



The Coordinator-General



Ella Bay Integrated Resort

Coordinator-General's report on the
environmental impact statement

November 2012



Queensland
Government

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Synopsis

This Coordinator-General's report provides an evaluation of the potential impacts of the Ella Bay Integrated Resort (the Ella Bay development or the project). It has been prepared pursuant to section 35 of the *State Development and Public Works Organisation Act 1971* (Qld) (SDPWO Act).

The proponent for the project, Satori Resorts Ella Bay Pty Ltd (Satori), proposes to construct a \$1.4 billion integrated tourism and residential community within Lot 320 Crown plan N157629 at Ella Bay, approximately 10 kilometres north-east of Innisfail. The site is situated within the Cassowary Coast Regional Council (CCRC) area. Of the approximately 470-hectare site, the proponent proposes a development area of 132 hectares. The remainder of the site will consist of 61.1 hectares of open space, golf course and parkland; 155 hectares of conservation covenant (protected corridors throughout the site providing connectivity for wildlife); 58.9 hectares of setbacks and easements and 62.8 hectares of land to be transferred to National Park.

Work to develop the property into a master planned tourism/residential community will occur over a 15-year period, along with an upgrade of Ella Bay Road and the construction of a new bypass road to connect to Ella Bay Road. The development will incorporate a range of short-term tourist accommodation such as resort hotels and holiday villas for approximately 2000 tourists (at full capacity). There are also plans to have 540 permanent residences, housing approximately 1400 people (at full capacity) at this location. The community design also includes educational and village precincts, beach access (people and emergency vehicles only), an 18-hole golf course, retail outlets, relevant public infrastructure and leisure facilities for local communities.

In evaluating the potential environmental, social and economic impacts of the project, I considered the environmental impact statement (EIS), supplementary EIS (SEIS), additional information document (SEIS Submission Response dated June 2012) and detailed environmental management plans (EMPs) prepared by the proponent; public submissions received on the EIS and SEIS; comments on the EIS and SEIS, additional information documents from advisory agencies and other entities, and technical reports.

The following provides an overview of the main issues arising from the EIS assessment and conditions I have made.

Social and economic impacts

The Ella Bay development is expected to inject \$256 million per annum in tourism expenditure into the Queensland economy when fully operational. The development is also expected to generate a peak construction workforce of just over 400 people around year eight of the development schedule. Once fully operational, just over 800 full-time jobs are expected to be created for the operation of the new resorts, golf course, retail and associated facilities. The development is also expected to provide other jobs including 240 part-time peak season jobs. The project would also benefit the local community, given its close proximity to Innisfail and the inclusion of public facilities such as walking tracks and other passive recreation opportunities.

When fully constructed, the Ella Bay development should provide greater funding for CCRC through an increase in the rate base.

Infrastructure impacts

The development requires substantial infrastructure to be established, including the access road and site roads, water supply, wastewater, power and telecommunications. The proponent has committed to provide and fund all necessary infrastructure for the development at no cost to local or state infrastructure providers.

The proponent is required to undertake a transport impact study to investigate the traffic impacts of the project on the local road network from the development site to the Bruce Highway. Subject to the outcome of the transport impact study, the proponent may be required to enter into an infrastructure agreement with CCRC to contribute to mitigating impacts on the local road network.

The upgrade of Ella Bay Road will occur at the beginning of stage 1 of the development schedule. The bypass road proposed to avoid long-term impacts on the residents of Flying Fish Point will be commenced once vehicular traffic through Flying Fish Point reaches 1000 vehicle movements per day or prior to the commencement of stage 2 of the development schedule, whichever is sooner. The potential temporary impacts on Flying Fish Point residents will be managed through proposed mitigation measures included in the proponent's transport management plan.

Ecology and offsets

Flora surveys identified four state-listed threatened flora species, one endangered regional ecosystem and thirteen 'of concern' and four 'least concern' regional ecosystems (REs). Queensland database searches identified 36 state-listed threatened flora species likely to occur in the project area.

Thirteen state-listed threatened fauna species were recorded in the Ella Bay development area and access road including the endangered southern cassowary (cassowary) and common mist frog. Twenty-one state-listed threatened species were also identified as likely to occur in the project area, based on suitable habitat, local records and Queensland database searches.

Activities associated with construction and operation of the development and access road are likely to disturb some habitat of these threatened species. Of these species, the cassowary is likely to be most affected by the development through loss or isolation of habitat, increased human presence and interaction with traffic. The majority of impacts on fauna are likely to be associated with vegetation clearing activities and works during the construction stages of the project.

Construction activities are expected to disturb approximately 3.75 hectares of vegetation comprising 0.95 hectares for the development of the integrated resort and 2.80 hectares for the access road. This would include 'non-remnant', 'of concern' and 'least concern' REs and vegetation classified as essential cassowary habitat. In addition to the loss of habitat, clearing is also expected to isolate around 2.02 hectares of cassowary habitat. No endangered REs and critically endangered threatened ecological communities have been included in the disturbance footprint. These ecosystems occur in areas marginal to the development site and adjacent to the

proposed access corridor and would be appropriately protected through the use of setbacks and buffers along the boundaries of the development area.

The proponent is required to implement a variety of management strategies to mitigate potential construction and operational impacts on fauna, flora and communities including an offsets strategy, EMPs, protected area management and species-specific management sub-plans. Management sub-plans have been developed for the cassowary, stream-dwelling rainforest frogs, spectacled flying-fox, marine turtles and significant flora. These sub-plans identify impacts of the development on these fauna and flora and also provide a number of strategies to manage or mitigate these impacts. Any loss of RE, or loss or isolation of essential cassowary habitat, will need to be offset by the proponent in accordance with State and Commonwealth legislation and policies.

The proponent has prepared and submitted an offsets package that includes the purchase and transfer of land to the State for National Park, a five-year commitment to the management of revegetation and removal of weeds, implementation and revegetation of conservation covenants over fauna corridors and nature conservation areas, and flora and fauna research programs.

As part of this package, the proponent has purchased 63.62 hectares of land identified in the *Recovery Plan for the Southern Cassowary Casuarius casuarius johnsonii* as a strategic regional habitat connectivity corridor; providing key ecological functions, broad movement corridors and suitable habitat for rehabilitation.¹

The proponent has committed to revegetating 50 hectares of land across the Ella Bay site and rehabilitation of 64 hectares. All development would be set back a minimum of 100 metres from National Park areas and riparian borders of watercourses to further minimise impacts to Ella Bay National Park, Wet Tropics World Heritage areas, riparian areas and watercourses.

A large portion of vegetated habitat and habitat connectivity areas within the Ella Bay property will be protected and managed through conservation management zones. These zones will be revegetated and rehabilitated to support and assist the southern cassowary recovery plan.

A higher level of protection will be provided to these zones through the transfer of 68.2 hectares of land to surrounding National Park and registering 155 hectares of conservation covenanted land under the *Land Title Act 1994*. This includes strategic land parcels that have been identified as key linkages or habitats for cassowary. The primary purpose of conservation zones will be to protect endangered vegetation and essential cassowary habitat, providing a buffer between sensitive environmental areas and the development, and improving habitat connectivity across the Ella Bay site. Overall, there is expected to be a net increase in essential cassowary habitat of approximately 238 hectares.

Each precinct and the internal roads within the precincts will be fully fenced to exclude cassowary and other fauna moving through fauna corridors of the conservation management zones, thereby limiting fauna and human interactions.

¹ P Latch, *Recovery plan for the southern cassowary (Casuarius casuarius johnsonii)*, Cassowary Recovery Team, Environmental Protection Agency, Brisbane, 2007, viewed 1 November 2012, <<http://www.environment.gov.au/biodiversity/threatened/publications/recovery/southern-cassowary/index.html>>.

All main internal roads servicing the resorts will also have elevated bridges/fauna underpasses, culverts and low-speed gated crossings to allow connectivity of fauna corridors. Unfenced roads with low volumes of traffic will include restricted speed limits and traffic calming devices, signage and/or raised speed platforms to reduce impacts on fauna.

Other impacts associated with road construction will be managed through the use of fauna sensitive road design, fauna management strategies and management plans for weeds, erosion and sediment control, drainage and stormwater. Management plans for erosion and sediment control, drainage and stormwater will also be important in the management of water quality impacts across the site and adjacent coastal waters of Ella Bay and Great Barrier Reef World Heritage Area (GBRWHA).

Other water quality measures to be used across the site include water treatment, the use of water sensitive urban design, water quality monitoring and implementation of a golf course EMP. Water quality will also be managed across the site using constructed wetlands and bioretention filters. Constructed wetlands will be used adjacent to the northern wetlands and Ella Bay Swamp to maintain the current surface water hydrological flow regime to the north and to minimise any nutrient and sediment inflow, and management of the golf course areas that drain northerly.

The coastal areas adjacent to the site are not directly affected by the Ella Bay development although the potential impacts associated with increased human activity in the beach areas require management. The proponent is required to implement a management sub-plan for marine turtles and beach stone curlews, which include strategies to mitigate impacts on marine turtles and shorebirds. Strategies include monitoring nesting activity and protecting identified nests, weed and pest management, public awareness and community education programs, artificial lighting management and prohibition of domestic pets and vehicles on beach areas.

Sustainability

The proponent's proposed sustainability measures for the development include:

- sustainable use and management of land and water resources (totally self-sufficient through rainwater capture and recycling of water)
- more efficient use of energy and greater use of renewable energy resources (all power generated on-site)
- more effective land use planning, environmental protection and pollution control
- reducing consumption, recycling and minimising waste
- 'green' transport options on-site
- reduced greenhouse gas emissions and improving air quality
- protecting biological diversity
- local economic development and employment growth.

