa crus-galli*	barnyard grass	Y			1
plants	monocots	Poaceae	*Chrysopogon fallax*			C		2
plants	monocots	Poaceae	*Diplachne fusca*					1
plants	monocots	Poaceae	*Eragrostis elongata*			C		2
plants	monocots	Poaceae	*Setaria oplismenoides*			C		1
plants	monocots	Poaceae	*Eragrostis leptocarpa*	drooping lovegrass		C		1
plants	monocots	Poaceae	*Eragrostis sororia*			C		1
plants	monocots	Poaceae	*Entolasia stricta*	wiry panic		C		6
plants	monocots	Poaceae	*Digitaria divaricatissima*	spreading umbrella grass		C		1
plants	monocots	Poaceae	*Arundinella nepalensis*	reedgrass		C		3
plants	monocots	Poaceae	*Dinebra decipiens*			C		1
plants	monocots	Poaceae	*Eriochloa*			C		1
plants	monocots	Poaceae	*Aristida contorta*	bunched kerosene grass		C		1
plants	monocots	Poaceae	*Digitaria leucostachya*			C		1
plants	monocots	Poaceae	*Capillipedium parviflorum*	scented top		C		1
plants	monocots	Poaceae	*Spinifex sericeus*	beach spinifex		C		2
plants	monocots	Poaceae	*Lepturus repens*	stalky grass		C		1
plants	monocots	Poaceae	*Eriachne*			C		1
plants	monocots	Poaceae	*Bothriochloa bladhii subsp. bladhii*			C		1
plants	monocots	Poaceae	*Aristida calycina var. calycina*			C		1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	monocots	Poaceae	*Urochloa subquadripara*		Y			1
plants	monocots	Poaceae	*Paspalum distichum*	water couch		C		1
plants	monocots	Poaceae	*Eriachne rara*			C		1
plants	monocots	Poaceae	*Paspalidium criniforme*			C		1/1
plants	monocots	Poaceae	*Aristida*			C		11
plants	monocots	Poaceae	*Oplismenus aemulus*	creeping shade grass		C		3
plants	monocots	Poaceae	*Eriochloa procera*	slender cupgrass		C		1
plants	monocots	Poaceae	*Eragrostis spartinoides*			C		1
plants	monocots	Poaceae	*Digitaria ciliaris*	summer grass	Y			2/1
plants	monocots	Poaceae	*Chloris inflata*	purpletop chloris	Y			2
plants	monocots	Poaceae	*Alloteropsis semialata*	cockatoo grass		C		1
plants	monocots	Poaceae	*Triraphis mollis*	purple plumegrass		C		2
plants	monocots	Poaceae	*Eragrostis pilosa*	soft lovegrass	Y			1
plants	monocots	Poaceae	*Sporobolus elongatus*			C		1
plants	monocots	Poaceae	*Themeda triandra*	kangaroo grass		C		14
plants	monocots	Poaceae	*Setaria surgens*			C		2
plants	monocots	Poaceae	*Schizachyrium fragile*	firegrass		C		1
plants	monocots	Poaceae	*Phragmites australis*	common reed		C		1
plants	monocots	Poaceae	*Heteropogon contortus*	black speargrass		C		12
plants	monocots	Poaceae	*Dactyloctenium aegyptium*	coast button grass	Y			2
plants	monocots	Poaceae	*Ancistrachne uncinulata*	hooky grass		C		1
plants	monocots	Poaceae	*Bothriochloa decipiens var. decipiens*			C		1
plants	monocots	Poaceae	*Digitaria didactyla*	Queensland blue couch	Y			2
plants	monocots	Poaceae	*Paspalidium*			C		2
plants	monocots	Poaceae	*Sporobolus virginicus*	sand couch		C		3
plants	monocots	Poaceae	*Panicum decompositum var. decompositum*			C		1
plants	monocots	Poaceae	*Digitaria parviflora*			C		5
plants	monocots	Poaceae	*Cymbopogon refractus*	barbed-wire grass		C		8
plants	monocots	Poaceae	*Cenchrus echinatus*	Mossman River grass	Y			3
plants	monocots	Poaceae	*Chloris divaricata var. divaricata*	slender chloris		C		2
plants	monocots	Poaceae	*Enneapogon nigricans*	niggerheads		C		1
plants	monocots	Poaceae	*Digitaria ammophila*	silky umbrella grass		C		1
plants	monocots	Poaceae	*Schizachyrium pseudeulalia*			C		1
plants	monocots	Poaceae	*Eremochloa bimaculata*	poverty grass		C		1
plants	monocots	Poaceae	*Dichanthium sericeum subsp. sericeum*			C		1
plants	monocots	Poaceae	*Setaria pumila*		Y			1
plants	monocots	Poaceae	*Paspalidium distans*	shotgrass		C		1
plants	monocots	Poaceae	*Imperata cylindrica*	blady grass		C		7
plants	monocots	Poaceae	*Eragrostis interrupta*			C		1
plants	monocots	Poaceae	*Eleusine indica*	crowsfoot grass	Y			1
plants	monocots	Poaceae	*Digitaria breviglumis*			C		1
plants	monocots	Poaceae	*Digitaria longiflora*			C		1
plants	monocots	Poaceae	*Themeda*					1
plants	monocots	Poaceae	*Melinis repens*	red natal grass	Y			4
plants	monocots	Poaceae	*Eragrostis*			C		3
plants	monocots	Poaceae	*Panicum paludosum*	swamp panic		C		1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	monocots	Poaceae	*Panicum effusum*			C		6
plants	monocots	Pontederiaceae	*Monochoria cyanea*			C		2
plants	monocots	Ruppiaceae	*Ruppia maritima*	sea tassel		C		1
plants	monocots	Smilacaceae	*Smilax australis*	barbed-wire vine		C		3
plants	monocots	Typhaceae	*Typha domingensis*			C		1
plants	monocots	Xanthorrhoeaceae	*Xanthorrhoea*			C		3
plants	monocots	Xanthorrhoeaceae	*Xanthorrhoea latifolia subsp. latifolia*			C		14
plants	monocots	Xanthorrhoeaceae	*Xanthorrhoea pumilio*			C		1

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 Extinct in the Wild (PE), Endangered (E), Vulnerable (V), Near Threatened (NT), Least Concern (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).

Records – The first number indicates the total number of records of the taxon for the record option selected (i.e. All, Confirmed or Specimens).
This number is output as 99999 if it equals or exceeds this value. The second number located after the / indicates the number of specimen records for the taxon.
This number is output as 999 if it equals or exceeds this value.

Queensland Government

Wildlife Online Extract

Search Criteria: Species List for a Selected Area
Species: All
Type: All
Status: All
Records: All
Area: Curtis Island National Park
Email: david.francis@cardno.com.au
Date submitted: Thursday 03 Sep 2015 13:17:10
Date extracted: Thursday 03 Sep 2015 13:20:03

The number of records retrieved = 381

Feedback about Wildlife Online should be emailed to wildlife.online@science.dsitia.qld.gov.au

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	amphibians	Bufonidae	*Rhinella marina*	cane toad	Y			1
animals	amphibians	Limnodynastidae	*Limnodynastes terraereginae*	scarlet sided pobblebonk		C		1
animals	birds	Acanthizidae	*Sericornis frontalis*	white-browed scrubwren		C		1
animals	birds	Accipitridae	*Haliaeetus leucogaster*	white-bellied sea-eagle		C		2
animals	birds	Accipitridae	*Elanus axillaris*	black-shouldered kite		C		1
animals	birds	Accipitridae	*Accipiter fasciatus*	brown goshawk		C		2
animals	birds	Accipitridae	*Haliastur indus*	brahminy kite		C		1
animals	birds	Accipitridae	*Haliastur sphenurus*	whistling kite		C		2
animals	birds	Accipitridae	*Aquila audax*	wedge-tailed eagle		C		2
animals	birds	Acrocephalidae	*Acrocephalus australis*	Australian reed-warbler		SL		1
animals	birds	Anhingidae	*Anhinga novaehollandiae*	Australasian darter		C		1
animals	birds	Apodidae	*Hirundapus caudacutus*	white-throated needletail		SL		1
animals	birds	Artamidae	*Cracticus nigrogularis*	pied butcherbird		C		3
animals	birds	Artamidae	*Cracticus tibicen*	Australian magpie		C		1
animals	birds	Cacatuidae	*Cacatua galerita*	sulphur-crested cockatoo		C		2
animals	birds	Campephagidae	*Lalage leucomela*	varied triller		C		2
animals	birds	Campephagidae	*Coracina novaehollandiae*	black-faced cuckoo-shrike		C		2
animals	birds	Charadriidae	*Vanellus miles novaehollandiae*	masked lapwing (southern subspecies)		C		1
animals	birds	Columbidae	*Lopholaimus antarcticus*	topknot pigeon		C		1
animals	birds	Columbidae	*Chalcophaps indica*	emerald dove		C		1
animals	birds	Columbidae	*Geopelia humeralis*	bar-shouldered dove		C		3
animals	birds	Columbidae	*Ptilinopus regina*	rose-crowned fruit-dove		C		1
animals	birds	Columbidae	*Macropygia amboinensis*	brown cuckoo-dove		C		1
animals	birds	Columbidae	*Leucosarcia melanoleuca*	wonga pigeon		C		2
animals	birds	Corvidae	*Corvus orru*	Torresian crow		C		3
animals	birds	Cuculidae	*Eudynamys orientalis*	eastern koel		C		1
animals	birds	Cuculidae	*Centropus phasianinus*	pheasant coucal		C		1
animals	birds	Cuculidae	*Cacomantis flabelliformis*	fan-tailed cuckoo		C		1
animals	birds	Cuculidae	*Cacomantis pallidus*	pallid cuckoo		C		1
animals	birds	Dicruridae	*Dicrurus bracteatus*	spangled drongo		C		2
animals	birds	Estrildidae	*Taeniopygia bichenovii*	double-barred finch		C		1
animals	birds	Falconidae	*Falco cenchroides*	nankeen kestrel		C		2
animals	birds	Falconidae	*Falco berigora*	brown falcon		C		2
animals	birds	Falconidae	*Falco longipennis*	Australian hobby		C		1
animals	birds	Haematopodidae	*Haematopus longirostris*	Australian pied oystercatcher		C		2
animals	birds	Haematopodidae	*Haematopus fuliginosus*	sooty oystercatcher		C		1
animals	birds	Halcyonidae	*Dacelo novaeguineae*	laughing kookaburra		C		2
animals	birds	Hirundinidae	*Hirundo neoxena*	welcome swallow		C		1
animals	birds	Laridae	*Chroicocephalus novaehollandiae*	silver gull		C		1
animals	birds	Maluridae	*Malurus melanocephalus*	red-backed fairy-wren		C		1
animals	birds	Megapodiidae	*Alectura lathami*	Australian brush-turkey		C		1
animals	birds	Meliphagidae	*Meliphaga lewinii*	Lewin's honeyeater		C		2
animals	birds	Meliphagidae	*Lichmera indistincta*	brown honeyeater		C		1
animals	birds	Meliphagidae	*Philemon corniculatus*	noisy friarbird		C		3
animals	birds	Meropidae	*Merops ornatus*	rainbow bee-eater		SL		3
animals	birds	Nectariniidae	*Nectarinia jugularis*	olive-backed sunbird		C		2

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	birds	Nectariniidae	*Dicaeum hirundinaceum*	mistletoebird		C		1
animals	birds	Oriolidae	*Sphecotheres vieilloti*	Australasian figbird		C		3
animals	birds	Pachycephalidae	*Colluricincla harmonica*	grey shrike-thrush		C		1
animals	birds	Pachycephalidae	*Colluricincla megarhyncha*	little shrike-thrush		C		2
animals	birds	Pachycephalidae	*Pachycephala rufiventris*	rufous whistler		C		1
animals	birds	Podicipedidae	*Tachybaptus novaehollandiae*	Australasian grebe		C		1
animals	birds	Psittacidae	*Trichoglossus haematodus moluccanus*	rainbow lorikeet		C		3
animals	birds	Scolopacidae	*Numenius phaeopus*	whimbrel		SL		2
animals	mammals	Equidae	*Equus caballus*	horse	Y			1
animals	mammals	Muridae	*Melomys cervinipes*	fawn-footed melomys		C		1
animals	mammals	Petauridae	*Petaurus breviceps*	sugar glider		C		1
animals	mammals	Phalangeridae	*Trichosurus vulpecula*	common brushtail possum		C		1
animals	mammals	Suidae	*Sus scrofa*	pig	Y			3
animals	mammals	Tachyglossidae	*Tachyglossus aculeatus*	short-beaked echidna		SL		1
animals	reptiles	Cheloniidae	*Natator depressus*	flatback turtle		V	V	1
animals	reptiles	Colubridae	*Boiga irregularis*	brown tree snake		C		1
animals	reptiles	Colubridae	*Dendrelaphis punctulatus*	green tree snake		C		1
animals	reptiles	Scincidae	*Ctenotus spaldingi*			C		1
animals	reptiles	Scincidae	*Concinnia tenuis*	bar-sided skink		C		1
animals	reptiles	Scincidae	*Morethia taeniopleura*	fire-tailed skink		C		1
plants	ferns	Adiantaceae	*Cheilanthes*			C		1
plants	ferns	Adiantaceae	*Adiantum hispidulum*			C		1
plants	ferns	Blechnaceae	*Blechnum indicum*	swamp water fern		C		1
plants	ferns	Dennstaedtiaceae	*Histiopteris incisa*	bats-wing fern		C		1/1
plants	ferns	Lindsaeaceae	*Lindsaea ensifolia*			C		2
plants	ferns	Parkeriaceae	*Ceratopteris thalictroides*			C		2/2
plants	ferns	Polypodiaceae	*Microsorum punctatum*			C		2
plants	ferns	Polypodiaceae	*Drynaria rigidula*			C		2
plants	ferns	Pteridaceae	*Acrostichum speciosum*	mangrove fern		C		1
plants	ferns	Schizaeaceae	*Lygodium microphyllum*	snake fern		C		1
plants	ferns	Thelypteridaceae	*Cyclosorus interruptus*			C		2
plants	higher dicots	Acanthaceae	*Pseuderanthemum variabile*	pastel flower		C		1
plants	higher dicots	Acanthaceae	*Brunoniella*			C		2
plants	higher dicots	Acanthaceae	*Brunoniella australis*	blue trumpet		C		2/2
plants	higher dicots	Acanthaceae	*Acanthus ilicifolius*			C		1
plants	higher dicots	Aizoaceae	*Sesuvium portulacastrum*	sea purslane		C		1
plants	higher dicots	Aizoaceae	*Carpobrotus glaucescens*	pigface		C		2
plants	higher dicots	Amaranthaceae	*Achyranthes aspera*			C		1
plants	higher dicots	Anacardiaceae	*Pleiogynium timorense*	Burdekin plum		C		4
plants	higher dicots	Apiaceae	*Centella asiatica*			C		6/1
plants	higher dicots	Apiaceae	*Platysace linearifolia*			C		3/2
plants	higher dicots	Apocynaceae	*Alyxia spicata*			C		1
plants	higher dicots	Apocynaceae	*Parsonsia plaesiophylla*			C		1
plants	higher dicots	Apocynaceae	*Secamone elliptica*			C		1
plants	higher dicots	Apocynaceae	*Alstonia constricta*	bitterbark		C		3
plants	higher dicots	Apocynaceae	*Alyxia ruscifolia*			C		16

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	higher dicots	Apocynaceae	*Marsdenia*			C		1
plants	higher dicots	Apocynaceae	*Sarcostemma viminale subsp. brunonianum*			C		6
plants	higher dicots	Apocynaceae	*Marsdenia rostrata*			C		1/1
plants	higher dicots	Apocynaceae	*Parsonsia velutina*	hairy silkpod		C		1/1
plants	higher dicots	Apocynaceae	*Hoya australis*			C		2
plants	higher dicots	Apocynaceae	*Marsdenia viridiflora*			C		1/1
plants	higher dicots	Araliaceae	*Polyscias elegans*	celery wood		C		4
plants	higher dicots	Asteraceae	*Helichrysum*			C		1
plants	higher dicots	Asteraceae	*Pterocaulon serrulatum*			C		1/1
plants	higher dicots	Asteraceae	*Pseudognaphalium luteoalbum*	Jersey cudweed		C		1/1
plants	higher dicots	Asteraceae	*Cyanthillium cinereum*			C		2
plants	higher dicots	Asteraceae	*Podolepis longipedata*	tall copper-wire daisy		C		1/1
plants	higher dicots	Asteraceae	*Coronidium rupicola*			C		3/1
plants	higher dicots	Asteraceae	*Sonchus oleraceus*	common sowthistle	Y			1
plants	higher dicots	Asteraceae	*Emilia sonchifolia*		Y			4
plants	higher dicots	Asteraceae	*Coronidium lanuginosum*			C		1
plants	higher dicots	Asteraceae	*Xerochrysum bracteatum*	golden everlasting daisy		C		2
plants	higher dicots	Asteraceae	*Tridax procumbens*	tridax daisy	Y			3
plants	higher dicots	Asteraceae	*Centipeda minima*			C		1/1
plants	higher dicots	Asteraceae	*Wollastonia biflora*			C		1
plants	higher dicots	Asteraceae	*Epaltes australis*	spreading nutheads		C		1
plants	higher dicots	Cactaceae	*Opuntia*		Y			6
plants	higher dicots	Cactaceae	*Opuntia stricta*		Y			8
plants	higher dicots	Caesalpiniaceae	*Chamaecrista concinna*			C		1/1
plants	higher dicots	Campanulaceae	*Lobelia anceps*			C		1/1
plants	higher dicots	Campanulaceae	*Wahlenbergia gracilis*	sprawling bluebell		C		1/1
plants	higher dicots	Capparaceae	*Capparis*			C		2/1
plants	higher dicots	Caryophyllaceae	*Polycarpaea corymbosa var. corymbosa*			C		1/1
plants	higher dicots	Casuarinaceae	*Casuarina glauca*	swamp she-oak		C		1
plants	higher dicots	Casuarinaceae	*Allocasuarina torulosa*			C		7
plants	higher dicots	Casuarinaceae	*Casuarina equisetifolia subsp. incana*			C		6
plants	higher dicots	Casuarinaceae	*Allocasuarina littoralis*			C		5
plants	higher dicots	Casuarinaceae	*Allocasuarina luehmannii*	bull oak		C		3
plants	higher dicots	Celastraceae	*Elaeodendron melanocarpum*			C		1
plants	higher dicots	Celastraceae	*Maytenus disperma*	orange boxwood		C		1
plants	higher dicots	Chenopodiaceae	*Einadia hastata*			C		2
plants	higher dicots	Chenopodiaceae	*Suaeda australis*			C		1/1
plants	higher dicots	Chenopodiaceae	*Enchylaena tomentosa*			C		1
plants	higher dicots	Clusiaceae	*Calophyllum inophyllum*	beach calophyllum		C		1
plants	higher dicots	Convolvulaceae	*Ipomoea littoralis*			C		1/1
plants	higher dicots	Convolvulaceae	*Evolvulus alsinoides*			C		2
plants	higher dicots	Convolvulaceae	*Ipomoea pes-caprae subsp. brasiliensis*	goatsfoot		C		6
plants	higher dicots	Dilleniaceae	*Hibbertia scandens*			C		5/1
plants	higher dicots	Dilleniaceae	*Hibbertia linearis*			C		4
plants	higher dicots	Dilleniaceae	*Hibbertia stricta*			C		3/1
plants	higher dicots	Dilleniaceae	*Hibbertia vestita*			C		1

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plants	higher dicots	Droseraceae	*Drosera indica*			C		1/1
plants	higher dicots	Ebenaceae	*Diospyros fasciculosa*	grey ebony		C		1
plants	higher dicots	Ebenaceae	*Diospyros geminata*	scaly ebony		C		10
plants	higher dicots	Euphorbiaceae	*Mallotus discolor*	white kamala		C		5
plants	higher dicots	Euphorbiaceae	*Ricinocarpos pinifolius*	wedding bush		C		1/1
plants	higher dicots	Euphorbiaceae	*Excoecaria agallocha*	milky mangrove		C		2
plants	higher dicots	Euphorbiaceae	*Homalanthus nutans*			C		1
plants	higher dicots	Fabaceae	*Canavalia rosea*	coastal jack bean		C		1
plants	higher dicots	Fabaceae	*Flemingia parviflora*	flemingia		C		2/1
plants	higher dicots	Fabaceae	*Jacksonia scoparia*			C		18
plants	higher dicots	Fabaceae	*Isotropis filicaulis*			C		2/1
plants	higher dicots	Fabaceae	*Indigofera hirsuta*	hairy indigo		C		1
plants	higher dicots	Fabaceae	*Indigofera pratensis*			C		1
plants	higher dicots	Fabaceae	*Hardenbergia violacea*			C		2
plants	higher dicots	Fabaceae	*Crotalaria medicaginea*	trefoil rattlepod		C		1
plants	higher dicots	Fabaceae	*Glycine*			C		2/2
plants	higher dicots	Fabaceae	*Vigna marina*	dune bean		C		3/1
plants	higher dicots	Fabaceae	*Stylosanthes guianensis*		Y			1/1
plants	higher dicots	Fabaceae	*Gompholobium pinnatum*	poor mans gold		C		2
plants	higher dicots	Fabaceae	*Sesbania cannabina*			C		1
plants	higher dicots	Fabaceae	*Chorizema parviflorum*	eastern flame pea		C		2
plants	higher dicots	Fabaceae	*Stylosanthes scabra*		Y			1/1
plants	higher dicots	Fabaceae	*Gompholobium virgatum*			C		1
plants	higher dicots	Fabaceae	*Tephrosia filipes subsp. filipes*			C		2
plants	higher dicots	Fabaceae	*Rhynchosia acuminatissima*			C		1/1
plants	higher dicots	Fabaceae	*Sophora tomentosa subsp. australis*			C		1
plants	higher dicots	Fabaceae	*Crotalaria montana*			C		2
plants	higher dicots	Flacourtiaceae	*Homalium alnifolium*	homalium		C		1
plants	higher dicots	Goodeniaceae	*Brunonia australis*	blue pincushion		C		3/2
plants	higher dicots	Goodeniaceae	*Goodenia glabra*			C		2/2
plants	higher dicots	Goodeniaceae	*Velleia glabrata*			C		1/1
plants	higher dicots	Goodeniaceae	*Velleia spathulata*	wild pansies		C		2
plants	higher dicots	Haloragaceae	*Gonocarpus micranthus*			C		1
plants	higher dicots	Lamiaceae	*Glossocarya hemiderma*			C		1/1
plants	higher dicots	Lamiaceae	*Vitex trifolia*			C		1
plants	higher dicots	Lamiaceae	*Clerodendrum floribundum*			C		7/3
plants	higher dicots	Lamiaceae	*Clerodendrum inerme*	coastal lolly bush		C		1
plants	higher dicots	Lecythidaceae	*Planchonia careya*	cockatoo apple		C		9
plants	higher dicots	Loranthaceae	*Diplatia furcata*			C		1/1
plants	higher dicots	Loranthaceae	*Amyema conspicua subsp. conspicua*			C		1/1
plants	higher dicots	Loranthaceae	*Dendrophthoe glabrescens*			C		2
plants	higher dicots	Malvaceae	*Hibiscus splendens*	pink hibiscus		C		1
plants	higher dicots	Malvaceae	*Hibiscus diversifolius*	swamp hibiscus		C		1/1
plants	higher dicots	Malvaceae	*Sida cordifolia*		Y			2/1
plants	higher dicots	Malvaceae	*Hibiscus tiliaceus*	cotton tree		C		5/1
plants	higher dicots	Melastomataceae	*Melastoma malabathricum subsp. malabathricum*			C		2/1

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plants	higher dicots	Mimosaceae	*Acacia aulacocarpa*			C		19/1
plants	higher dicots	Mimosaceae	*Acacia penninervis*			C		1/1
plants	higher dicots	Mimosaceae	*Acacia leptocarpa*	north coast wattle		C		8/3
plants	higher dicots	Mimosaceae	*Acacia crassa subsp. longicoma*			C		1/1
plants	higher dicots	Mimosaceae	*Acacia conferta*			C		7/1
plants	higher dicots	Mimosaceae	*Acacia flavescens*	toothed wattle		C		13
plants	higher dicots	Mimosaceae	*Acacia sparsiflora*			C		1
plants	higher dicots	Mimosaceae	*Acacia amblygona*	fan-leaf wattle		C		6/3
plants	higher dicots	Mimosaceae	*Acacia julifera*			C		25/2
plants	higher dicots	Mimosaceae	*Acacia falcata*	sickle wattle		C		1/1
plants	higher dicots	Mimosaceae	*Acacia leiocalyx*			C		6/1
plants	higher dicots	Mimosaceae	*Acacia*			C		4
plants	higher dicots	Moraceae	*Trophis scandens subsp. scandens*			C		8
plants	higher dicots	Moraceae	*Ficus virens var. virens*			C		1/1
plants	higher dicots	Moraceae	*Ficus opposita*			C		7
plants	higher dicots	Moraceae	*Ficus platypoda*			C		3
plants	higher dicots	Moraceae	*Ficus*			C		4
plants	higher dicots	Moraceae	*Ficus virens*			C		1
plants	higher dicots	Moraceae	*Ficus obliqua*			C		5/1
plants	higher dicots	Myrsinaceae	*Aegiceras corniculatum*	river mangrove		C		1/1
plants	higher dicots	Myrsinaceae	*Myrsine variabilis*			C		4
plants	higher dicots	Myrtaceae	*Melaleuca nervosa*			C		11
plants	higher dicots	Myrtaceae	*Eucalyptus fibrosa subsp. fibrosa*			C		2/1
plants	higher dicots	Myrtaceae	*Eucalyptus exserta*	Queensland peppermint		C		12/1
plants	higher dicots	Myrtaceae	*Eucalyptus acmenoides*			C		1
plants	higher dicots	Myrtaceae	*Lophostemon suaveolens*	swamp box		C		12
plants	higher dicots	Myrtaceae	*Melaleuca dealbata*	swamp tea-tree		C		4
plants	higher dicots	Myrtaceae	*Melaleuca quinquenervia*	swamp paperbark		C		6/2
plants	higher dicots	Myrtaceae	*Leptospermum neglectum*			C		10/1
plants	higher dicots	Myrtaceae	*Melaleuca nervosa subsp. nervosa*			C		2/1
plants	higher dicots	Myrtaceae	*Melaleuca leucadendra*	broad-leaved tea-tree		C		7/1
plants	higher dicots	Myrtaceae	*Corymbia citriodora*	spotted gum		C		7
plants	higher dicots	Myrtaceae	*Eucalyptus crebra*	narrow-leaved red ironbark		C		8
plants	higher dicots	Myrtaceae	*Eucalyptus moluccana*	gum-topped box		C		4
plants	higher dicots	Myrtaceae	*Eucalyptus latisinensis*			C		3/2
plants	higher dicots	Myrtaceae	*Eucalyptus tereticornis*			C		4
plants	higher dicots	Myrtaceae	*Corymbia intermedia*	pink bloodwood		C		10
plants	higher dicots	Myrtaceae	*Corymbia clarksoniana*			C		3/2
plants	higher dicots	Myrtaceae	*Leptospermum polygalifolium*	tantoon		C		2
plants	higher dicots	Myrtaceae	*Eucalyptus fibrosa*			C		5
plants	higher dicots	Myrtaceae	*Lithomyrtus obtusa*			C		19
plants	higher dicots	Myrtaceae	*Corymbia tessellaris*	Moreton Bay ash		C		10
plants	higher dicots	Myrtaceae	*Melaleuca*			C		1
plants	higher dicots	Oleaceae	*Jasminum simplicifolium*					12
plants	higher dicots	Oleaceae	*Jasminum didymum subsp. didymum*			C		12
plants	higher dicots	Oleaceae	*Jasminum didymum*			C		4