Matters of national environmental significance

World Heritage

The Ella Bay site is surrounded on three sides (north, west and part south) by the Ella Bay National Park. Most of the surrounding area is located in the Wet Tropics of Queensland World Heritage Area (WTQWHA). The site is separated from the GBRWHA to the east by a gazetted esplanade.

The proponent is required to design, construct and manage the development to avoid (where possible) potential adverse impacts on tropical rainforest, swampland (WTQWHA) and coastal and aquatic (GBRWHA) ecosystems or on the geological and geo-morphological characteristics of the region that underlie the ecological diversity of the Wet Tropics of Queensland and the Great Barrier Reef. Where impacts cannot be avoided, the proponent is required to implement an environmental management regime and has proposed a number of measures to minimise and mitigate potential impacts. The proponent also proposes offsets to address residual impacts.

Primary matters for WTQWHA consideration include maintenance of outstanding universal values (OUV) and potential impacts of the access road and the development on the cassowary, common mist frog and to a lesser extent, other threatened fauna potentially having habitat in the World Heritage Area.

Primary matters for GBRWHA consideration with respect to the Ella Bay development and the access road include maintenance of OUV, visual impacts when viewed from ships at sea and potential impacts on biological processes from water quality (during construction and operation).

Threatened species and communities

An assessment of the impacts on threatened species and communities undertaken during the EIS process indicated that the species with the most potential to be impacted by the development is the cassowary through isolation of habitat, increased human presence and increased vehicular traffic. Other potentially impacted species/communities are:

- stream-dwelling rainforest frogs—increased human presence; impacts on habitat; exotic diseases
- marine turtles—increased human presence; lighting and noise; water quality
- other marine species—water quality
- littoral rainforest—spread of weeds; human encroachment.

Mitigation and offsets

The proponent has presented strategies to mitigate and/or offset potential impacts on threatened species and communities and OUV including:

- habitat preservation (for example, significant flora management plan)
- connectivity preservation (dedicated conservations zones)
- environmental offsets (purchase and revegetation of on-site and off-site land)
- wildlife management plans (including plans for southern cassowary, marine turtles and stream-dwelling rainforest frog species)

- water quality management (including wastewater/recycle water treatment to tertiary class A+ standard with nutrient levels within approved levels; erosion and sediment controls; water sensitive urban design; water quality monitoring; stormwater treatment)
- road management strategies for wildlife protection (potential fauna sensitive design mechanisms)
- public awareness/education.

In summary, the objectives of the proponent's strategies are to:

- provide appropriate offsets for potential impacts on MNES
- comply with the requirements of the Queensland *Vegetation Management Act 1999* and associated codes and policies
- be consistent with the *Recovery Plan for the Southern Cassowary*
- provide tangible conservation benefits locally and within the wider Innisfail/Graham–Seymour Range area with an emphasis on threatened species conservation, particularly the cassowary.

Coordinator-General's conclusion

I consider that the environmental impact assessment requirements of the SDPWO Act for the Ella Bay development have been satisfactorily fulfilled and that sufficient information has been provided to enable a proper evaluation of the potential impacts of the development.

I conclude that there are significant local, regional and state benefits to be derived from the development, and that any adverse environmental or social impacts can be acceptably avoided, minimised, mitigated and/or offset through the implementation of the measures and commitments outlined in the EIS documentation. Conditions in this report have been formulated in order to further manage all impacts associated with the project.

Accordingly, I approve that the project proceed subject to the conditions set out in appendices 1 and 2 of this report. In addition, it is expected that the proponent's commitments will be fully implemented.

This report will be provided to the Commonwealth Minister for the Environment, pursuant to section 36(2) of the SDPWO Regulation and the bilateral agreement between the State of Queensland and the Australian Government to support a decision on approval of the controlled action for this project pursuant to section 133 of the *Environment Protection and Biodiversity Conservation Act 1999*.

A copy of this report will be provided to the proponent, CCRC and relevant state agencies, and will also be made publicly available at www.dsdip.qld.gov.au



Barry Broe
Coordinator-General

8 November 2012

1. Introduction

This Coordinator-General's report evaluates the environmental impact statement (EIS) and subsequent supplementary material prepared by Satori Resorts Ella Bay Pty Ltd (Satori, the proponent) for the Ella Bay Integrated Resort (the Ella Bay development or the project).

The report focuses on the substantive environmental effects and related matters associated with the project's potential impacts on the physical, social and economic environment at the local, regional, state and national level.

This report also sets conditions that must be incorporated into subsequent development approvals and licences required to be issued by various state authorities.

It represents the conclusion of the Coordinator-General's impact assessment process pursuant to the *State Development and Public Works Organisation Act 1971* (SDPWO Act). For information on the EIS process, including details of the organisations and individuals who commented on the proponent's EIS, refer to Section 3 of this report (page 15).

2. About the project

2.1. The proponent

The project is to be developed by Satori which is a member of the Ella Bay Developments Group of Companies and is headed by Company Director, Mr Rod Lamb. Satori acquired the Ella Bay project from a joint venture between the Witt Property Group and John Holland Pty Ltd in May 2007.

Ella Bay Developments purchased the subject site, Lot 320 on Crown plan N157629, County Nares, Parish Glandy, in early 2008 during the EIS process.

Responsibility for compliance with conditions in this report, commitments made in the EIS documents and future approvals relating to the Ella Bay development will be Satori in the first instance with subsequent arrangements to hand over responsibility to the Ella Bay Body Corporate. Body corporate details are addressed in detail in the SEIS (Volume 1 section 1.7.9 and Volume 2 section 2.3.2).

2.2. Project description

2.2.1. Location

Satori proposes to construct a \$1.4 billion integrated tourism and residential community at Ella Bay, approximately 10 kilometres north-east of Innisfail (refer Figure 2.1). The site is situated within the Cassowary Coast Regional Council (CCRC) area. The proposal includes the redevelopment of a 470-hectare² cattle station (Lot 320) into a master planned community over a 15-year period.

The Ella Bay site is surrounded on three sides (north, west and part south) by the Ella Bay National Park. Most of the surrounding area is located in the Wet Tropics of Queensland World Heritage Area (WTQWHA). The site is separated from the Great Barrier Reef World Heritage Area (GBRWHA) to the east by a gazetted esplanade.

Ella Bay Developments also owns freehold title over the adjoining property to the south (Lot 337 NR53) which has development approval for Little Cove Resort consisting of 70 residential lots and 30 villas. Construction of Little Cove Resort is yet to commence. The Little Cove Resort does not relate to any approval for the Ella Bay development.

The Ella Bay site has been farmed for over a century and during this time extensive areas of land have been cleared and in some cases reclaimed by the rainforest. The EIS indicated that the main sources of degradation are historic logging practices; clearance for bananas, market gardening, cropping, pasture; systemic weed invasion; cyclonic wind damage; damage caused by high numbers of native fauna eg *Macropus agilis* (agile wallaby); degradation caused by introduced animal (pigs) activity.

² Note that the area within the property boundary totals 469.9ha whereas the area of the registered title is 449.2ha. The property includes two unconstructed road easements which will contribute an additional 20 hectares on road closure. From herein the property will be described as being of 470ha.