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plants	higher dicots	Oleaceae	*Chionanthus ramiflorus*	northern olive		C		1/1
plants	higher dicots	Onagraceae	*Ludwigia octovalvis*	willow primrose		C		1/1
plants	higher dicots	Orobanchaceae	*Buchnera urticifolia*			C		1/1
plants	higher dicots	Passifloraceae	*Passiflora suberosa*	corky passion flower	Y			17
plants	higher dicots	Passifloraceae	*Passiflora foetida*		Y			3/1
plants	higher dicots	Phyllanthaceae	*Phyllanthus virgatus*			C		3
plants	higher dicots	Phyllanthaceae	*Glochidion sumatranum*	umbrella cheese tree		C		2
plants	higher dicots	Phyllanthaceae	*Breynia oblongifolia*			C		9
plants	higher dicots	Phyllanthaceae	*Glochidion ferdinandi*			C		1/1
plants	higher dicots	Phyllanthaceae	*Bridelia leichhardtii*			C		2
plants	higher dicots	Phyllanthaceae	*Phyllanthus*			C		1
plants	higher dicots	Phyllanthaceae	*Glochidion lobocarpum*			C		3
plants	higher dicots	Picrodendraceae	*Petalostigma pubescens*	quinine tree		C		17
plants	higher dicots	Picrodendraceae	*Pseudanthus orientalis*			C		2
plants	higher dicots	Pittosporaceae	*Pittosporum ferrugineum*			C		5
plants	higher dicots	Pittosporaceae	*Bursaria incana*			C		1/1
plants	higher dicots	Polygonaceae	*Persicaria decipiens*	slender knotweed		C		1/1
plants	higher dicots	Portulacaceae	*Portulaca bicolor*			C		1/1
plants	higher dicots	Proteaceae	*Banksia integrifolia*			C		12
plants	higher dicots	Putranjivaceae	*Drypetes deplanchei*	grey boxwood		C		17
plants	higher dicots	Rhamnaceae	*Alphitonia excelsa*	soap tree		C		24
plants	higher dicots	Rhamnaceae	*Rhamnella vitiensis*			C		1
plants	higher dicots	Rhizophoraceae	*Ceriops tagal*	yellow mangrove		C		1
plants	higher dicots	Rubiaceae	*Cyclophyllum coprosmoides*			C		14
plants	higher dicots	Rubiaceae	*Pavetta australiensis*			C		3
plants	higher dicots	Rubiaceae	*Timonius timon var. timon*			C		2/1
plants	higher dicots	Rubiaceae	*Psychotria daphnoides*			C		1
plants	higher dicots	Rubiaceae	*Psychotria loniceroides*	hairy psychotria		C		1
plants	higher dicots	Rubiaceae	*Aidia racemosa*			C		1
plants	higher dicots	Rubiaceae	*Pogonolobus reticulatus*			C		12
plants	higher dicots	Rutaceae	*Micromelum minutum*	clusterberry		C		1/1
plants	higher dicots	Rutaceae	*Acronychia imperforata*	beach acronychia		C		2/1
plants	higher dicots	Rutaceae	*Acronychia laevis*	glossy acronychia		C		6
plants	higher dicots	Santalaceae	*Exocarpos latifolius*			C		17
plants	higher dicots	Sapindaceae	*Dodonaea lanceolata*			C		1
plants	higher dicots	Sapindaceae	*Dodonaea lanceolata var. subsessilifolia*			C		1
plants	higher dicots	Sapindaceae	*Elattostachys xylocarpa*	white tamarind		C		1
plants	higher dicots	Sapindaceae	*Alectryon connatus*	grey birds-eye		C		14/1
plants	higher dicots	Sapindaceae	*Jagera pseudorhus*			C		7
plants	higher dicots	Sapindaceae	*Cupaniopsis anacardioides*	tuckeroo		C		19
plants	higher dicots	Sapindaceae	*Dodonaea viscosa subsp. burmanniana*			C		2/2
plants	higher dicots	Sapindaceae	*Alectryon tomentosus*			C		1
plants	higher dicots	Sapindaceae	*Dodonaea viscosa*			C		4
plants	higher dicots	Sapotaceae	*Sersalisia sericea*			C		16
plants	higher dicots	Scrophulariaceae	*Myoporum acuminatum*	coastal boobialla		C		1
plants	higher dicots	Solanaceae	*Solanum*			C		1

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plants	higher dicots	Solanaceae	*Solanum seaforthianum*	Brazilian nightshade	Y			1
plants	higher dicots	Sparrmanniaceae	*Triumfetta rhomboidea*	chinese burr	Y			1
plants	higher dicots	Stylidiaceae	*Stylidium rotundifolium*			C		1/1
plants	higher dicots	Stylidiaceae	*Stylidium*			C		1
plants	higher dicots	Thymelaeaceae	*Pimelea linifolia*			C		1
plants	higher dicots	Ulmaceae	*Trema tomentosa*			C		1
plants	higher dicots	Ulmaceae	*Celtis paniculata*	native celtis		C		4
plants	higher dicots	Verbenaceae	*Phyla nodiflora*	carpetweed		C		1
plants	higher dicots	Verbenaceae	*Stachytarpheta jamaicensis*	Jamaica snakeweed	Y			2/1
plants	higher dicots	Verbenaceae	*Lantana camara*	lantana	Y			24/1
plants	higher dicots	Verbenaceae	*Lantana*			C		1
plants	higher dicots	Viscaceae	*Viscum articulatum*	flat mistletoe		C		1/1
plants	higher dicots	Vitaceae	*Tetrastigma nitens*	shining grape		C		1
plants	lower dicots	Annonaceae	*Polyalthia nitidissima*	polyalthia		C		3
plants	lower dicots	Lauraceae	*Cassytha filiformis*	dodder laurel		C		3/1
plants	lower dicots	Lauraceae	*Cassytha pubescens*	downy devil's twine		C		7
plants	lower dicots	Lauraceae	*Cassytha*			C		5
plants	lower dicots	Menispermaceae	*Stephania japonica var. discolor*			C		1
plants	lower dicots	Menispermaceae	*Pleogyne australis*	wiry grape		C		2
plants	lower dicots	Menispermaceae	*Stephania japonica*			C		7
plants	lower dicots	Piperaceae	*Peperomia blanda var. floribunda*			C		2
plants	monocots	Amaryllidaceae	*Crinum pedunculatum*	river lily		C		1/1
plants	monocots	Arecaceae	*Livistona decora*			C		8
plants	monocots	Colchicaceae	*Iphigenia indica*			C		1/1
plants	monocots	Cyperaceae	*Schoenus apogon*			C		1/1
plants	monocots	Cyperaceae	*Schoenus sparteus*			C		3
plants	monocots	Cyperaceae	*Cyperus sphaeroideus*			C		1/1
plants	monocots	Cyperaceae	*Cyperus tetracarpus*			C		1/1
plants	monocots	Cyperaceae	*Eleocharis geniculata*			C		1/1
plants	monocots	Cyperaceae	*Carex pumila*	strand sedge		C		1/1
plants	monocots	Cyperaceae	*Fimbristylis ferruginea*			C		4/3
plants	monocots	Cyperaceae	*Cyperus*			C		3/1
plants	monocots	Cyperaceae	*Cyperus gunnii subsp. novae-hollandiae*			C		1/1
plants	monocots	Cyperaceae	*Lepironia articulata*			C		2
plants	monocots	Cyperaceae	*Trachystylis stradbrokensis*			C		4/1
plants	monocots	Cyperaceae	*Fuirena umbellata*			C		3/3
plants	monocots	Cyperaceae	*Gahnia aspera*			C		1
plants	monocots	Cyperaceae	*Cyperus pedunculatus*			C		2/1
plants	monocots	Cyperaceae	*Fimbristylis*			C		4
plants	monocots	Cyperaceae	*Cyperus brevifolius*	Mullumbimby couch	Y			1/1
plants	monocots	Cyperaceae	*Cyperus polystachyos*			C		4/2
plants	monocots	Cyperaceae	*Cyperus enervis*			C		5
plants	monocots	Cyperaceae	*Fuirena ciliaris*			C		1
plants	monocots	Hemerocallidaceae	*Dianella congesta*			C		3/2
plants	monocots	Hemerocallidaceae	*Dianella caerulea*			C		5
plants	monocots	Hemerocallidaceae	*Dianella longifolia*			C		6/1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	monocots	Hemerocallidaceae	*Dianella*			C		8
plants	monocots	Hemerocallidaceae	*Dianella rara*			C		2
plants	monocots	Hemerocallidaceae	*Dianella revoluta*			C		2/2
plants	monocots	Johnsoniaceae	*Tricoryne elatior*	yellow autumn lily		C		1
plants	monocots	Juncaceae	*Juncus*			C		1
plants	monocots	Juncaceae	*Juncus kraussii*	sea rush		C		1
plants	monocots	Juncaginaceae	*Triglochin striata*	streaked arrowgrass		C		1/1
plants	monocots	Laxmanniaceae	*Lomandra confertifolia*			C		5
plants	monocots	Laxmanniaceae	*Lomandra longifolia*			C		1
plants	monocots	Laxmanniaceae	*Lomandra confertifolia subsp. pallida*			C		4/1
plants	monocots	Laxmanniaceae	*Eustrephus latifolius*	wombat berry		C		12
plants	monocots	Laxmanniaceae	*Lomandra multiflora subsp. multiflora*			C		3
plants	monocots	Laxmanniaceae	*Lomandra*			C		1
plants	monocots	Orchidaceae	*Dipodium variegatum*			C		2/2
plants	monocots	Orchidaceae	*Cymbidium canaliculatum*			C		1
plants	monocots	Orchidaceae	*Dendrobium discolor*			C		3
plants	monocots	Pandanaceae	*Pandanus*			C		2
plants	monocots	Pandanaceae	*Pandanus tectorius*			C		10
plants	monocots	Philydraceae	*Philydrum lanuginosum*	frogsmouth		C		2
plants	monocots	Poaceae	*Setaria surgens*			C		5
plants	monocots	Poaceae	*Zoysia macrantha*	prickly couch		C		2
plants	monocots	Poaceae	*Phragmites australis*	common reed		C		4
plants	monocots	Poaceae	*Panicum simile*			C		1
plants	monocots	Poaceae	*Heteropogon contortus*	black speargrass		C		5
plants	monocots	Poaceae	*Ancistrachne uncinulata*	hooky grass		C		3
plants	monocots	Poaceae	*Digitaria*			C		1
plants	monocots	Poaceae	*Echinochloa crus-galli*	barnyard grass	Y			1/1
plants	monocots	Poaceae	*Paspalum scrobiculatum*	ditch millet		C		1
plants	monocots	Poaceae	*Chrysopogon fallax*			C		2
plants	monocots	Poaceae	*Paspalidium*			C		1
plants	monocots	Poaceae	*Sporobolus virginicus*	sand couch		C		3
plants	monocots	Poaceae	*Digitaria parviflora*			C		4
plants	monocots	Poaceae	*Cymbopogon refractus*	barbed-wire grass		C		2
plants	monocots	Poaceae	*Ischaemum*			C		2
plants	monocots	Poaceae	*Cenchrus echinatus*	Mossman River grass	Y			1
plants	monocots	Poaceae	*Themeda triandra*	kangaroo grass		C		23
plants	monocots	Poaceae	*Chloris pectinata*	comb chloris		C		1/1
plants	monocots	Poaceae	*Enneapogon lindleyanus*			C		1/1
plants	monocots	Poaceae	*Eriachne pallescens*			C		4
plants	monocots	Poaceae	*Chloris inflata*	purpletop chloris	Y			3/1
plants	monocots	Poaceae	*Aristida*			C		17
plants	monocots	Poaceae	*Paspalum*			C		1
plants	monocots	Poaceae	*Eriachne*			C		2
plants	monocots	Poaceae	*Spinifex sericeus*	beach spinifex		C		2
plants	monocots	Poaceae	*Sorghum nitidum forma aristatum*			C		1/1
plants	monocots	Poaceae	*Dinebra decipiens*			C		1/1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	monocots	Poaceae	*Entolasia stricta*	wiry panic		C		6
plants	monocots	Poaceae	*Ischaemum fragile*			C		1/1
plants	monocots	Poaceae	*Melinis repens*	red natal grass	Y			1
plants	monocots	Poaceae	*Cymbopogon bombycinus*	silky oilgrass		C		1/1
plants	monocots	Poaceae	*Eragrostis*			C		10/1
plants	monocots	Poaceae	*Panicum effusum*			C		3
plants	monocots	Poaceae	*Eragrostis interrupta*			C		3
plants	monocots	Poaceae	*Imperata cylindrica*	blady grass		C		20
plants	monocots	Poaceae	*Cynodon dactylon var. dactylon*		Y			1
plants	monocots	Poaceae	*Ischaemum triticeum*			C		1/1
plants	monocots	Potamogetonaceae	*Potamogeton*			C		1
plants	monocots	Xanthorrhoeaceae	*Xanthorrhoea*			C		3
plants	monocots	Xanthorrhoeaceae	*Xanthorrhoea latifolia subsp. latifolia*			C		15/1

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 Extinct in the Wild (PE), Endangered (E), Vulnerable (V), Near Threatened (NT), Least Concern (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).

Records – The first number indicates the total number of records of the taxon for the record option selected (i.e. All, Confirmed or Specimens).
This number is output as 99999 if it equals or exceeds this value. The second number located after the / indicates the number of specimen records for the taxon.
This number is output as 999 if it equals or exceeds this value.

Appendix 6 – Field Survey 2016 (Logic Environmental)

ABN 73 437 852 252

Brisbane – 61 Lugg Street Bardon QLD 4161
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Ref: L010126BS

6 April 2016

QRE Pty Ltd

PO Box 1108

Caloundra Qld 4551

Via Email: qre@sbcglobal.net

Attention: Tim Reigel

RESPONSE TO RFI – EPBC REF 2015/7585
FIELD SURVEYS
TURTLE STREET BEACH RSORT
CURTIS ISLAND, QLD

1.0 INTRODUCTION

Logic Environmental was commissioned by QRE Pty Ltd to prepare this report. The report has been compiled generally to convey results obtained during surveys conducted at the subject site in response to a request for further information (RFI) from the Department of the Environment (DoE). Specifically, the report and site surveys were aimed at addressing matters relating to;

- listed threatened and listed migratory bird species; and
- specific rare/threatened flora species.

Relevant site surveys (for migratory birds) and this report have been conducted/prepared in general accordance with the documents; '*Survey Guidelines for Australia's Threatened Birds (DoE)'* and the *'Background Paper to EPBC Act Policy Statement 3.21 - Significant Impact Guidelines for 36 Migratory Shorebird Species'*. Flora surveys were undertaken generally utilising recognised industry best practice methodology.

The report generally aims to convey results of field surveys conducted in February 2016 only, rather than provide in depth discussion on the site, associated ecology and reasoning to explain results. We understand significant other information on the site/proposal has been provided.

1.1 Site Description

The site as a whole is located on the eastern side of Curtis Island, in the Central Queensland region, directly offshore from the city of Gladstone. The proposed development involves a resort with various accomodation types, a central facility and associated infrastructure, including an airstrip.The specific survey sites identified for this assessment vary from an area of beach to mudflats, salt pans and tidal mangrove areas. Refer Section 3.2 for further details on each survey site.

2.0 SCOPE OF SURVEY

Six sites were identified within the subject site and surveyed using techniques and survey design generally outlined in the SGATB. Surveys were conducted at the various locations during February 2016 to provide a species count, evidence of presence of relevant shorebird species, available habitat for

these species and to determine the presence of a range of flora species. Further:

- Shorebird surveys and habitat assessment were targeted toward threatened and listed migratory bird species outlined within the RFI and associated correspondence. In particular, the species *Numenius madagascariensis* (Eastern Curlew) and *Calidris furruginea* (Curlew Sandpiper) were targeted. Surveys included intertidal point surveys foraging/traverse on foot and shorebird roost surveys by small vessel traverse along mangrove edges (at high tide) to facilitate flushing of target species; and
- Flora observation survey was undertaken across the subject site. Targeted flora species included the following;
  - *Samadera bidwillii;*
  - *Cupaniopsis shirleyana;*
  - *Cycas ophiolitica;* and
  - *Cycas megacarpa.*

3.0 METHODOLOGY

3.1 Shorebird Survey

Various methods were employed to collect data to satisfy the different aspects of the RFI. Table 3.1 below outlines the methodology, timing and survey effort employed to collect data on shorebirds at each survey location. Refer Figure 1 in Appendix A for survey locations. The survey team was lead by Andrew Thorrold, an Ecologist with 15 years experience in the field and six years consecutive experience working on Curtis Island and the subject site. Tide heights experienced throughout the survey period ranged from a low of 1.01m to a high of 4.19m.

Table 3.1 Dates, methodology and effort at each site surveyed at the Turtle Street Beach Resort.

Survey Location	Dates	Methodology	Survey Effort (Total Hrs)
1	2/2/2016 3/2/2016 4/2/2016 17/2/2016 18/2/2016 19/2/2016	Intertidal Point (Foraging) Survey • Sampling during high and low tides for shorebirds and habitat that may support target species. • Each site was traversed by two observers at both high and low tide within 2hrs either side of the tide, for a total of 30 minutes at each site, totaling one (1) man hour, • All observed species were identified, counted and recorded. • Relevant habitat observations recorded • All Evidence of Presence was recorded. Opportunistic Observations • Observations were recorded during site setup time prior to and post surveys.	Foraging surveys (high and low tide) - 6hrs Opportunistic observations throughout the survey period. This survey point was observed every day due to being used for access to other survey locations and was used as a staging point. - 15hrs
2	2/2/2016 3/2/2016 4/2/2016 17/2/2016 18/2/2016 19/2/2016	Intertidal Point (Foraging) Survey • Sampling during high and low tides for shorebirds and habitat that may support target species. • Each site was traversed by two observers at both high and low tide within 2hrs either side of the tide, for a total of 30 minutes at each site, totaling one (1) man hour, • All observed species were identified, counted and recorded. • Relevant habitat observations recorded • All Evidence of Presence was recorded. Opportunistic Observations • Observations were recorded during site setup time	Foraging surveys (high and low tide) - 6hrs Opportunistic Observations - 1hr

Survey Location	Dates	Methodology	Survey Effort (Total Hrs)
		prior to and post surveys.	
3	2/2/2016 3/2/2016 4/2/2016 17/2/2016 18/2/2016 19/2/2016	Intertidal Point (Foraging) Survey • Sampling during high and low tides for shorebirds and habitat that may support target species. • Each site was traversed by two observers at both high and low tide within 2hrs either side of the tide, for a total of 30 minutes at each site, totaling one (1) man hour, • All observed species were identified, counted and recorded. • Relevant habitat observations recorded • All Evidence of Presence was recorded. Opportunistic Observations • Observations were recorded during site setup time prior to and post surveys.	Foraging surveys (high and low tide) - 6hrs Opportunistic Observations - 1hr
4	2/2/2016 3/2/2016 4/2/2016 17/2/2016 18/2/2016 19/2/2016	Intertidal Point (Foraging) Survey • Sampling during high and low tides for shorebirds and habitat that may support target species. • Each site was traversed by two observers at both high and low tide within 2hrs either side of the tide, for a total of 30 minutes at each site, totaling one (1) man hour, • All observed species were identified, counted and recorded. • Relevant habitat observations recorded • All Evidence of Presence was recorded. Opportunistic Observations • Observations were recorded during site setup time prior to and post surveys.	Foraging surveys (high and low tide) - 6hrs Opportunistic Observations - 1hr
5	2/2/2016 3/2/2016 4/2/2016 17/2/2016 18/2/2016 19/2/2016	Intertidal Point (Foraging) Survey • Sampling during high and low tides for shorebirds and habitat that may support target species. • Each site was traversed by two observers at both high and low tide within 2hrs either side of the tide, for a total of 30 minutes at each site, totaling one (1) man hour, • All observed species were identified, counted and recorded. • Relevant habitat observations recorded • All Evidence of Presence was recorded. Opportunistic Observations • Observations were recorded during site setup time prior to and post surveys.	Foraging surveys (high and low tide) - 6hrs Opportunistic Observations - 1hr
6	2/2/2016 3/2/2016 4/2/2016 17/2/2016 18/2/2016 19/2/2016	Intertidal Point (Foraging) Survey • Sampling during high and low tides for shorebirds and habitat that may support target species. • Each site was traversed by two observers at both high and low tide within 2hrs either side of the tide, for a total of 30 minutes at each site, totaling one (1) man hour, • All observed species were identified, counted and recorded. • Relevant habitat observations recorded • All Evidence of Presence was recorded. Opportunistic Observations • Observations were recorded during site setup time prior to and post surveys.	Foraging surveys (high and low tide) - 6hrs Opportunistic Observations - 1hr
7	3/2/2016	Shorebird Roost Survey	Vessel man hrs - 1hrs

Survey Location	Dates	Methodology	Survey Effort (Total Hrs)
	18/2/2016	• Sampling at high tide for shorebirds via traverse by small vessel along the mangrove edge, flushing birds from roosting areas, generally for a 30 minute period either side of the high tide. • All observed species were identified, counted and recorded. Opportunistic Observations • Observations were recorded during site setup time prior to and post surveys.	Opportunistic Observations - 1hr

3.2 Habitat Observations

During the course of the shorebird surveys, observations on the available habitat were recorded. Habitat characteristics observed generally included the following;

- Site hydrology;
- Dominant landform type;
- Dominant terrestrial and aquatic vegetation types;
- Intertidal substrate characteristics; and
- Invasive species.

3.3 Flora Survey

Flora surveys were conducted throughout the proposal site and opportunistically at the numbered shore bird sites (i.e. sites 1 - 7), generally by traversing the areas and searching for the nominated species of concern. The flora survey effort was performed in addition to previous (extensive) flora surveys conducted over the site. Particular attention was paid to a small area of previously identified 'beach scrub', located close to shore bird survey site 1. This area was thought most likely to contain the targeted species of concern.

4.0 SURVEY OUTCOMES

4.1 Shorebird Survey

The resort site and associated areas surveyed had a very small number of individuals recorded, representing six species in total. These were limited to the Beach Stone-curlew (*Esacus magnirostris)*, Masked Lapwing (*Vanellus miles*), Black-winged Stilt (*Himantopus himantopus*), Bar-tailed Godwit (*Limosa lapponica*),White Faced Heron (*Egretta novaehollandiae*) and Pied Oyster Catcher (*Haematopus longirostris*).

Maximum species count for survey sites one to six are shown in the table below;

Common Name	Survey 1	Survey 2	Survey 3	Survey 4	Survey 5	Survey 6
Beach Stone-curlew	2					
Masked Lapwing		1			1	
Black Winged Stilt						1

Common Name	Survey 1	Survey 2	Survey 3	Survey 4	Survey 5	Survey 6
Bar-tailed Godwit					1	
White Faced Heron				1		1
Pied Oyster Catcher	2					

The maximum number of Shorebirds recorded at the survey locations was four individuals present at site 1. Survey site 3 recorded 0 birds, sites 5, 6, 2 and 4 each recorded one individual. All sites showed a lack of evidence of presence (droppings, calls, footprints, obvious roosts) of the targeted shorebird species.

4.2 Habitat Assessment

Habitat assessment was conducted at each site simultaneously with the shorebird counts. General details for each site are as follows. Refer Figure 1 in Appendix A for site locations and Site Photographs in Appendix B for further details. The site as a whole was observed as containing a range of habitat that was thought to be generally suitable as habitat for a range of shorebird species, generally with minimal levels of disturbance.

Site 1

This site generally represented a tidal sand flat/beach area adjacent a rocky headland and a small estuary mouth/area of mangroves.

Parameter	Hydrology	Dominant Land Form	Dominant terrestrial/aquatic vegetation	Intertidal Substrate Characteristics	Invasive Species	Overall Assumed Suitability as Shore Bird Habitat
Observations	- Open beach (oceanic influence) - Mouth of small estuary	- Beach/sand flats	- Mangroves associated with small estuary - Fringing eucalypt woodland	- Sand	- Minimal to none	Good

Site 2

This site represented a tidal salt pan with some adjacent mangroves and eucalypt woodland. Some small areas of salt couch (*Sporobulous virginicus)* were also observed.