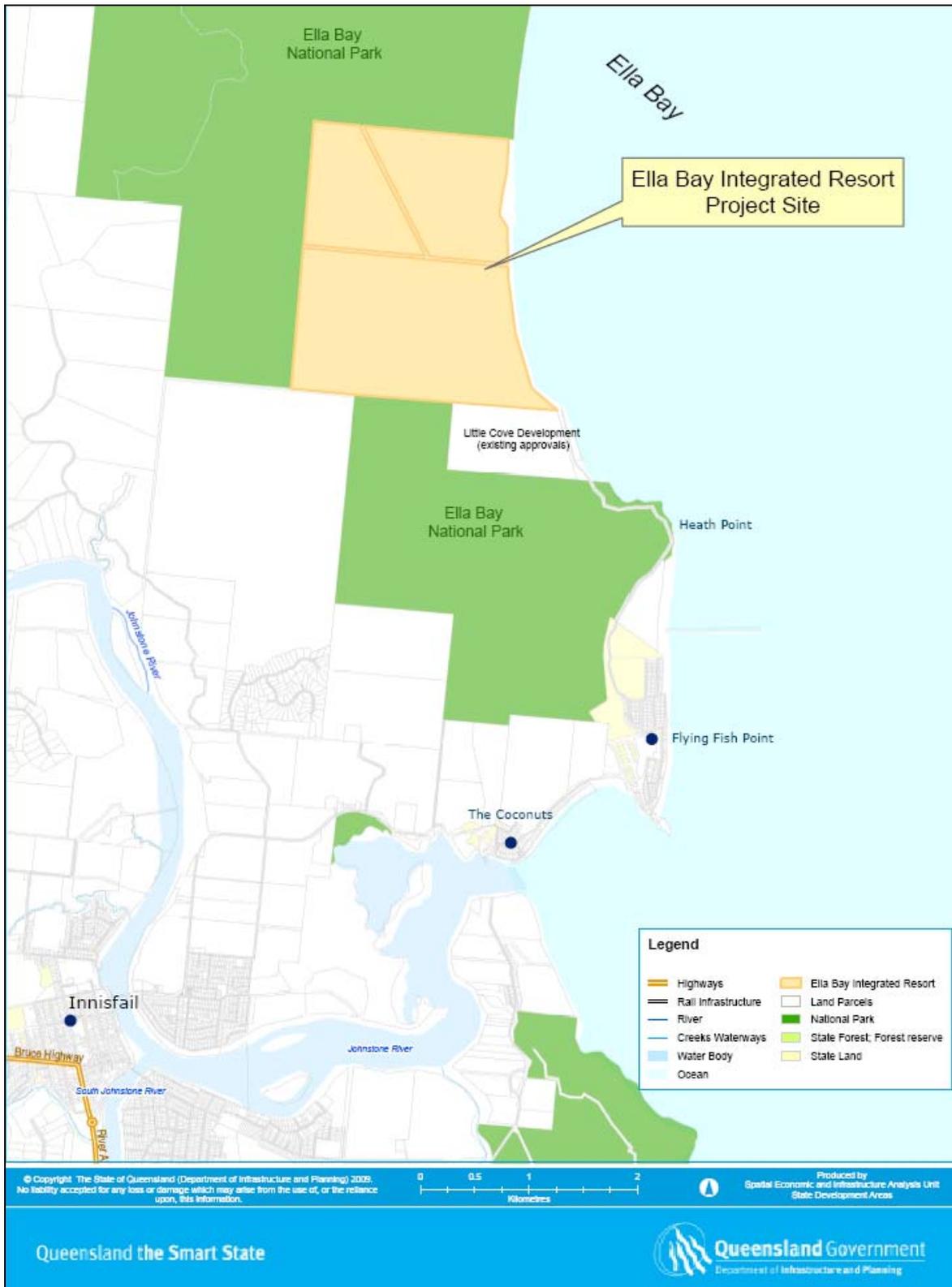


Figure 2.1 Project location (Longitude: 17°28'S Latitude: 146°04'E)

2.2.2. Project components—integrated tourism and residential community

The proposed development (refer Figure 2.2) will incorporate:

- three resort precincts comprising 860 units and villas
- four residential precincts comprising 540 residences (for permanent residential use and holiday letting)
- a village community precinct comprising mixed retail, professional services, offices and restaurants
- a research and education precinct incorporating a welcome centre, a collaborative research institute, cassowary research station
- recreation/open space area comprising recreational amenities, community services and an 18-hole golf course
- residential communal facilities including swimming pool, barbecue facilities, playgrounds, tennis courts and club house for each residential precinct. The clubhouse will be designed with shutters for category 5 cyclones.



LEGEND

- | | |
|--|---|
| RESORT/RESIDENTIAL PRECINCT | SEWER TRANSFER PUMP |
| RESIDENTIAL PRECINCT | SEWER TREATMENT PLANT |
| OPEN SPACE/RECREATION | GROUND WATER PUMPING STATION & STORAGE |
| CONSERVATION ZONE | POTABLE WATER HEAD TANK |
| PRECINCT BOUNDARY | RECYCLED WATER HEAD TANK |
| BRIDGE FAUNA UNDERPASS | RECYCLED WATER STORAGE |
| ROAD CROSSING | WELCOME CENTRE |
| PROPERTY BOUNDARY | REVEGETATION NURSERY |
| BEACH ACCESS | RECYCLE CENTRE |
| CONSTRUCTED WETLAND | COUNTRY CLUB |
| BIORETENTION FILTER | INSTITUTE OF SUSTAINABILITY/ EDUCATION FACILITY |
| COMMUNITY FACILITY & EMERGENCY SHELTER | CASSOWARY RESEARCH CENTRE |
| RESORT EMERGENCY SHELTER | TELECOMMUNICATIONS |
| PUBLIC POOL | COMMUNITY GARDEN PLOTS |
| LPG POWERED GENERATOR | |
| RETAIL AND COMMERCIAL HUB | |

Figure 2.2 Proposed project master plan

The Ella Bay development is expected to accommodate approximately 2000 tourists and 1200 permanent residents when the development is at full capacity and during the peak period of the dry season. The project's precinct plan (refer Figure 5.2) highlights the specific categories of development within the development footprint. The development's master plan and plan of development and the proposed tourism/residential mix are discussed in sections 5.1.1 and 5.1.3 of this report.

Within the 470-hectare site, the proponent proposes a development area of 132 hectares. The remainder of the site will consist of:

- 61.1 hectares of open space (including golf course and parkland)
- 155 hectares of conservation covenant (protected corridors throughout the site providing connectivity for wildlife)
- 58.9 hectares of setback and easements
- 62.8 hectares of land to be transferred to National Park.

The project as described in the EIS was substantially down-scaled compared with the project described in the initial advice statement (IAS) and included many modifications aimed at decreasing the impact of the project.

Revisions to the Master Plan also occurred following the EIS and SEIS consultation processes. Key project revisions since 'significant project' declaration include:

- reduced development footprint
- one golf course rather than two
- 800 residential lots reduced to 540 lots
- size of the resorts have been reduced
- total area of vegetation clearing on the Ella Bay site has been reduced to 0.95 hectares
- area of land to be revegetated and rehabilitated on the Ella Bay site has been increased to 50.0 hectares and 64.3 hectares respectively
- all development has been setback a minimum of 100 metres from the National Park
- fauna movement corridors have been enhanced to include bridges (fauna underpasses) to enable cassowary movement to the coastal dunal swale
- revegetation schedule has been modified to ensure that revegetation is completed in advance of development to ensure that the net available food source for the cassowaries is maintained as positive
- minimum development floor height has been modified to:
 - account for the potential impacts of climate change caused by sea level rise
 - withstand a 100 average recurrence interval (ARI) year storm tide.

The revised proposal also focuses on self-sufficiency, particularly in relation to energy, water and sewerage management. Proposed fauna movement corridors were researched and also included in the revised proposal. Changes to the access road have been clearly documented in Volume 4 – Ella Bay Road Design and Environmental Management Report of the proponent's additional information document (SEIS Submission Response dated June 2012).

2.2.3. Project components—access road

The project also requires the construction of an access road to the site which involves minor vegetation clearing and considerable earthworks. The majority of the proposed route follows the course of the existing road through the Ella Bay National Park, though some widening is required.

The proponent's proposed option for the access road includes the upgrade of the existing unsealed road access to the site which will incorporate fauna impact mitigation measures based on environmentally sensitive road engineering and design. Ella Bay Road will be a 4790-metre long road constructed from Bay Road (Esplanade) to the south west of Flying Fish Point to the Ella Bay development in the north. The road is expected to convey a maximum design daily two-way traffic of approximately 4000 vehicles per day with an annual average daily traffic of approximately 3000 vehicles per day. The maximum design hourly two-way traffic is 350 vehicles per hour.

The upgrade and construction of Ella Bay Road (refer Figure 2.3) will consist of two stages:

- Stage 1 will comprise a four-kilometre upgrade of the existing Ella Bay Road from Ruby Street in Flying Fish Point to the entry of the Ella Bay development. Note: Stage 1 includes an upgrade of 90 metres of Ella Bay Road which will not form part of the final alignment.
- Stage 2 will comprise a new 880-metre road that bypasses Flying Fish Point to the west. Stage 2 will include construction of a roundabout and approaches on Bay Road (Esplanade) to direct Ella Bay traffic north behind Flying Fish Point through a new 'cut and cover' tunnel, and connection to the existing Ella Bay Road alignment to the north of Ruby Street. Stage 2 of the road will commence when Ella Bay Road carries 1000 vehicles per day and must be completed prior to the commencement of stage 2 of the Ella Bay development, which is expected around year six to seven of construction.

The road may also include traffic calming devices such as chicanes and/or raised speed platforms, transverse line markings and cassowary/wildlife signage to reduce operational speed.

Potential impacts of the proposed access road are addressed in section 5.2.2 of this report.



Figure 2.3 Ella Bay Road proposed alignment

2.2.4. Development stages

Satori's additional information document (SEIS Submission Response dated June 2012) indicated that the development would be completed over a 15-year period, based on a four stage construction plan (refer figures 2.4 and 2.5).

Project construction is anticipated to commence in 2013 and be completed by 2028.