Parameter	Hydrology	Dominant Land Form	Dominant terrestrial/aquatic vegetation	Intertidal Substrate Characteristics	Invasive Species	Overall Assumed Suitability as Shore Bird Habitat
Observations	- minimal standing water observed	- intertidal clay/sand/salt flats	- Mangroves associated with small estuary - fringing eucalypt woodland - some areas of salt couch	- Clay material	- Minimal to none	Good

Site 3

This site represented an intertidal zone with surrounding mangrove vegetation, in the upper reaches of tidal influence. The site is directly adjacent (East of) the proposed run way for the development.

Parameter	Hydrology	Dominant Land Form	Dominant terrestrial/aquatic vegetation	Intertidal Substrate Characteristics	Invasive Species	Overall Assumed Suitability as Shore Bird Habitat
Observations	- Tidal upper estuary	- Underlying rock	- Mangroves associated with small estuary - fringing eucalypt woodland	- Clay material	- Minimal to none	Good

Site 4

This site represented an intertidal zone with surrounding mangrove vegetation.

Parameter	Hydrology	Dominant Land Form	Dominant terrestrial/aquatic vegetation	Intertidal Substrate Characteristics	Invasive Species	Overall Assumed Suitability as Shore Bird Habitat
Observations	- Tidal upper estuary	- Mud/clay flats - underlying rock	- Mangroves associated with small estuary - fringing eucalypt woodland	- Clay material	- Minimal to none	Good

Site 5

This site represented an intertidal zone with surrounding mangrove vegetation and significant areas of salt couch (*Sporobulous virginicus)* flats.

Parameter	Hydrology	Dominant Land Form	Dominant terrestrial/aquatic vegetation	Intertidal Substrate Characteristics	Invasive Species	Overall Assumed Suitability as Shore Bird Habitat
Observations	- Tidal estuary	- Mud/clay flats	- Mangroves associated with estuary - Salt couch - fringing eucalypt woodland	- Clay material	- Minimal to none	Good

Site 6

This site represented an intertidal zone with surrounding mangrove vegetation and significant areas of salt couch (*Sporobulous virginicus)* flats.

Parameter	Hydrology	Dominant Land Form	Dominant terrestrial/aquatic vegetation	Intertidal Substrate Characteristics	Invasive Species	Overall Assumed Suitability as Shore Bird Habitat
Observations	- Tidal estuary	- Mud/clay flats	- Mangroves associated with estuary - Salt couch - fringing eucalypts	- Clay material	- Minimal to none	Good

Site 7

This site represented a mangrove community with areas of mud flat (at low tide). Note, this was the only survey site where a boat was able to be employed into the survey effort.

Parameter	Hydrology	Dominant Land Form	Dominant terrestrial/aquatic vegetation	Intertidal Substrate Characteristics	Invasive Species	Overall Assumed Suitability as Shore Bird Habitat
Observations	- Tidal estuary	- Mud/clay flats	- Mangroves associated with estuary - fringing eucalypt woodland	- Clay/estuarine mud material	- Minimal to none	Good

4.3 Flora Survey

None of the species highlighted in the DoE RFI were observed within the site during the field surveys. It should be noted also that extensive flora surveys were completed for the site in 2015 by Logic Environmental (refer previously submitted documentation). The information below provides further discussion on the highlighted species and their likelihood to occur on the subject site.

Cupaniopsis shirleyana (Wedge-leaf Tuckeroo) – COMMENTS:

- *Cupaniopsis shirleyana* generally occurs in specific vineforest habitats - from simple microphyll closed forests to tall closed forest, often with Hoop Pine. The small areas supporting vineforest, vineforest species, and specific regional ecosystems near the 'resort area' were well surveyed for this plant during 2015.
- The majority of the property is comprised of Land Zone 11 (with scattered areas of LZs 2, 3 and 12; the three dominant LZs on which the plant could occur).
- Overall there is limited supporting habitat on site.
- The plant is recorded from Mt Larcom (probably on LZ12) and Turkey Beach – near Rodds Bay, Sth Gladstone (probably on LZ 2).
- There are no records mapped for Curtis Island, see. The Australian Virtual Herbarium website, the southern section of the island is mapped, only, as a 'likely' distribution area.
- However 'Curtis Island' is referenced as the northern limit of the plant's distribution on the Commonwealth Govt's 'Conservation Advice' for the species.

NOTES:

- Wedge-leaf Tuckeroo occurs in a number of small populations throughout its range, in dry rainforest and scrubby urbanised areas on moderate to very steep slopes, scree slope gullies and rocky stream channels at elevations of 60–550 m above sea level (Thomas & McDonald, 1989).
- Sites where the species has been found are mostly simple microphyll closed forests to tall closed forest, often with Hoop Pine (*Araucaria cunninghamii*) emergent (SPRAT Profile, 2015).
- The Wedge-leaf Tuckeroo is predominately found on dark brown sandy loams and sandy clay loams (pH 5-7.5) and rocky scree slopes (SPRAT Profile 2015). Generally, these soils have formed from volcanic parent materials (mainly granites and granodiorites, basalt and andesitic flows, and pyroclastics (Barry & Thomas 1994).

Above notes from - SPRAT Profile (2015). Commonwealth of Australia.

Samadera bidwillii (Quassia) - COMMENTS:

- Similar habitat that supports this species occurs on site – i.e. near 'temporary and permanent watercourses' in rainforest or on rainforest margins, open forest and woodland.

The watercourses and surrounding habitat areas near the 'resort area' were well surveyed for this plant.

- In 2001 the plant was 'confirmed' at 40 sites (see Notes below).
- It is recorded from the Mt Larcom area.
- There are no records mapped for Curtis Island, see The Australian Virtual Herbarium website, part of the island is mapped, only, as a 'likely' distribution area.
- There is no mention in the Commonwealth Gov't (2015) notification for occurrences of this plant on Curtis Island.

NOTES:

- Quassia commonly occurs in lowland rainforest or on rainforest margins (Hewson 1985), but it can also be found in other forest types, such as open forest and woodland (QDNR 2001). Quassia is commonly found in areas adjacent to both temporary and permanent watercourses (Belleng Pty Ltd 2004) in locations up to 510 m altitude. The species occurs on lithosols, skeletal soils, loam soils, sands, silts and sands with clay subsoils (Stanley & Ross 1983).
- Of the 40 sites on which Quassia occurs (where the species is confirmed), nine are within state forest, one within a military reserve, and one within a protected area (Stanley & Ross 1983; R. Melzer 1995, pers. comm., cited in QDNR 2001). The remaining sites are on freehold land or roadsides (Queensland Herbarium 2000).

Cycas ophiolitica – COMMENTS:

- The resort area is not within known distributional range – it is currently only known from the brigalow belt.
- The species is known to occur in certain Regional Ecosystems none of which were located on site.
- There are no records mapped for Curtis Island; refer The Australian Virtual Herbarium website. The island is mapped, only, as a 'likely' distribution area.

NOTES:

- *C. ophiolitica* is endemic to central Queensland where the known populations are concentrated in two areas, from Marlborough in the north, to the Fitzroy River near Rockhampton in the south, in woodland or open woodland dominated by eucalypts.
- It occurs within an altitudinal range of 80-400m, often on serpentinite substrates (with *Corymbia dallachiana, C. erythrophloia, C. xanthope, Eucalyptus fibrosa*), but also on mudstone (with *Corymbia dallachiana, C. erythrophloia* and *Eucalyptus crebra*) and on alluvial loams (with *Corymbia intermedia, Eucalyptus drepanophylla* and *E. tereticornis*).
- Above notes from - Queensland Herbarium. 2007. National Multi-species Recovery Plan for the cycads, *Cycas megacarpa, Cycas ophiolitica, Macrozamia cranei, Macrozamia lomandroides, Macrozamiapauli-guilielmian Macrozamia platyrhachis,* Report to Department of the Environment and Water Resources, Canberra. Queensland Parks and Wildlife Service, Brisbane.

Cycas megacarpa (Tree zamia) - COMMENTS:

- Tree Zamia is recorded from the Mt Larcom area, in open eucalypt forest on mid/upper and top of slope.
- Tree Zamia is known to occur in quite a number of REs and mosaics over its range; several of these occur in the resort area. Likely REs and surrounding areas near the 'resort area' were well surveyed for this plant.
- There are no records mapped for Curtis Island, see The Australian Virtual Herbarium website. The island is mapped, only, as a 'likely' distribution area.

NOTES:

- C. megacarpa occurs within an altitudinal range of 40–680m, in woodland or open woodland dominated by eucalypts, particularly Corymbia citriodora and Eucalyptus crebra, but also Corymbia erythrophloia, E. melanophloia and Lophostemon confertus. The substrate is usually rocky and derived from acid volcanics, ironstone or mudstone, rarely from alluvium.
- Above notes from - Queensland Herbarium. 2007. National Multi-species Recovery Plan for the cycads, Cycas megacarpa, Cycas ophiolitica, Macrozamia cranei, Macrozamia lomandroides, Macrozamiapauli-guilielmiandMacrozamiaplatyrhachis ReporttoDepartmentofthe Environment and Water Resources, Canberra. Queensland Parks and Wildlife Service, Brisbane.

5.0 CONCLUSIONS

The site (as a whole) displayed limited diversity/abundance of shore bird species. A total of 6 species were observed. The highlighted species, the Eastern Curlew (*Numenius madagascariensis)* and the Curlew Sandpiper (*Calidris furruginea*) were not observed. Of the species observed, the Beach Stone Curlew is federally listed as a marine species (EPBC Act) and in Queensland as vulnerable (NC Act) and the Bar Tailed Godwit is listed as migratory.

Various habitat observations were made during the course of the field surveys; these observations highlighted a range of habitat features generally considered suitable for a range of shore bird species. At this stage, it is unknown as to why shorebird species diversity/abundance levels were observed as being so low. There is some potential that diversity/abundance levels may display as higher at different times of the year, dependant on specific migratory patterns of birds in the area. It is also possible that shorebirds infact prefer other areas on Curtis Island or in the general vicinity.

Given the extent of survey effort employed (in this and previous studies), we consider it accurate to conclude that the site does not support the highlighted rare/threatened flora species (i.e. *Samadera bidwillii, Cupaniopsis shirleyana, Cycas ophiolitica* and *Cycas megacarpa).* Whilst certain site characteristics and the site's general location may suggest their potential existence, evidence at hand does suggest otherwise.

6.0 CLOSURE

If you have any further queries, please contact the undersigned.

Yours faithfully,

Andrew Thorrold
BAppSci (Hons) MEIANZ MAILDM
Director

logic ENVIRONMENTAL

7.0 REFERENCES

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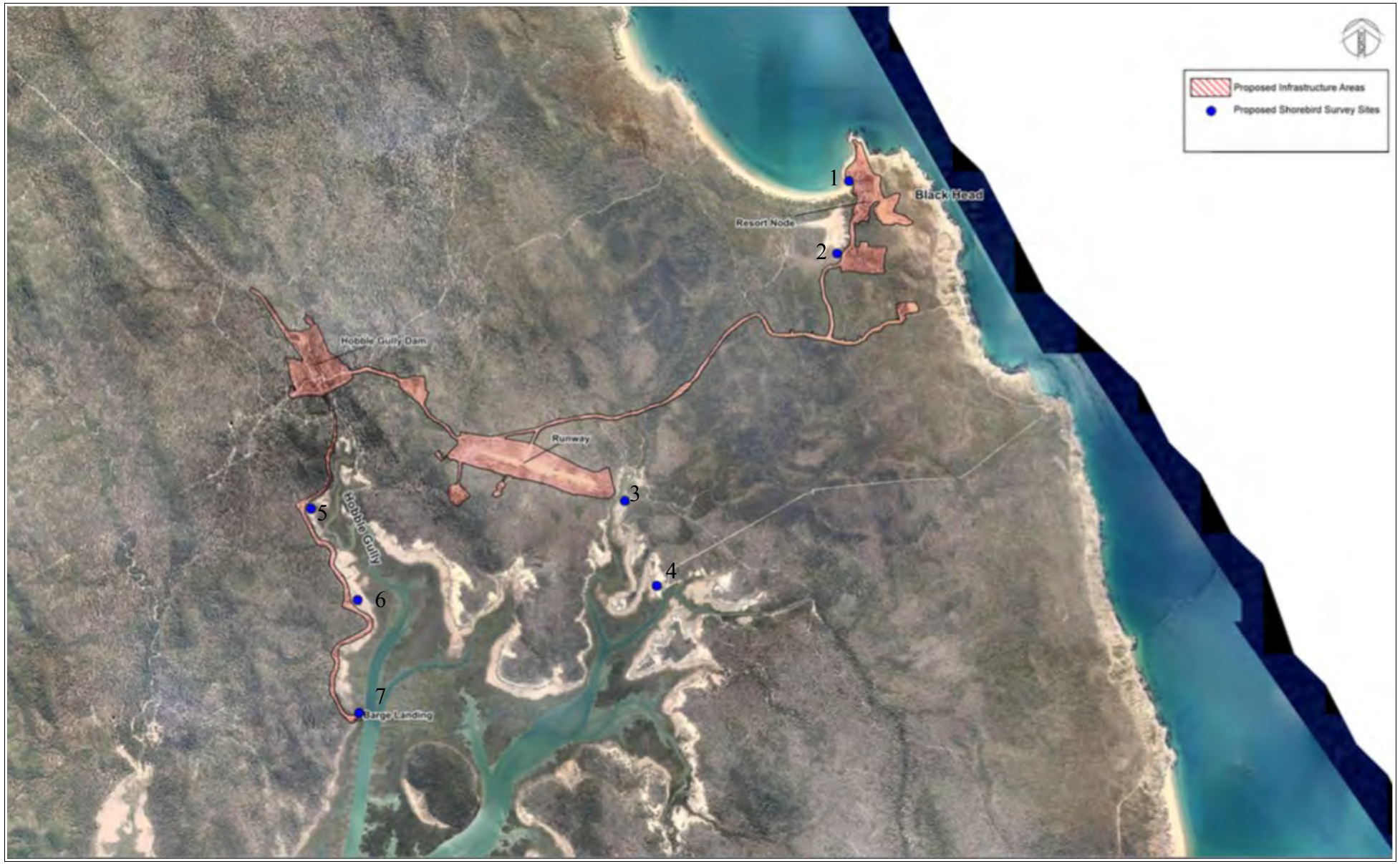
APPENDIX A:
FIGURES AND DIAGRAMS

Figure 1 – Shorebird Survey Sites



APPENDIX B:
SITE PHOTOGRAPHS

Site 1

Site 2

Site 3

Site 4

Site 5

Site 6

Site 7

Appendix 7 – Operational Works Approval

GLADSTONE REGIONAL COUNCIL

Gladstone Regional Council
PO Box 29, Gladstone Qld 4680
Phone (07) 4970 0700 Fax (07) 4975 8500
Email info@gladstonerc.qld.gov.au
Website www.gladstone.qld.gov.au

Please address all correspondence to The Chief Executive Officer

Contact Officer: Renqi Shen
Contact Phone Number.: 07 4977 6830
Our Ref: OPW/436/2013

12 June 2015

Q R E Pty Ltd
CARE Tate Professional Engineers Pty Ltd
PO Box 1092
MOOLOOLABA QLD 4557

Dear Sir/Madam

EXTENSION OF CURRENCY PERIOD
DEVELOPMENT APPLICATION NO. OPW/436/2013
OPERATIONAL WORKS APPLICATION - ROAD WORKS, STORMWATER, WATER INFRASTRUCTURE, DRAINAGE WORKS, EARTHWORKS, SEWERAGE INFRASTRUCTURE & LANDSCAPING - TURTLE STREET RESORT

DESCRIPTION: LOT 8 CP 860464, CURTIS, LOT 11 CP 860464, CURTIS, LOT TL 220087

I refer to your recent application received by this office on the 4 June 2015 for an extension of the currency period for the above application.

I wish to advise that Council agrees to an extension for a further *24 months* from the date of the current expiry date being *26 July 2015*. As such, the abovementioned operational works approval now lapses on the *26 July 2017* unless works have substantially commenced.

Please be advised that Council would be unlikely to support any further requests for an extension of the currency period beyond this date.

Please note that the currency period for the associated approval (DA/99/2009) has not automatically been extended as a result of this development extension approval. The Development Application is due to lapse on *26 July 2017*. Therefore it is recommended that you liaise with Council's Planning Department in regards to any further required extensions.

Should you have any queries in relation to this matter, please contact Council's Engineer - Development, Renqi Shen on **07 4977 6830**.

Yours Sincerely

EMMA HAMILTON
ACTING MANAGER TECHNICAL SERVICES

CC. David Douglas, QRE Pty Ltd

GLADSTONE REGIONAL COUNCIL

Gladstone Regional Council
PO Box 29, Gladstone Qld 4680
Phone (07) 4970 0700 Fax (07) 4975 8500
Email info@gladstonerc.qld.gov.au
Website www.gladstone.qld.gov.au

Please address all correspondence to The Chief Executive Officer

Contact Officer: Don Dickson
Contact Phone Number: 07 4975 8414
Our Ref: OPW/436/2013

COPY

26 July 2013

Mr Ian Farrington
Q R E Pty Ltd
Care Tate Professional Engineers Pty Ltd
PO Box 1092
MOOLOOLABA QLD 4557

Dear Sir

DECISION NOTICE
Sustainable Planning Act S334

DEVELOPMENT APPLICATION NO. OPW/436/2013
OPERATIONAL WORKS APPLICATION
ROAD WORKS, STORMWATER, WATER INFRASTRUCTURE, DRAINAGE WORKS, EARTHWORKS, SEWERAGE INFRASTRUCTURE & LANDSCAPING
TURTLE STREET RESORT

LOCATION: LOT 8 CP 860464, UNNAMED ROAD, CURTIS ISLAND QLD 4680
DESCRIPTION: LOT 8 CP 860464, CURTIS, LOT 11 CP 860464, CURTIS, LOT TL 220087

Reference is made to the above development application, which was received by Council on 7 January 2013.

I wish to advise that the application was assessed under Delegated Authority on 26 July 2013 and was approved subject to the conditions as set out in the following Decision Notice.

Should you have any questions or require further clarification in relation to any matters raised in the Decision Notice, please contact **Council's Operational Works Unit** on **07 4975 8414**.

Yours faithfully

A E KEARNS
CHIEF PLANNER

GLADSTONE
REGIONAL COUNCIL

DECISION NOTICE - Operational Works Application - (OPW/436/2013)
Sustainable Planning Act 2009 S335

TURTLE STREET RESORT

Lot 8 CP 860464, Curtis, Lot 11 CP 860464, Curtis, Lot TL 220087

Application:	Operational Works Application - Road Works, Stormwater, Water Infrastructure, Drainage Works, Earthworks, Sewerage Infrastructure & Landscaping
Applicant Name & Address:	Q R E Pty Ltd Care Tate Professional Engineers Pty Ltd PO Box 1092 MOOLOOLABA QLD 4557
Owner:	Q R E Pty Ltd
Subject Land:	Lot 8 CP 860464, Unnamed Road, CURTIS ISLAND QLD 4680
Location:	Lot 8 CP 860464, Curtis, Lot 11 CP 860464, Curtis, Lot TL 220087
Site Area:	6,300,000m2
Application Received:	7 January 2013

You are advised that your application is approved, subject to the attached conditions. These *Assessment Manager Conditions for Operational Works* may include conditions imposed by referral agencies and are referenced accordingly.

1. DETAILS OF THE APPROVAL

	Development Permit	Preliminary Approval
• **Associated work** made assessable by the planning scheme: o Building work o Operational work - Road Works, Stormwater, Water Infrastructure, Drainage Works, Earthworks, Sewerage Infrastructure & Landscaping	✓	x

2. RELEVANT PERIOD FOR THE APPROVAL

The relevant periods stated in section 341 of the *Sustainable Planning Act 2009* (SPA) apply to each aspect of development in this approval, as outlined below:-

✓ 2 years starting the day the approval takes effect.

OR

✓ the following relevant periods apply to the following aspects of development in this approval:-

If there is 1 or more subsequent related approvals for a development approval for a material change of use or a reconfiguration, the relevant period for the approval will be taken to have started on the day the latest related approval takes effect.

3. APPROVED PLANS

The approved plans and/or documents for this development approval are listed in the following table:

Plan No.	Rev.	Title	Date	Prepared By	Certified By
C5668/13/L01	-	Locality Plan And Drawing Index	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/L02	-	Overall Layout Plan	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/L03	-	Resort Layout Plan - Sheet 1 Of 2	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/L04	-	Resort Layout Plan - Sheet 2 Of 2	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/L05	-	Aerial Photo Overlay	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/R01	-	Roadworks Master Plan - Sheet 1 Of 2	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/R02	-	Roadworks Master Plan - Sheet 2 Of 2	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/R03	-	Control Line Setout Plan - Sheet 1 Of 3	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/R04	-	Control Line Setout Plan - Sheet 2 Of 3	19/12/2012	Tate Professional	RPEQ NO 4665

				Engineers Pty Ltd	
C5668/13/R05	-	Control Line Setout Plan - Sheet 3 Of 3	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/R06	-	Control Line Setout Details - Sheet 1 Of 2	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/R07	-	Control Line Setout Details - Sheet 2 Of 2	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/R08	-	Roadworks Detail Plan - Sheet 1 Of 8	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/R09	-	Roadworks Detail Plan - Sheet 2 Of 8	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/R10	-	Roadworks Detail Plan - Sheet 3 Of 8	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/R11	-	Roadworks Detail Plan - Sheet 4 Of 8	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/R12	-	Roadworks Detail Plan - Sheet 5 Of 8	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/R13	-	Roadworks Detail Plan - Sheet 6 Of 8	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/R14	-	Roadworks Detail Plan - Sheet 7 Of 8	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/R15	-	Roadworks Detail Plan - Sheet 8 Of 8	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/R16	-	Road 1 Longitudinal Section - Sheet 1 Of 3	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/R17	-	Road 1 Longitudinal Section - Sheet 2 Of 3	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/R18	-	Road 1 Longitudinal Section - Sheet 3 Of 3	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/R19	-	Road 1 Typical	19/12/2012	Tate	RPEQ

		Cross Sections - Sheet 1 Of 2		Professional Engineers Pty Ltd	NO 4665
C5668/13/R20	-	Road 1 Typical Cross Sections - Sheet 2 Of 2	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/R21	-	Road 1 Cross Sections - Sheet 1 Of 4	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/R22	-	Road 1 Cross Sections - Sheet 2 Of 4	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/R23	-	Road 1 Cross Sections - Sheet 3 Of 4	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/R24	-	Road 1 Cross Sections - Sheet 4 Of 4	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/R25	-	Road 2 & Road 3 Longitudinal Sections	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/R26	-	Road 2 & Road 3 Typical Cross Sections	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/R27	-	Road 2 & Road 3 Cross Sections	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/R28	-	Road 4 Longitudinal Section	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/R29	-	Road 4 Typical Cross Sections - Sheet 1 Of 2	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/R30	-	Road 4 Typical Cross Sections - Sheet 2 Of 2	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/R31	-	Road 4 Cross Sections - Sheet 1 Of 3	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/R32	-	Road 4 Cross Sections - Sheet 2 Of 3	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/R33	-	Road 4 Cross Sections - Sheet 3 Of 3	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665

C5668/13/R34	-	Road 5 Longitudinal Section	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/R35	-	Road 5 Typical Cross Sections - Sheet 1 Of 2	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/R36	-	Road 5 Typical Cross Sections - Sheet 2 Of 2	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/R37	-	Road 5 Cross Sections - Sheet 1 Of 2	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/R38	-	Road 5 Cross Sections - Sheet 2 Of 2	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/R39	-	Road 6 & Road 7 Longitudinal Sections	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/R40	-	Road 6 & Road 7 Typical Cross Sections	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/R41	-	Road 6 Cross Sections	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/R42	-	Road 8 & Road 9 Longitudinal Sections	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/R43	-	Road 8 & Road 9 Typical Cross Sections	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/R44	-	Road 8 Cross Sections	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/R45	-	Road 10 & Road 11 Longitudinal Sections	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/R46	-	Road 10 & Road 11 Typical Cross Sections	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/R47	-	Road 10 Cross Sections	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/R48	-	Road 12 & Road 13 Longitudinal Sections	19/12/2012	Tate Professional Engineers Pty	RPEQ NO 4665

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C5668/13/R49	-	Road 12 & Road 13 Typical Cross Sections	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/R50	-	Road 12 Cross Sections - Sheet 1 Of 2	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/R51	-	Road 12 Cross Sections - Sheet 2 Of 2	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/R52	-	Road 14 & Road 15 Longitudinal Sections	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/R53	-	Road 14 & Road 15 Typical Cross Sections	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/R54	-	Road 14 Cross Sections	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/R55	-	Road 16 & Road 17 Longitudinal Sections	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/R56	-	Road 16 & Road 17 Typical Cross Sections	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/R57	-	Road 16 Cross Sections	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/R58	-	Road 18 & Road 19 Longitudinal Sections	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/R59	-	Road 18 & Road 19 Typical Cross Sections	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/R60	-	Road 18 Cross Sections	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/R61	-	Road 19 Cross Sections	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/R62	-	Road 20 & Road 21 Longitudinal Sections	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/R63	-	Road 20 & Road 21 Typical Cross	19/12/2012	Tate Professional	RPEQ NO 4665