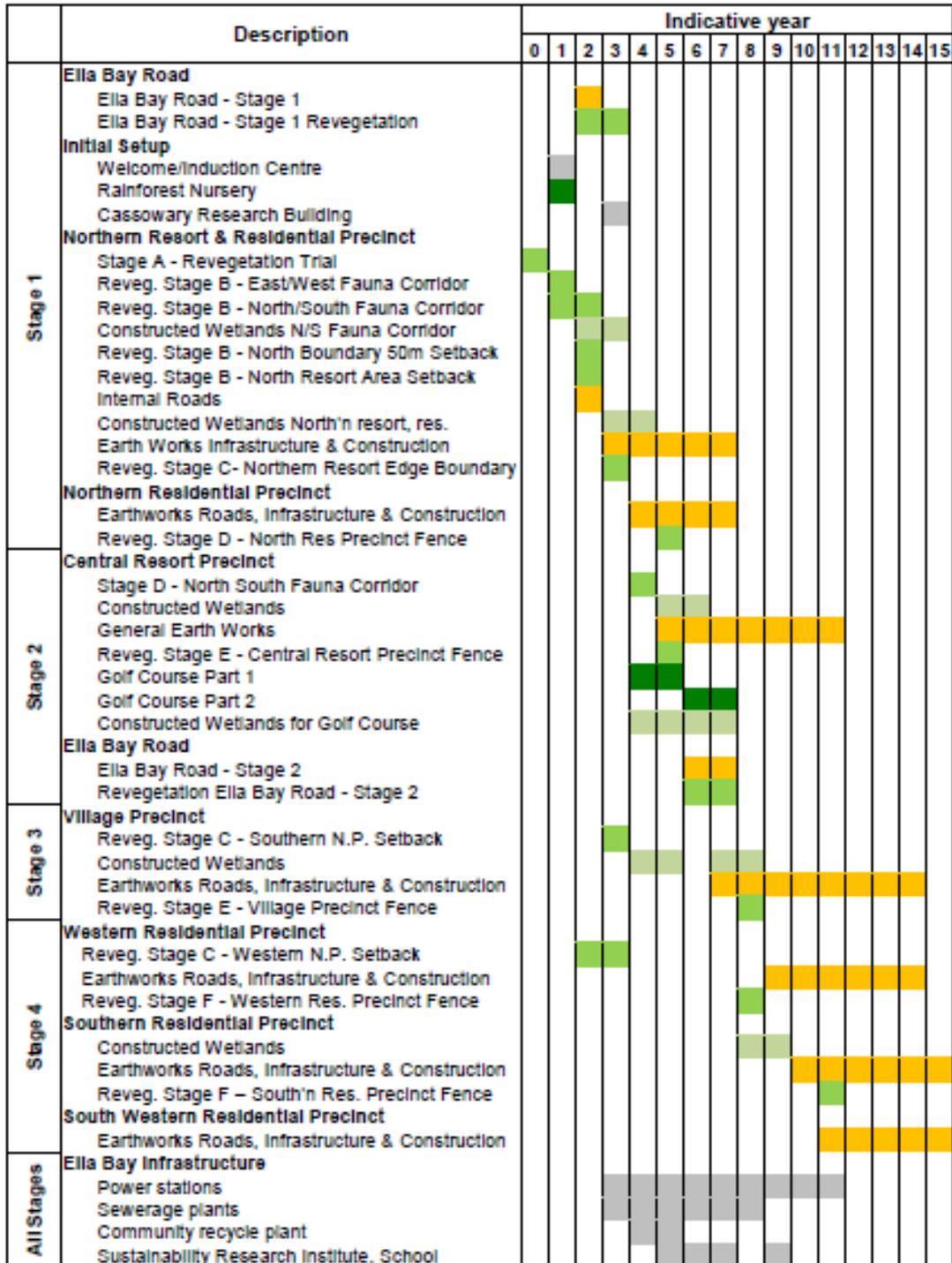


Figure 2.4 Proposed precinct staging



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 STAGE 1	
NORTHERN RESORT PRECINCT	13.7 ha
NORTHERN RESIDENTIAL PRECINCT	21.8 ha
 STAGE 2	
CENTRAL RESORT PRECINCT	33.2 ha
 STAGE 3	
VILLAGE PRECINCT	25.4 ha
 STAGE 4	
SOUTHERN RESIDENTIAL PRECINCT	8.7 ha
SOUTH WESTERN RESIDENTIAL PRECINCT	16.7 ha
WESTERN RESIDENTIAL PRECINCT	12.5 ha

Figure 2.5 Proposed precinct staging plan

2.3. Project rationale

It is anticipated that the proposed Ella Bay development will provide significant economic and community benefits to the Innisfail region, bringing increased employment, training opportunities, population growth, increased economic activity and multiplier effects from increased spending.

Environmental benefits are also expected from the development.

2.3.1. Community

The CCRC region has experienced a contraction in population of four per cent over the past ten years (ABS Census 2011). Unemployment in the CCRC region has increased over the past few years to 9.4 per cent (compared to the Queensland rate of 5.5 per cent) with Indigenous unemployment greater than 16 per cent.

When fully completed, the Ella Bay development is expected to add an extra 540 households to the CCRC. It is expected that the 540 new homes will add approximately 1400 people to CCRC's resident population. An additional population inflow is also expected as the number of jobs available for the different components of the operational phase of the development exceeds the unemployment level in the area.

Increased population as a result of the Ella Bay development should provide greater funding for CCRC through a larger rate base. EIS documentation indicated that once construction is complete the Council's rate base will increase by \$10 million per annum (that is, a 33 per cent increase) as a direct result of the development.

The Ella Bay development will also provide community benefits such as new training and job opportunities for local people, particularly for younger people.

The proponent is continuing negotiations with the Bagirbarra people and the Mamu people to ensure Indigenous issues are addressed including the provision of opportunities for training, work experience, employment and economic development during pre-construction, construction and post-construction at Ella Bay. The proponent has indicated that a Heads of Agreement is being negotiated with the Bagirbarra people and Mamu people to develop Indigenous employment and tourism-based Indigenous opportunities. Some of the proposals for Indigenous employment and training are noted in section 2.4.2 Volume 2 of the additional information document (SEIS Submission Response dated June 2012).

2.3.2. Tourism

The proposed Ella Bay development is expected to provide a focal point to showcase the natural values of the region with the sustainability of the development as a tourist attraction itself.

The Ella Bay development will provide an eco-tourism experience for international, interstate, intra-state and local visitors. The development will provide walking tracks throughout the vegetated areas of the site with proposed access to the Ella Bay National Park; access to ocean beaches; views to the adjacent WTQWHA and

GBRWHA; and education programs for residents and visitors focused on the protection of local threatened fauna and flora communities.

The region, which hosts a number of natural, historical, reef and island attractions and activities, may benefit from an increased visitor base that the Ella Bay development is expected to provide. It is also likely that the development would add substantial numbers of visitors to local attractions such as:

- Misty Mountain's Wilderness Walking Trails
- Eubenangee Wetlands
- Paronella Park
- Mamu Canopy Walk
- Babinda Boulders.

The majority of tourist offerings in the region provide principally for the intra-regional and (to a lesser degree) intra-state markets, with very limited interstate and international tourist expenditure in the region. The Ella Bay development has the potential to promote the attractiveness of the Innisfail region to a wider market. The project also has the potential to increase Gross Regional Product through increased tourism expenditure from tourists from outside the immediate region. The EIS states that the likely increase in tourist numbers in the region as a result of the Ella Bay development, is expected to inject approximately \$256 million per annum into the regional economy.

As there are no similar resort-styled tourism offerings available and currently no other proposals for similar developments in the region, the Ella Bay project will help to expand and diversify the tourism market in the region rather than compete with other tourist centres such as Mission Beach.

The tourism component of the Ella Bay development is expected to attract around 2000 short-stay tourists during peak times of the year.

The Far North Queensland Regional Plan (FNQRP) supports tourism development in the area. This project comprises a significant tourism component (60 per cent) with an inter-related residential component (40 per cent) to be built on a cleared site. The Department of Tourism, Major Events, Small Business and the Commonwealth Games has indicated that the project would help to boost business confidence in the region and have a positive impact on the North Queensland tourism industry.

2.3.3. Economics

EIS documentation indicated that construction of the development is expected to take approximately 15 years at an estimated cost of \$1.4 billion. A peak construction workforce of just over 400 is expected in year 8. Once fully operational, just over 800 full time jobs are expected to be created for the operation of the new resorts, golf course, retail and associated facilities. The development is also expected to provide other jobs including 240 part-time peak season jobs.

The development is also likely to generate:

- \$256 million per annum in expenditure by visitors staying in the region
- \$50 million in State Government taxes and duties
- \$285 million of federal payroll and company taxes over 15 years.

An up-to-date summary of the economic benefits of the Ella Bay development is included in section 2.4.2 Volume 2 of the additional information document (SEIS Submission response dated June 2012).

2.3.4. Cyclone Larry and Cyclone Yasi

On Monday, 20 March 2006, the Innisfail region experienced physical, social and economic devastation as a result of Cyclone Larry. Cyclone Larry caused substantial disruption to communities, industries and the broader economy. The Queensland and Australian governments assisted with the recovery effort for the region.

As a result of the effects of Cyclone Larry, the region's banana industry, which employed up to 6000 people, suffered extreme crop losses, which accounted for more than 80 per cent of the total banana crop for Australia. Cyclone Larry exposed the region to the importance of expanding the region's economic base and exploring tourism as a key economic factor. The impact of diversifying the economy away from its predominantly agrarian-based industries is seen as significant in revitalising and developing the area. The Ella Bay development has been viewed by many as the catalyst for this diversification.

In February 2011, the area experienced its second major cyclonic event within five years. Cyclone Yasi caused extensive damage to the area and its negative flow on social and economic effects are still evident today.

2.3.5. Environmental benefits

The Ella Bay development also offers the following potential environmental benefits which balance the potential impacts of the development:

- the opportunity to support the establishment of east-west and north-south wildlife corridors in the region to protect various wildlife in particular the endangered southern cassowary (*Casuarius casuarius johnsonii*) (also referred to as cassowary throughout this report), through land purchase(s)/conservation covenants as part of the offsets package
- considerable committed revegetation to enhance the natural vegetation corridors on the site
- donation of over 62 hectares of land to National Park.

These are addressed in detail in Section 5.3.4 of this report.

3. Impact assessment process

3.1. Overview

This section of the report details the steps involved in the project's EIS assessment process. Table 3.1 shows the steps taken in the project's EIS process.

Table 3.1 Overview of EIS process

Date	Process
19 Apr 2005	Final initial advice statement and request for project declaration received
4 Jul 2005	Australian Government determined project is a 'controlled action'
23 Sep 2005	Project declared 'significant project' by Coordinator-General
5 Nov 2005 to 5 Dec 2005	Submission period on draft terms of reference (TOR) commenced
16 Dec 2005	TOR finalised
31 Mar 2007 to 21 May 2007	EIS released for public and agency comment (seven-week period)
12 Apr 2008 to 16 May 2008	Supplementary project information available for public and agency comment (four-week period)
4 Jun 2012	Additional supplementary information provided to Coordinator-General for evaluation (SEIS Submission Report dated June 2012)
14 Jun 2012	Additional supplementary project information available for agency comment (three-week period)
16 Jul 2012	Advisory agency review closes

For a detailed explanation of the EIS process, refer to www.dsdip.qld.gov.au

In undertaking this evaluation, I have considered the following:

- IAS
- EIS and SEIS
- issues raised in submissions relating to the EIS and SEIS
- technical reports
- additional information provided by the proponent
- agency advice on the EIS, SEIS and additional information document
- comments and properly made submissions³ from members of the public.

3.2. Significant project declaration

On 23 September 2005, the then Coordinator-General declared this project to be a 'significant project' under section 26(1)(a) of the Queensland *State Development and Public Works Organisation Act 1971* (SDPWO Act). This declaration initiated the

³ For a definition of a 'properly made submission', refer to the Glossary on page 239 of this report.

statutory environmental impact evaluation procedure in accordance with Part 4 of the Act, which required the proponent to prepare an EIS for the project.

3.3. Controlled action

On 4 July 2005, the Commonwealth Minister for Environment and Heritage (Commonwealth Environment Minister) determined that the project is a 'controlled action'⁴ under the *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth) (EPBC Act) (EPBC ref 2005/2159).

The relevant controlling provisions under the EPBC Act are:

- sections 12 and 15(a) World Heritage
- sections 18 and 18(a) listed threatened species and ecological communities.

A bilateral agreement exists between the Australian and Queensland governments which allows the Queensland Government to conduct the EIS assessment process to meet the needs of both jurisdictions. Section 7 of this report (Matters of national environmental significance), lists each controlling provision under the EPBC Act and explains the extent to which the Queensland Government EIS process addresses the potential impacts of the project on the matters covered by each provision.

The Commonwealth Environment Minister will be provided with a copy of this report for assessment under the EPBC Act.

3.4. Terms of reference

The draft terms of reference (TOR) for an EIS for the proposed Ella Bay development was released for public and advisory agency comment from 5 November to 5 December 2005. Twenty-three submissions were received, comprising fifteen from advisory agencies, three from non-government organisations and five from public submitters.

A final TOR was prepared having regard to submissions received and was issued to the proponent on 16 December 2005.

3.5. Review of the EIS

The EIS, prepared by the proponent, was released for public and agency comment from 31 March to 21 May 2007.

56 submissions were received including 14 from government agencies, 3 from non-government organisations, 37 from individuals (including 20 pro-forma letters) and 2 petitions (one with 166 signatures and the other with 32 signatures). As well as the proponent, copies of all submissions were forwarded to the then Commonwealth Department of Environment and Water Resources (DEWR)⁵.

⁴ For a definition of 'controlled action', refer to the Glossary on page 243 of this report.

⁵ The name of this department changed during the EIS process. Refer to Appendix 7 for details.

The most prominent issues raised in public submissions (including petitions and the pro-forma letter) were issues relating to the road access route options presented in the EIS. The public, while mostly recognising the importance of the development for the area, objected to the use of Flying Fish Point roads as the main access to the site. This was mainly due to the perceived negative impact on the people and their lifestyle and also the impact on local wildlife, in particular the cassowary. The proponent now proposes an access road that bypasses Flying Fish Point. Refer to Section 5.2.2 for an analysis of the road access issue.

Other substantive issues raised in submissions include impacts on:

- vulnerable and endangered species (particularly the cassowary)
- outstanding universal values (OUV)
- water quality
- vegetation and habitat.

Table 3.2 summarises the number of public and agency submissions on the EIS.

Table 3.2 Public and agency comments received on the EIS

Agency⁶	No. submissions
<p>Queensland Government</p> <ul style="list-style-type: none"> • Department of Education, Training and the Arts • Department of Housing • Department of Employment and Industrial Relations • Department of Natural Resources and Water • Department of Primary Industries and Fisheries • Queensland Health • Environmental Protection Agency • Department of Main Roads • Department of Local Government and Planning • Queensland Transport • Department of Communities <p>Australian Government</p> <ul style="list-style-type: none"> • Department of the Environment and Water Resources <p>Queensland/Australian Government</p> <ul style="list-style-type: none"> • Wet Tropics Management Authority <p>Local Government</p> <ul style="list-style-type: none"> • Johnstone Shire Council 	14
<p>Private organisations/community groups</p> <ul style="list-style-type: none"> • C4 (Community for Coastal and Cassowary Conservation Inc) • Cairns and Far North Environment Centre Inc • Johnstone Ecological Society 	3
<p>Private individuals</p>	17
<p>Private individuals—pro-forma letter</p>	20

⁶ The names of some departments changed during the EIS process. Refer to Appendix 7 for details.

Agency ⁶	No. submissions
Petitions (Petition 1: 166 signatures; Petition 2: 32 signatures)	2
TOTAL	56

3.6. Supplementary information

3.6.1. Supplementary EIS

In July 2007, the Coordinator-General requested that Satori submit supplementary information (SEIS) to address substantive issues raised in submissions on the EIS and to address impacts likely to arise from the proposed re-alignment of the access road to the site, bypassing Flying Fish Point.

Due to the nature and significance of the proposed changes to the access route, the proponent and the Queensland and Australian governments agreed the SEIS would be publicly advertised. It was released for public and agency comment from 12 April 2008 to 16 May 2008.

Sixty-seven submissions were received including 16 from government agencies, four from non-government organisations, 46 from individuals (including 38 pro-forma letters) and one petition with five signatures. Copies of all submissions were forwarded to the proponent and the Commonwealth Department of Environment, Water, Heritage and the Arts (DEWHA).⁷

The most prominent issues raised in submissions included:

- road access (including timing of construction of bypass road, road route, timing of mitigation measures, impact on wildlife)
- impacts of the development on wildlife (especially the cassowary)
- water quality (baseline and monitoring)
- environmental offsets for loss of vegetation and habitat.

Table 3.3 summarises the public and agency submissions on the SEIS provided by the proponent.

⁷ The name of this department changed during the EIS process. Refer to Appendix 7 for details.

Table 3.3 Public and agency comments received on the SEIS

Agency ⁶	No. submissions
Queensland Government <ul style="list-style-type: none"> • Department of Housing • Department of Employment and Industrial Relations • Department of Natural Resources and Water • Department of Primary Industries and Fisheries • Queensland Health • Environmental Protection Agency • Department of Main Roads • Queensland Transport • Department of Communities • Department of the Premier and Cabinet • Department of Tourism, Regional Development and Industry • Department of Emergency Services • Tourism Queensland Australian Government <ul style="list-style-type: none"> • Department of the Environment, Water, Heritage and the Arts Queensland/Australian Government <ul style="list-style-type: none"> • Wet Tropics Management Authority Local Government <ul style="list-style-type: none"> • Cassowary Coast Regional Council 	16
Private organisations/community groups <ul style="list-style-type: none"> • C4 (Community for Coastal and Cassowary Conservation Inc) • Cairns and Far North Environment Centre Inc • Environmental Defenders Office • Johnstone Ecological Society 	4
Private individuals	8
Private individuals—pro-forma letter	38
Petitions (Petition 1: 5 signatures)	1
TOTAL	67

3.6.2. Additional information document

Following receipt of submissions on the SEIS, additional information was requested to address further outstanding issues. Proponent priorities, the global financial crisis and the additional studies caused a delay in the provision of this material. On 4 June 2012, Satori submitted an additional information document (SEIS Submission Response dated June 2012) which was forwarded to advisory agencies for final comment on 12 June 2012. Submissions closed on 16 July 2012. I have considered this final advice in preparing this evaluation report.

4. Project approvals

The SDPWO Act establishes the framework for environmental assessment of declared significant projects in Queensland and coordinates the relevant state and local development assessment jurisdictions for the project. The environmental impact assessment is undertaken in accordance with the provisions of Part 4 of the SDPWO Act and evaluation of the EIS is pursuant to section 35 of the Act.

On release of this evaluation report, Satori needs to obtain a range of statutory approvals under state and Commonwealth law before the project can lawfully proceed. In regard to approvals under state law, I have stipulated certain conditions that must be part of such approvals by the relevant agencies. These conditions are contained in appendices 1 and 2 of this report. Approving agencies may add further conditions to approvals, if considered necessary, but these must be consistent with the Coordinator-General's conditions.

4.1. Local approvals

The Ella Bay integrated resort development site and access road are wholly located within the CCRC area. The CCRC was formed on 15 March 2008 following the amalgamation of the shires of Johnstone and Cardwell. The site is located within the former Johnstone Shire Council area.

Under the transitional arrangements for the amalgamated councils, the planning schemes for the former shires remain applicable in assessing development until a new regional council planning scheme comes into effect. There are currently two planning schemes in force for the Cassowary Coast region. The Cardwell Shire Planning Scheme 2007 applies to land within the former Cardwell Shire area and the Johnstone Shire Planning Scheme (JSPS) 2005 applies to land within the former Johnstone Shire area. Therefore, the Ella Bay development will require approval for material change of use (MCU), reconfiguration of lot and operational works under the JSPS 2005. CCRC is the assessment manager for these approvals.