		Sections		Engineers Pty Ltd	
C5668/13/R64	-	Road 20 & Road 21 Cross Sections	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/R65	-	Intersection Details Plan - Sheet 1 Of 6	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/R66	-	Intersection Details Plan - Sheet 2 Of 6	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/R67	-	Intersection Details Plan - Sheet 3 Of 6	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/R68	-	Intersection Details Plan - Sheet 4 Of 6	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/R69	-	Intersection Details Plan - Sheet 5 Of 6	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/R70	-	Intersection Details Plan - Sheet 6 Of 6	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/R71	-	Miscellaneous Details Sheet	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/E01	-	Earthworks Master Plan - Sheet 1 Of 2	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/E02	-	Earthworks Master Plan - Sheet 2 Of 2	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/E03	-	Earthworks Detail Plan - Sheet 1 Of 8	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/E04	-	Earthworks Detail Plan - Sheet 2 Of 8	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/E05	-	Earthworks Detail Plan - Sheet 3 Of 8	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/E06	-	Earthworks Detail Plan - Sheet 4 Of 8	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/E07	-	Earthworks Detail	19/12/2012	Tate	RPEQ

		Plan - Sheet 5 Of 8		Professional Engineers Pty Ltd	NO 4665
C5668/13/E08	-	Earthworks Detail Plan - Sheet 6 Of 8	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/E09	-	Earthworks Detail Plan - Sheet 7 Of 8	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/E10	-	Earthworks Detail Plan - Sheet 8 Of 8	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/E11	-	Retaining Wall Details & Typical Sections Sheet	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/E12	-	Resort Dam - Layout Plan	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/E13	-	Resort Dam - Dam Wall & Spillway Details Plan	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/E14	-	Resort Dam - Typical Sections	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/E15	-	Erosion & Sediment Control - Miscellaneous Details	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/INF01	-	Infrastructure Compound Detail Plan	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/INF02	-	Water & Sewerage Storage / Treatment Area	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/D01	-	Stormwater Drainage Master Plan - Sheet 1 Of 2	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/D02	-	Stormwater Drainage Master Plan - Sheet 2 Of 2	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/D03	-	Stormwater Drainage Detail Plan - Sheet 1 Of 8	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/D04	-	Stormwater Drainage Detail Plan - Sheet 2 Of 8	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665

C5668/13/D05	-	Stormwater Drainage Detail Plan - Sheet 3 Of 8	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/D06	-	Stormwater Drainage Detail Plan - Sheet 4 Of 8	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/D07	-	Stormwater Drainage Detail Plan - Sheet 5 Of 8	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/D08	-	Stormwater Drainage Detail Plan - Sheet 6 Of 8	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/D09	-	Stormwater Drainage Detail Plan - Sheet 7 Of 8 \	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/D10	-	Stormwater Drainage Detail Plan - Sheet 8 Of 8	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/D11	-	Entry Road Culvert Details - Sheet 1 Of 3	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/D12	-	Entry Road Culvert Details - Sheet 2 Of 3	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/D13	-	Entry Road Culvert Details - Sheet 3 Of 3	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/D14	-	Entry Road Culvert Details - Longitudinal Sections	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/D15	-	Stormwater Longitudinal Sections - Sheet 1 Of 2	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/D16	-	Stormwater Longitudinal Sections - Sheet 2 Of 2	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/D17	-	Miscellaneous Stormwater Details	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/D18	-	Roofwater Infiltration System Details Sheet	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/S01	-	Sewerage Reticulation Master Plan	19/12/2012	Tate Professional Engineers Pty	RPEQ NO 4665

				Ltd	
C5668/13/S02	-	Sewerage Reticulation Detail Plan - Sheet 1 Of 5	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/S03	-	Sewerage Reticulation Detail Plan - Sheet 2 Of 5	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/S04	-	Sewerage Reticulation Detail Plan - Sheet 3 Of 5	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/S05	-	Sewerage Reticulation Detail Plan - Sheet 4 Of 5	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/S06	-	Sewerage Reticulation Detail Plan - Sheet 5 Of 5	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/S07	-	Sewerage Longitudinal Sections - Sheet 1 Of 4	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/S08	-	Sewerage Longitudinal Sections - Sheet 2 Of 4	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/S09	-	Sewerage Longitudinal Sections - Sheet 3 Of 4	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/S10	-	Sewerage Longitudinal Sections - Sheet 4 Of 4	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/S11	-	Sewerage Rising Main Long. Sections - Sheet 1 Of 2	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/S12	-	Sewerage Rising Main Long. Sections - Sheet 2 Of 2	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/W01	-	External Water Supply Master Plan	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/W02	-	Potable Water Supply Master Plan	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/W03	-	Recycled Water Supply Master Plan	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/W04	-	Electrical, Gas & Communications	19/12/2012	Tate Professional	RPEQ NO 4665

		Master Plan		Engineers Pty Ltd	
C5668/13/W05	-	Water Reticulation Detail Plan - Sheet 1 Of 8	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/W06	-	Water Reticulation Detail Plan - Sheet 2 Of 8	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/W07	-	Water Reticulation Detail Plan - Sheet 3 Of 8	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/W08	-	Water Reticulation Detail Plan - Sheet 4 Of 8	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/W09	-	Water Reticulation Detail Plan - Sheet 5 Of 8	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/W10	-	Water Reticulation Detail Plan - Sheet 6 Of 8	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/W11	-	Water Reticulation Detail Plan - Sheet 7 Of 8	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/W12	-	Water Reticulation Detail Plan - Sheet 8 Of 8	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/CA01	-	Entry Road Culverts - Stormwater Catchment Plan	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/CA02	-	Entry Road Culverts - Stormwater Calculations	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/CA03	-	Resort Dam - Catchment Plan & Calculations	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/CA04	-	Resort Site - Stormwater Catchment Plan	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/CA05	-	Resort Site - Stormwater Calculations - Sheet 1 Of 2	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
C5668/13/CA06	-	Resort Site - Stormwater Calculations - Sheet 2 Of 2	19/12/2012	Tate Professional Engineers Pty Ltd	RPEQ NO 4665
LOG010126-L01	-	Landscaping Plan	18/12/2012	Logic	-

		Overall Layout Plan		Environmental	
LOG010126-L02	-	Landscaping Plan	18/12/2012	Logic Environmental	-
LOG010126-L03	-	Landscaping Plan	18/12/2012	Logic Environmental	-
LOG010126-L04	-	Landscaping Plan	18/12/2012	Logic Environmental	-
LOG010126-L05	-	Landscaping Plan	18/12/2012	Logic Environmental	-
LOG010126-L06	-	Landscaping Plan	18/12/2012	Logic Environmental	-
LOG010126-L07	-	Landscaping Plan	18/12/2012	Logic Environmental	-
LOG010126-L08	-	Landscaping Plan	18/12/2012	Logic Environmental	-
LOG010126-L09	-	Landscaping Plan	18/12/2012	Logic Environmental	-
LOG010126-L10	-	Landscaping Plan	18/12/2012	Logic Environmental	-
LOG010126-L11	-	Landscaping Plan	18/12/2012	Logic Environmental	-
LOG010126-L12	-	Landscaping Plan	18/12/2012	Logic Environmental	-
LOG010126-L13	-	Landscaping Plan	18/12/2012	Logic Environmental	-
LOG010126-L14	-	Landscaping Plan	18/12/2012	Logic Environmental	-
LOG010126-L15	-	Landscaping Plan Dam Details	18/12/2012	Logic Environmental	-
LOG010126-L16	-	Typical Building Layouts	18/12/2012	Logic Environmental	-
LOG010126-L17	-	King Unit Building Layout	18/12/2012	Logic Environmental	-
LOG010126-L18	-	Destination Unit Building Layout	18/12/2012	Logic Environmental	-
LOG010126-L19	-	Landscape Details and Specifications	18/12/2012	Logic Environmental	-
LOG010126-L20	-	Landscape Details and Specifications Proposed Planting Schedule	18/12/2012	Logic Environmental	-
LOG010126-L21	-	Landscape Details Typical Road Sections	18/12/2012	Logic Environmental	-

4. APPEAL RIGHTS

Attached is an extract from the SPA which details your appeal rights and the appeal rights of any submitters regarding this decision.

5. WHEN THE DEVELOPMENT APPROVAL TAKES EFFECT

This development approval takes effect:-

- From the time the decision notice is given, if there is no submitter and the applicant does not appeal the decision to the court.

OR

- If there is a submitter and the applicant does not appeal the decision, the earlier date of either:
  - When the submitter's appeal ends; or
  - The day the last submitter gives the assessment manager written notice that the submitter will not be appealing the decision.

OR

- Subject to the decision of the court, when the appeal is finally decided, if an appeal is made to the court.

This approval will lapse if:-

- for a development approval other than a material change of use or reconfiguration, the development does not substantially start within the relevant period stated in section 2 of this decision notice.

Note that in the case of a development approval for a material change of use or for reconfiguring a lot, if there is 1 or more subsequent related approvals the relevant period for the material change of use or reconfiguration will restart from the date of the related approval taking effect. Please refer to section 341 of SPA for further information.

Should you wish to discuss this matter further, please contact **Council's Operational Works Unit** on **07 4975 8414.**

Yours faithfully

A E KEARNS
CHIEF PLANNER

Attached: **Conditions**
Appeal Rights
Approved Plans

GLADSTONE
REGIONAL COUNCIL

ASSESSMENT MANAGER CONDITIONS

Sustainable Planning Act S335

DEVELOPMENT APPLICATION NO. OPW/436/2013
OPERATIONAL WORKS
Road Works, Stormwater, Water Infrastructure, Drainage Works, Earthworks, Sewerage Infrastructure & Landscaping
TURTLE STREET RESORT

Lot 8 CP 860464, Curtis, Lot 11 CP 860464, Curtis, Lot TL 220087

SPECIAL CONDITIONS

1. The applicant is to obtain all relevant building approvals for building works including retaining walls.
2. The applicant is to make application in relation to water and sewer works under the requirements of the Plumbing and Drainage Act 2002.
3. Any disturbance to the tidal area must be avoided or the area must be rehabilitated. Any excavation or filling must maintain the natural hydrology and prevent changes in water quality that would adversely affect the ecological values of the site.
4. The table drain, except where infiltration swales have been proposed, must be turfed/ vegetated to prevent erosion and provide quality treatment for stormwater to be discharged into the natural waterway.
5. Provide evidence of resource entitlement prior to construction of Road 12 situated outside the subject property site.

PRIOR TO CONSTRUCTION COMMENCING

6. Prior to commencing construction the applicant must arrange for a "Pre-start site meeting" which must be attended by a representative of the Gladstone Regional Council, the Contractor and the Supervising Engineer. All relevant Referral Agencies and other relevant Agencies including Ergon and Telstra shall be invited to attend.
7. Prior to construction commencing the applicant must lodge a construction security bond (in the form of cash or a bank guarantee) in the amount of 2.5% of the estimated cost of the construction of the works (or the minimum fee in accordance with Council's Fees

and Charges Schedule). The construction security bond must be lodged with Council prior to arranging a pre-start site meeting. The construction security bond is intended to cover action by Council required to provide for people safety, traffic safety, or for the protection of property or the environment where:

- A condition of this approval is breached; or
- additional scour protection measures are needed, or the installation and maintenance of erosion and sediment control measures is deficient, or other remediation works to the site are required where it has been left unattended for an unreasonably long period of time; and
- either the works need to be carried out by Council as a matter of urgency or the works need to be carried out by Council because the applicant has failed to comply with a notice to:
  - remedy a breach of this approval, or
  - provide for people safety, traffic safety, or to provide for the protection of property or the environment within a reasonable period of time.

The cost incurred by Council in actioning the above, will be recovered from the construction security bond.

The construction security bond shall be released when the construction phase works are complete and the works commence the maintenance / performance verification period.

Note: An administration fee will be charged to all new bonds accepted by Council.

8. The applicant / developer is to ensure that any existing easements over the site are protected during construction and are able to be accessed at all times.

9. The applicant must ascertain the existence and location of existing services associated with the development, including but not limited to water supply, sewerage, stormwater, gas, electricity and telecommunications services and must protect these services from damage and must rectify any damage or arrange for the rectification works to be carried out by the relevant service authority (at the applicant's expense) immediately the damage occurs.

10. Prior to commencing construction of stormwater drainage the applicant shall nominate a suitably experienced person in this field to perform the stormwater work. Works shall only be carried out with this nominated person on the site.

11. Prior to works commencing on any existing Council road, the applicant must forward a copy of a traffic management plan prepared and signed by a level three (minimum) accredited person with identification card number for all works to be carried out on existing roads showing how traffic will be managed in accordance with the Manual of Uniform Traffic Control Devices. The plan must outline the process delineating the works including Council notification and traffic control device placement plans in the vicinity of the works.

12. Before construction commences, a person or entity must be nominated as the community contact for the construction project to answer concerns of the community and Council (dust, emergency repairs etc)

13. A project sign shall be erected in a prominent location prior to commencement of construction and shall remain for the duration of construction.

    Information on the sign shall identify the project including a brief scope of works, the name of the community contact for the project along with phone numbers and contact details etc. This contact must be available 16 hours each day during the construction period. Other details such as the contractor's, subcontractors' and developer's names may also be included.

    All complaints received by the contact must be recorded including the resulting investigation undertaken, conclusions formed, and actions taken. This information must be available to Gladstone Regional Council or relevant government agency on request, to show that "environmental duty" has been exercised by the contractor, in order to avoid prosecution under the Environmental Protection Act.