4.2. State approvals

At the date of this report, key statutory approvals necessary for the development of the project include:

- development permit for operational works—clearing of native vegetation—*Sustainable Planning Act 2009* (SPA) and *Vegetation Management Act 1999* (Department of Natural Resources and Mines (DNRM) concurrence agency)
- development permit for operational works—for waterway barrier/fish barrier—SPA and *Fisheries Act 1994* (Department of Agriculture, Fisheries and Forestry (DAFF) concurrence agency)
- development permit for operational works—removal of marine plants—SPA and *Fisheries Act 1994* (DAFF concurrence agency)

- approval to make an alteration or improvement to a local government road—*Local Government Act 2009* (CCRC assessment manager)
- development permit for MCU—works within the coastal management district—SPA and *Coastal Protection and Management Act 1995* (Department of Environment and Heritage Protection (DEHP) concurrence agency)
- development approval for appropriate environmentally relevant activities (ERA)—*Environmental Protection Act 1994* and associated Regulation (DEHP concurrence agency) including ERA 63—sewage treatment.
- approval to disturb, harm or destroy a listed species under the *Nature Conservation Act 1992* (NC Act) (DEHP approval agency).

The proponent will also be required to submit an application to DNRM for the closure of two gazetted unformed roads that exist within the Ella Bay site. This matter is addressed in Section 5.2.4 of this report.

In addition, the proposed road works for the development will also require the following approvals:

- permit for road works in the WTQWHA under the *Wet Tropics Management Plan 1998* (subordinate legislation to the *Wet Tropics World Heritage Protection and Management Act 1993* (Qld)) (WTMA assessment manager)
- development permit for operational works in accordance with SPA and the JSPS. CCRC is the assessment manager for this application
- approval of a road opening through Lot 8 on USL 35566 and Lot 18 on USL35566, Parish of Glady to accommodate the route of the bypass road to the site (DNRM assessment manager)
- approval to purchase approximately 0.014 hectares of state land (Ella Bay National Park) to accommodate the proposed bypass road alignment. An application will be required to be submitted to DNRM. Revocation of National Park requires Governor in Council approval under the NC Act.

4.3. Australian Government approvals

The Commonwealth Environment Minister determined the Ella Bay development to be a controlled action pursuant to section 75 of the EPBC Act on 4 July 2005. The EIS process has been undertaken in accordance with the requirements of the bilateral agreement between the Queensland and Australian governments.

Therefore, subsequent to this report, the controlled action will be considered for approval under section 133 of the EPBC Act once the Commonwealth Minister has received this evaluation report prepared under section 35 of the SDPWO Act.

The minister will use the information in this report to make a decision under the EPBC Act as to whether the project should proceed, and if so, apply conditions to the approval necessary to limit the impact on MNES.

5. Environmental impacts

This section outlines the major environmental effects⁸ identified in the EIS, supplementary project information, additional information provided by the proponent, submissions on these documents and comments from advisory agencies and other stakeholders. This section includes a discussion and conclusion on the environmental effects and, where relevant, conditions to address environmental impacts.

5.1. Social, economic and planning impacts

5.1.1. Planning issues

Council planning scheme

As stated above, the JSPS 2005 still applies to land within the former Johnstone Shire area. The Ella Bay site, located within the former Johnstone Shire Council area, will require approval for an MCU, reconfiguration of a lot and operational works under the JSPS.

The southern part of Lot 320 is currently zoned Rural Zone (Rural Precinct) and the northern part is zoned Rural Zone (Rural Conservation Precinct).

The EIS recognised that the project site is not currently identified for tourist nor urban development and that the project is inconsistent with the current planning scheme zoning. However, this does not preclude development—a preliminary approval may override the planning scheme if there are sufficient grounds to justify the decision.

Regional plan

Ella Bay is currently included in the region that is covered by the FNQRP.

On 9 May 2008, the draft FNQRP and the associated Draft State Planning Regulatory Provisions (Regional Plans) were released for public consultation. Submissions on the draft were accepted until 8 August 2008. The project proponent lodged a submission on the draft.

The consultation report on the draft FNQRP and draft Regulatory Provisions were released for public comment on 28 October 2008 with submissions closing on 28 November 2008. The final FNQRP and associated Regulatory Provisions were released on 13 February 2009.

During development of the FNQRP and associated Regulatory Provisions, the area of government responsible for regional planning was aware of the proposed Ella Bay project; however it was not recognised or acknowledged in the planning process as the outcome of the project was pending. As such, the Ella Bay site lies within the Regional Landscape and Rural Production Area of the FNQRP.

⁸ For a definition of 'environmental effects', refer to the Glossary on page 239 of this report.

The FNQRP includes a preferred pattern of development for the FNQ region which directs urban growth, particularly residential development, to existing urban areas designated within the Urban Footprint.

The Ella Bay development is exempt from the Regulatory Provisions of the Regional Plan where section 1.6 states that the Regulatory Provisions do not apply to a development application for a significant project declared under section 26(1)(a) of the SDPWO Act.

The Ella Bay development is consistent with the FNQRP in the following areas:

- ensuring economic diversity and viability to rural land owners through sustainable tourism opportunities that complement the landscape
- showcasing a sustainable tourism development and golf course in the area as part of the tourist attraction
- diversifying the economy away from its predominantly agrarian-based industries and assisting in the development of the region through tourism
- restoration of wildlife and creek corridors and preservation of existing native ecosystems
- retention of remnant vegetation and cassowary habitat to the greatest extent possible.

It is noted that in the additional information document (SEIS Submission Response dated June 2012), the proponent made considerable modifications to the proposal to address concerns under the FNQRP regarding management of the impacts of natural hazards and climate change, minimising potential environmental impacts and development of ecologically sustainable infrastructure services such as water supply, sewerage and power.

The development has been redesigned to minimise the construction footprint. The development will be limited to the currently cleared cattle grazing area of the site incorporating appropriate buffers. Only a very limited amount of vegetation removal is required.

As the development will be limited in size and capacity and is totally surrounded by National Park to the north, south and west and the ocean to the east, the potential of future unplanned residential expansion is unlikely. The approval of this project would not establish a precedent for the development of adjoining areas.

State planning policies

The following state planning policies (SPPs) may be relevant to the Ella Bay development:

- SPP 1/92—Development and the conservation of agricultural land
- SPP 2/02—Planning and managing development involving acid sulfate soils
- SPP 2/03—Mitigating the adverse impacts of flood, bushfire and landslide
- SPP 4/10—Healthy waters—refer to ‘Coastal planning’ below
- SPP 4/11—Protecting wetlands of high ecological significance in Great Barrier Reef catchments—refer to ‘Coastal planning’ below

- SPP 1/12—Protection of Queensland’s strategic cropping land
- Temporary SPP 2/12—Planning for prosperity
- Draft Coastal Protection State Planning Regulatory Provision—Protecting the coastal environment (October 2012) (suspends the operation of SPP 3/11—Coastal protection)—refer to ‘Coastal planning’ below.

SPP 1/92

The cleared parts of the Ella Bay site had, up until recently, been used for cattle grazing and would be categorised as pasture land. Both the JSPS and the FNQRP show the majority of the Ella Bay site as containing good quality agricultural land.

Since purchasing the property, the current owner has removed all cattle from the site. While the site is suitable for cattle grazing, it is isolated from other agricultural land and the area of the site is relatively small and unlikely to produce viable economic returns. If the development was not to proceed, it is considered that the land would have a negligible agricultural future. Therefore, construction of the Ella Bay development would not cause a loss of good agricultural land and would not compromise the state’s interest under SPP 1/92.

SPP 2/02

The proponent has committed to manage potential acid sulfate soil and acid sulfate soil in accordance with relevant government requirements to achieve the development outcomes of SPP 2/02—Planning and managing development involving acid sulfate soils (ASS) and not compromise the state’s interest. The management of potential acid sulfate soil for the Ella Bay development is addressed in Section 5.4 of this report.

SPP 2/03

The Ella Bay development footprint has been located and designed to minimise potential adverse impacts from natural hazards in accordance with the objectives of SPP 2/03—Mitigating the adverse impacts of flood, bushfire and landslide. Section 4.12 of the EIS and section 1.7.7 of the SEIS identified and addressed potential hazards and risks associated with the Ella Bay development. I note the proponent has committed to prepare a cyclone, fire and emergency management plan as part of the EMP. This matter is addressed in Section 5.1.7 of this report.

SPP 1/12

The Ella Bay development is within a management area mapped as potential strategic cropping land under the *Strategic Cropping Land Act 2011*, which commenced on 30 January 2012. As the site has no recent cropping history and a large portion of the site is densely vegetated, I consider that construction of the Ella Bay development would not cause a loss of strategic cropping land and would not compromise the state’s interest under SPP 1/12—Protection of Queensland’s strategic cropping land.

Temporary SPP 2/12

A temporary SPP, which is a statutory instrument under the SPA, may be made if the Planning Minister considers it is urgently required to protect or give effect to a state interest. Temporary SPP 2/12 commenced on 24 August 2012 and will expire on

24 August 2013. Temporary SPP 2/12 prescribed that the state interests in economic growth include promoting agriculture, tourism, mineral and extractive resources industries and construction activities.

The Ella Bay development is a very important tourism development for the Innisfail region providing a standard of tourism development not currently available in the area. The Ella Bay development is expected to provide a significant boost for the Queensland tourism industry and the local construction industry. The development does not negatively impact on the agriculture industry or the state's mineral and extractive resource industries. Therefore, the Ella Bay development is consistent with the recently commenced temporary SPP 2/12—Planning for prosperity. The tourism benefits of the Ella Bay development are addressed in sections 2.3.2 and 2.3.3 of this report.