SUPERVISION OF WORKS

14. The roadworks, stormwater, water infrastructure, sewerage infrastructure, earthworks, drainage and any other development works are to be executed under the supervision of a Registered Professional Engineer of Queensland and on completion of such work, the Applicant shall give to the Council, Construction Certificates from such Supervising Engineer, that the work has been constructed in accordance with this operational works permit and good engineering practice.

    Such certificates must include the following information:

    a. Company name, address, & contact details.

    b. Engineer's name and position in company.

    c. Professional registration number (RPEQ) and signature

    d. Project name, location and Council reference number

    e. Full details of the work performed, including:

    - comprehensive and detailed "As Constructed" plans in AutoCAD and Adobe Acrobat "pdf" format. The plans must be certified by a Registered Surveyor in regards to the accuracy of the information provided (location, line, level etc) and certified by the Supervising Engineer (RPEQ) in regards to compliance with this Operational Works Permit. The applicant / consultants must liaise with Council's Operational Works Officers in regard to the detailed requirements for the electronic data.

    - quality control test results including material property, compaction testing, bitumen prime and seal spray rates, aggregate spread rates, AC compaction testing.

- a successful (defect free) CCTV report in accordance with the Water Services Association of Australia; including inclination graphs, on all stormwater and sewer lines. CCTV reports are required as part of the "On Maintenance" inspection and as part of the "Off Maintenance" inspection. Council reserves the right to utilise for its own purposes and for sale, the "as constructed" documentation provided.

Note: Sewer lines to be pressure cleaned prior to CCTV inspection.

f. The relevant standards to which a product or installation complies

g. Quality assurance system in place, date of QA manual used and the Council proforma duly completed

h. Any maintenance procedures required for products certified to achieve the design life

15. The Supervising Engineer shall inspect the earthworks, roadworks and stormwater drainage, with the relevant Council officer also invited to attend each inspection, at the stages of construction as set out in the Gladstone Regional Council "Roads and Transport Standard 2005" and at the stages listed below. All works shall be carried out in accordance with this standard and good engineering practice. The supervising consulting engineer shall arrange a time for inspection at the following critical stages.

a. culvert foundations

b. stormwater pipes backfilled to top of pipe

c. subgrade inspection

d. pre-laying of kerb and channel

e. pre-seal inspection

f. commencement of the on-maintenance / verification period

g. completion of the on-maintenance / verification period

Quality control documentation including compaction test results for culvert foundations shall be provided to Council prior to inspection by Council's Operational Works officers.

Quality control documentation including compaction test results and a check survey of the subgrade levels shall be provided to Council prior to the sub-grade inspection.

Quality control documentation including compaction test results and a check survey of the pre-seal pavement levels shall be provided to Council prior to the pre-seal inspection.

The supervising engineer must carry out a successful inspection of the works and must certify that the works are ready for inspection prior to inspection by Council's Operational Works officers. A minimum of 24 hours notice (by email or facsimile) is required by Council's Operational Works Officers.

The Supervising Engineer's inspection certificate and associated quality control documentation must be forwarded to Council prior to the time of the inspection.

Note: Re-inspection by Council's Operational Works Officers may attract a "re-inspection" fee.

16. Council's Operational Works Officers shall be invited to carry out verification inspections at salient phases of construction and may carry out random audit inspections during the course of construction.

17. A maintenance / performance verification security bond must be lodged with Council and prior to the works being accepted "on maintenance". The Applicant must lodge a maintenance / performance verification security bond (in the form of cash or a bank guarantee) in the amount of 5.0% of the estimated cost of the construction of the works (or the minimum fee in accordance with Council's Fees and Charges Schedule). The maintenance / performance verification security bond is intended to cover:

    - urgent action required by Council to provide for people safety, traffic safety and for the protection of property and the environment
    - installation of additional scour and environmental protection measures and the installation and maintenance of erosion and sediment control measures (where deficient)
    - rectification of defective work or the construction of new work resulting from design omissions or deficiencies
    - rectification of defective work or the construction of new work resulting from construction omissions or deficiencies
    - maintenance of the works

    The maintenance / performance verification security bond shall be held by Council for a minimum period of 12 months. This period will be extended by Council to verify the integrity and performance of the works should actual or potential defects or omissions be identified.

    Note: An administration fee will be charged to all new bonds accepted by Council.

GENERAL CONDITIONS

18. Erosion and sediment control measures are to be implemented generally in accordance with the principles / practices described in the publication:

    IECA Best Practice Erosion & Sediment Control – November 2008. International Erosion Control Association (Australasia), Picton NSW.

19. Before construction commences (prior to organising a pre-start meeting) a site specific Erosion and Sediment Control Plan (ESCP) certified by a RPEQ experienced in this type of work must be forwarded to Council for Council's records.

20. An updated ESCP (certified by a RPEQ) is to be provided to Council at the end of each calendar month (28th day of each month or immediately prior to this date) from October to May and on request

at any time during the remainder of the year throughout the course of construction.

21. The ESCP must be monitored by a RPEQ experienced in this type of work throughout the course of the operational works and in addition to the monitoring tasks outlined in the ESCP, the RPEQ is to carry out an audit of the ESCP at the end of each calendar month (28th day of each month or immediately prior to this date) from October to May and at the request of Council at any time during the remainder of the year. The results of the regular (monthly) audit and the Council requested audits must be forwarded to Council for their records.

22. The ESCP must include the following non-compliance procedures:
    a) notify Council immediately of any non-compliance;
    b) without delay, notify Council on how and when the non-compliance is to be investigated / managed / dealt with / rectified;
    c) keep Council informed on progress (regular reports);
    d) advise Council when the matter has been resolved.

23. Failure to advise Council and to rectify / deal appropriately and in a timely manner with an issue or occurrence that may result in compliance action by Council. Compliance tools available to Council include but are not limited to:
    a) Warnings
    b) penalty infringement notices
    c) statutory / regulatory tools under the Sustainable Planning Act 2009 and the Environmental Protection Act 1994
    d) prosecution (criminal offence)

24. In addition to the installation of environmentally responsible sediment, erosion control, scour protection or other long term stabilisation measures and prior to the works being accepted "on-maintenance", the following environmental protection measures must be installed:

    a) Turfing of footpath (verge / nature strip) - full width (from the back of kerb to property boundary) turfing of all footpaths and associated open space / access areas.

    b) Seeding plus hydromulching of areas disturbed during construction (including allotments). Topsoiling and hydromulching is to be carried out in accordance with the following specification:

Seeding and hydromulching must be undertaken as separate operations. The system described below aims to protect the soil surface against erosion by wind and water, and forms a protective barrier for the seed. When sufficient rain occurs, the seed will germinate under normal conditions. The ground will have a good protection from dust erosion and light 'rill' erosion should it rain.

- Drill seed with seed and fertiliser into the soil surface to be stabilised.
- Immediately follow-up with hydromulchings operation to the rates shown below. Note that mulching rates are 'dry weight' (i.e prior to adding water).
- Prevent or restrict vehicle traffic access to hydromulched areas wherever possible.
- Provide documentary evidence to Council that the site stabilisation has occurred in accordance with the specifications (e.g. certification by Superintendent and/or hyrdomulch contractor, as to nature and extent of stabilisation works undertaken, in particular the mulch application rate(s) used onsite).
- The applicant must achieve a minimum of 70% ground coverage over the total area prior to the works being accepted "off maintenance".

Minimum Application Rates Kg per 1000 m^2					
Slope Gradient	FLAT		MEDIUM		STEEP
	<5%	5-12%	12-20%	20-50%	>50%
Seed Mix	8	8	8	8	8
Sugar Cane	140	155	175	200	280
Paper	60	67	75	86	120
Flax Blend	40	45	50	60	80
Fertiliser	20	20	20	20	20
Tackifier	3	3	4*	4*	6*

Notes:
1. *the rates are 'dry weight', i.e. prior to adding water;*
2. ** indicates non-rewettable tackifier must be used.*
3. Flax blend comprises lucerne and linseed.
4. Dye may be used to gauge application coverage %

Seed Mixes			
	Summer Blend (applications November – February)	Mid Season Blend (applications March/April & September/October)	Winter Blend (applications May-August)
Unhulled green couch (Cynodon dactylon) or Blue couch (Digitaria didactyla)	25%	25%	25%
Hulled green couch (Cynodon dactylon) or Blue couch (Digitaria didactyla)	25%	25%	25%
Japanese millet	30%	15%	N/A
Rye grass	N/A	15%	30%
Carpet grass (Axonopus affinis)	20%	20%	20%

c) Silt fencing of individual allotments - the silt fencing to each allotment is to be independent of the silt fencing to adjoining or other allotments. Silt fencing is to be non woven fabric and installed along the full length of an allotment boundary where

surface runoff crosses the boundary and is to return a 6m (minimum) distance along both side boundaries. The removal of silt fencing from one allotment is not to impact on the integrity of the silt fencing associated with adjoining allotments.

25. All disturbed areas are be stabilised to minimise water and wind erosion within 30 days of the disturbance.

26. All roads to be constructed generally in accordance with TATE Engineers drawings C5668/13/AL01 to C5668/13/R71.

    The proposed flexible pavement design must be approved by Council's Operational Works Unit prior to the commencement of pavement construction.

27. Flexible pavement design - Subgrade evaluation shall be undertaken in accordance with Austroads publications "Guide to Asset Management Part 5: Pavement Performance" and "Guide to Pavement Technology Part 2: Pavement Structural Design". Investigations are to include both field and laboratory testing.

    a) Field Testing

    - Visual description of sample including the material type and colour. (Unified Soil Classification system).
    - Dynamic Cone Penetrometer test to a depth of 1.0m. (Main Roads Test Method Q114B to provide equivalent CBR results)
    - Field moisture content.

    a) Laboratory Testing

    - Grading of the subgrade material
    - Atterberg limits
    - 4 Day Soaked CBR testing

    A minimum of two soaked CBR tests shall be undertaken on each material type. Testing shall be in accordance with (Main Roads Test Method Q113C). The single point CBR test shall be carried out at OMC and at the density that will occur in service. Test methods shall be in accordance with the latest amendments to AS1289 (or the equivalent Main Roads Method) except in the case of the CBR and DCP tests which shall only be in accordance with Main Roads Methods.

    Flexible pavements to be constructed on expansive subgrade material (classified as more expansive than moderately expansive in accordance with Table 5.2 of AUSTROADS Guide To Pavement Technology Part 2: Pavement Structural Design) must include as a minimum:

    a) A low-permeability lime stabilised (or equivalent) capping layer for the total width of the roadway and for 1.5m behind the back of kerbs.

    a) Shallow subsoil drains (above low permeability capping layer) with "Tideflex" (or equivalent) check valves and caps at all stormwater structures.

28. Any errors in or omissions from the plans and specifications detected during construction may be required by Council to be rectified in accordance with Gladstone Regional Council Design Standards, Reconfiguration Development Permit Conditions or other policies.

29. The Applicant shall be responsible for any alterations to electricity, telecommunications, water mains, sewers and/or any other public utility installations that may be affected by the construction of the roads and/or drainage, or any other works associated with the subdivision.

ASSESSMENT MANAGER'S ADVICE

1. Aboriginal Cultural Heritage: It is strictly the Developer's responsibility to take all reasonable and practicable measures to ensure that the activity does not harm Aboriginal Cultural Heritage in accordance with the *Aboriginal Cultural Heritage Act 2003.*

2. Contaminated Land: It is strictly the Developer's responsibility to source information regarding contaminated land from the Environmental Protection Agency, Contaminated Lands Section, as Council has not conducted detail studies and does not hold detailed information pertaining to contaminated land.

3. Hours of Work: It is the developer/owner's responsibility to ensure compliance with *Part 3B, Section 440R* of the *Environmental Protection Act 1994,* which prohibits any construction, building and earthworks activities likely to cause nuisance noise (including the entry and departure of heavy vehicles) between the hours of 6.30pm and 6.30am from Monday to Saturday and at all times on Sundays and Public Holidays.

4. Dust Control: It is the developer/owner's responsibility to ensure compliance with *Part 3B* of the *Environmental Protection Act 1994,* which prohibits unlawful environmental nuisance caused by dust, ash, fumes, light, odour or smoke beyond the boundaries of the property during all stages of the development including earthworks and construction.

5. Sedimentation Control: It is the developer/owner's responsibility to ensure compliance with *Part 3C, Section 440ZG* of the *Environmental Protection Act 1994,* to prevent soil erosion and contamination of the stormwater drainage system and waterways.

6. Noise During Construction and Noise in General: It is the developer/owner's responsibility to ensure compliance with *Part 5A, Section 363C (3)* of the *General Emission Criteria and Part 5A, Section 363c (4)* of the *Noise Emission Criteria* of the *Environmental Protection Act 1994.*

7. General Safety of Public During Construction: It is the principal contractor's responsibility to ensure compliance with *Section 31* of the *Workplace Health and Safety Act 1995. Section 31(1)(c)* states that the principal contractor is obliged on a construction workplace to ensure that work activities at the workplace are safe and without risk of injury or illness to members of the public at or near the workplace.