Coastal planning

The Draft Coastal Protection State Planning Regulatory Provision—Protecting the coastal environment (October 2012) (draft SPRP) commenced on 8 October 2012 and will operate for 12 months or until earlier repealed. The draft SPRP is a statutory instrument under SPA, and in practice, suspends the operation of SPP 3/11—Coastal Protection. The draft SPRP ensures the government manages development in Queensland's coastal zone and grows the economy, while balancing environmental and social resources for present and future generations.

The situation for development applications is as follows:

- the draft SPRP applies to the assessment of development applications and master plan applications that are properly made from 8 October 2012.
- the provisions set out in the draft SPRP are based on the State Coastal Management Plan (SCMP) policies that were in place before the introduction of the SPP 3/11.

The State Policy for Coastal Management (SPCM), which forms part of the QPC and still remains in effect, is prepared under the *Coastal Protection and Management Act 1995* and provides policy direction for natural resource management decision-makers about land on the coast, such as coastal reserves, beaches, esplanades and tidal areas. The management policy applies to management planning, activities, decisions and works that are not assessable development under SPA and therefore not subject to SPP 3/11. DEHP has advised that the Ella Bay development does not trigger the SPCM.

The EIS and SEIS provided an assessment of the Ella Bay development against the SCMP, which was current policy at that time, and the associated Wet Tropical Coast Regional Coastal Management Plan which has since been repealed.

Draft SPRP

Part 2 of the draft SPRP is applicable to the Ella Bay development.

Coastal hazards and development in an erosion prone area

The Ella Bay development footprint has been designed to minimise potential adverse impacts from coastal hazards. The development (other than nature walkways and pedestrian access to the beaches (including pedestrian bridges), the day spa area and any life saving structure) will be located outside the maximum expected sea level rise and the storm tide inundation zones and erosion prone areas as agreed with DEHP. The erosion prone area linear distance (110–165 metres), as generally depicted on page 3 of the BMT WBM Pty Ltd letter dated 26 September 2012 and noted in Figure 5.1 of this report, has been approved by DEHP.



Figure 5.1 Approved erosion prone area widths at Ella Bay

I have stated conditions in this report to protect the coastal management district of the Ella Bay area by requiring that no development, other than construction of nature walkways and pedestrian access to the beaches (including pedestrian bridges), the day spa area and any life-saving structures, can occur in the erosion prone area (refer to Appendix 1, Condition 23).

Section 4.12 of the EIS and section 1.7.7 of the SEIS identified and addressed potential hazards and risks associated with the Ella Bay development. The proponent has committed to prepare a cyclone, fire and emergency management plan as part of the EMP. I have also stated a condition in this report requiring the proponent to prepare an isolation plan to address any situation where access to the site might be cut off on a short-term basis during a severe natural event (Appendix 1, Condition 7). These matters are addressed in Section 5.1.7 of this report.

Nature conservation

The development is expected to have only minimal impact on the coastal environment. The potential impacts of the development on coastal flora and fauna and the proponent's proposed mitigation measures are addressed in detail in sections 5.3.3, 5.3.4, 5.3.5, 5.3.6 and 5.4 of this report.

Some of the mitigation strategies include:

- habitat protection strategies including conservation zones on site; specific species management plans (for example, cassowary and marine turtles); protection of littoral rainforest; revegetation and rehabilitation on site
- water quality measures including treatment of water to tertiary class A+ standard with nutrient levels within levels approved by DEHP; use of erosion and sediment controls; employ water supply urban design principles; undertake water quality monitoring; best practice golf course management
- connectivity preservation strategies including on-site fencing and access road fauna protection measures such as fauna underpasses and culverts
- offsets strategy to meet state and Commonwealth requirements
- road management strategies to protect wildlife
- education programs to educate workers, visitors and residents about the local environment and protected flora and fauna.

Areas of high ecological significance

The Ella Bay development is adjacent to the Ella Bay Swamp wetland, which is a declared nationally significant wetland. This matter is addressed in the subsection addressing SPP 4/11—Protecting wetlands of high ecological significance in Great Barrier Reef catchments below.

Potential development impacts on the WTQWHA and the GBRWHA are addressed in detail in the relevant MNES section of this report (refer Section 7.6).

The vegetated areas of the Ella Bay site are listed as areas of high ecological significance from a state perspective. The development will require the removal of 0.95 hectares of vegetation. However, this will be offset by proposed revegetation of 50 hectares and rehabilitation of 64 hectares within the site. Approximately 62.8

hectares of the vegetated land will be handed over to national park and while the remainder will be protected through a series of conservation areas (67.8 hectares), fauna corridors (87.3 hectares), and setbacks and easements (58.9 hectares). The proponent's conservation proposal is addressed in Section 5.3.4 of this report.

Public access

The Ella Bay development will not cause a net loss of public access to the foreshore. The development will provide access to an area which was only accessed by occasional campers and pig hunters. The Ella Bay development will include a number of nature walkways throughout the development and pedestrian access paths to the beach. Access paths are addressed in Section 5.1.5 of this report.

Coastal-dependent land use

The development does not include any maritime infrastructure such as jetties, pontoons or boat ramps.

Canals and dry land marinas

The development is not a dry land marina and does not involve the construction of canals.

SPP 4/10

The proponent has committed to design its stormwater system and to monitor water quality (including groundwater) in accordance with SPP 4/10—Healthy waters and other relevant requirements. The management of stormwater for the Ella Bay development is addressed in Section 5.2.6 of this report.

SPP 4/11

SPP 4/11—Protecting wetlands of high ecological significance in Great Barrier Reef catchments took effect on 25 November 2011 as part of a protection package for the Great Barrier Reef catchments and as such the EIS and SEIS did not include an assessment of the project against the policy. The north-eastern edge of the Ella Bay site includes the southern-most tip of the Ella Bay Swamp wetland which is a declared nationally significant wetland. Development within the Ella Bay site does not occur near the wetland. The proponent has committed to a number of mitigation measures in relation to stormwater management, groundwater, wastewater treatment and water quality monitoring which are designed to avoid any adverse effects on the receiving environment. The management of wastewater and stormwater are addressed in Section 5.2.6 of this report.

The proponent aims to enhance the ecological values of the Ella Bay Swamp by providing environmental buffers and undertaking a weed management program. The proponent has committed to donating 62.8 hectares of land (which includes the southern tip of the wetland) to the Ella Bay National Park which is to the north of the development. The proponent also proposes to revegetate a strip of land of about 50 metres in width adjacent to the donated land to provide a buffer of around 400 metres between development and the wetland. This would therefore provide a greater level of protection for the wetlands. These actions form part of the proponent's

proposed environmental offset package for the development which is addressed in Section 5.3.4 of this report.

The proponent also committed to implement its weed management plan which should help to reduce the potential spread of noxious weeds (including pond apple (*Annona glabra*)) within the Ella Bay swamp. Weed management for the development is addressed in Section 5.5.1 of this report.

5.1.2. Coordinator-General's conclusions—planning issues

The current planning scheme (JSPS), FNQRP and coastal management policies generally seek to contain urban land uses to existing developed areas and away from the coastal zone. This accords with best practice, which dictates that the preferred settlement pattern for a region should result in a compact, well-serviced and efficient urban form. Similarly, urban land uses should also avoid sensitive coastal areas to minimise risks to important habitats and/or degradation of the marine environment.

The tourism component of the development does have specific locational requirements. The EIS found that there are no other cleared sites of the appropriate size within the existing developed areas of the region, suitable for a tourism development of this nature. Also, the development will provide a standard of tourist accommodation not currently available in the region.

The residential component of the Ella Bay development is designed to support the tourism component of the development by providing:

- a diversification of project revenues to help secure finance for the required infrastructure investment
- a base level of population to justify provision of infrastructure for the development
- a base level of population supporting retail and services, thereby supporting the operating cashflow of businesses which form part of the development. This acknowledges the high variability of tourism populations in facilities of this nature.

The EIS, SEIS and additional information document reinforce the proponent's commitment to provide all hard infrastructure such as roads, water, sewerage and power related to the Ella Bay development at no cost to government. A condition stated in this report reflects these commitments (Appendix 1, Condition 1). The proponent has also committed to fund and construct community facilities for use by tourists, residents and the general public, including a golf course, cycle ways and pedestrian paths, public parking areas, an education and research centre and access to national park walking tracks if approved by the relevant authorities. I have stated a condition requiring the proponent to fund and construct the community facilities as outlined in the EIS/SEIS documentation to ensure the delivery of the required facilities (Appendix 1, Condition 5).

The EIS described the economic opportunities of a major tourism development of this nature that would benefit the region and the state. The project would also provide a benefit to the local community given its close proximity to Innisfail and access to walking tracks in the Ella Bay National Park.

It is accepted that the permanent residential component is critical to the financial viability of the overall development. Sales of residential land would underpin the ability of the project to provide the necessary infrastructure and services. The proposed proportion of permanent residential dwellings within the development footprint (40 per cent) is appropriate for an integrated tourism/residential development of this size.

Overall, it is considered that the Ella Bay development demonstrates sufficient reasons to be located on the proposed site as long as environmental issues are sufficiently resolved. These matters are addressed in the following sections of this report.

5.1.3. Master plan/draft plan of development

A master plan for the Ella Bay development was presented in the EIS and revised in the SEIS (refer Figure 2.2 and Figure 2.5 above). The footprint of the development is confined to the cleared areas on the site for environmental reasons. The development income has been reduced as a result of reducing the number of residential lots from 800 to 540 and reducing the size of the resorts. Other revisions are discussed in Section 2.2.2 of this report.

Details of the draft Ella Bay environment and development plan are included in Volume 4 Section A2.12 of the EIS. These details were updated in the Volume 6 Section 6.5a (Ella Bay development local area plan) of the additional information document (SEIS Submission Response dated June 2012). Three elements are identified for the site (refer Figure 5.2):

- development precincts
- recreation/open space areas
- conservation zones.

The following precincts are included in the development precinct:

- coastal precincts—resort residential (tourism)
 - village precinct—resort residential, villa housing, multiple dwellings, retail, education, car parking, community uses and associated services and infrastructure (25.4 hectares)
 - central resort precinct—resort accommodation, resort residential lots, villa housing, multiple dwellings, resort facilities and in-house resort restaurants and tourist shops (33.2 hectares)
 - northern resort precinct—resort accommodation, resort residential lots, villa housing, multiple dwellings, resort facilities and in-house resort restaurants and tourist shops (13.7 hectares)
- residential precincts
 - northern residential precinct—detached resort residential lots and ancillary structures (21.8 hectares)
 - western residential precinct—detached resort residential lots and ancillary structures (12.5 hectares)
 - south-western residential precinct—detached resort residential lots and ancillary structures (16.7 hectares)

- southern residential precinct—detached resort residential lots and ancillary structures (8.7 hectares).

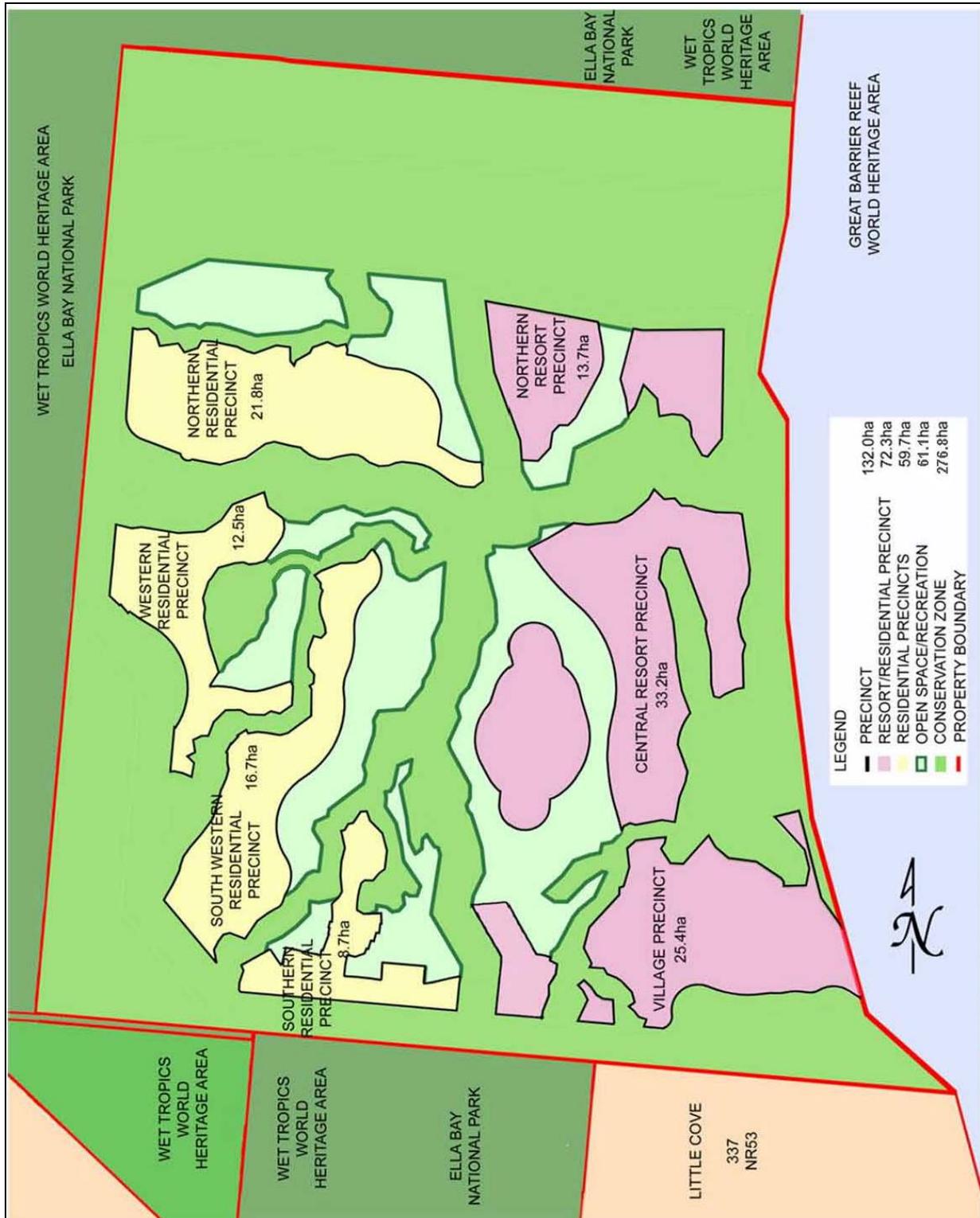


Figure 5.2 Proposed Ella Bay precinct plan

The recreational/open space areas (including the golf course) surround and buffer much of the development areas from the proposed environmental protected areas (61.1 hectares).

The protected areas within the Ella Bay site will consist of four conservation zones (refer Figure 5.3):

- national park (62.8 hectares)
- nature conservation area (67.8 hectares)
- fauna corridor (87.3 hectares)
- setback and easement (58.9 hectares).

The protected areas are addressed in detail in Section 5.3.4 of this report.



Figure 5.3 Proposed Ella Bay conservation zones

The draft development plan provides for a total of 1400 dwellings within the Ella Bay development. The most appropriate mix of short-term tourist and permanent residential dwellings for the development should remain at 60/40 (that is, around 860 short-term tourism dwellings and 540 permanent residential dwellings). The proponent has indicated that the residential component may be used for permanent residential use and/or holiday letting. I consider that a 60/40 mix would support viability of the tourism and public facilities and services and help to finance required infrastructure for the development including electricity, telecommunications, water supply and roads.

I encourage CCRC to undertake compliance checks by regular audit or following a substantive negative report from residents to ensure the development's compliance with the 60/40 short-term tourism/permanent residential mix. Council may also consider employing a rating option which would reflect different charges for different land uses such as permanent residential and tourism accommodation. I would support the use of these actions by CCRC.

The Ella Bay development plan will be generally finalised in accordance with the draft document submitted as part of the EIS (Volume 4 Section A2.12) and revised in the additional information document (SEIS Submission Response dated June 2012) (Volume 6 Section 6.5a (Ella Bay development local area plan)). Revision of the development plan will be undertaken in consultation with CCRC. The finalised development plan is to be based on the precinct plan for the development as in Figure 2.2 (refer page 6). I note that CCRC may impose further requirements in the form of conditions of development, not inconsistent with the conditions stated in this report.

I state conditions in this report (Appendix 1, conditions 2–31) to ensure the project is developed appropriately and in accordance with the master plan as described in the EIS, precinct plan (Figure 2.2 above) and the overarching planning principles for the region.

5.1.4. Development schedule

The proposed development schedule for the Ella Bay development was included as Figure 2-4 in Volume 1 of the additional information document (SEIS Submission Response dated June 2012) (refer Figure 2.4 and Figure 2.5 above). The schedule shows the proposed 15 year development program consisting of four stages.

The proponent proposes a four stage construction plan based on the precincts discussed in Section 5.1.3 of this report. The majority of the proposed environmental mitigation measures including the setup of the rainforest nursery; revegetation of the site; construction of the cassowary research centre; constructed wetlands; and the construction of the Ella Bay Road upgrade (stage 1 of the access road works) and underpasses and traffic calming devices, will precede construction of the resort and residential development. Works on Ella Bay Road widening and internal roads will commence prior to resort and residential construction at the start of year three. Stage 1 of the development schedule will continue with the construction of the northern precincts. Stage 1 will also include the construction of some primary infrastructure associated with the village precinct and open space area including the welcome centre; groundwater supply pumping and storage; community recycling and waste plant; and

sewage treatment plant and recycled water storage. Other essential infrastructure will be constructed throughout the development schedule.

Stage 2 will include construction of the central resort precinct and construction/landscaping of the open space golf course and country club and start of the education and recreation facilities. Ella Bay Road stage 2 (the bypass road) is proposed to be constructed during stage 2 of the development schedule commencing around year six/seven.

Construction of the remainder of the village precinct is proposed for stage 3 of the development. Stage 4 involves construction of the western, southern and south western residential precincts.

Construction of short-term tourist and permanent dwellings will commence in stage 1 of the development. The tourism component of the development is expected to reach a peak of 73 per cent of dwellings by the end of stage 3. When construction is complete tourism dwellings will make up over 60 percent of the total dwellings in the Ella Bay development.

The proponent has indicated that staging of the development will be dependent on market demand and it is the proponent's intention to limit the construction supply to match the demand for the various products

I have stated a condition in this report to ensure that key components of the project are developed in accordance with the schedule proposed in the additional information document (SEIS Submission Response dated June 2012) (Appendix 1, Condition 4).

5.1.5. Community, tourism and leisure facilities

The proposed development was described in Volume 3 of the EIS and Volume 2 of the SEIS. It was further refined in Volume 1 section 2.1 of the additional information document (SEIS Submission Response dated June 2012) and other information provided by the proponent. The community, tourism and leisure facilities for visitors and short-term and permanent residents of the Ella Bay development committed to by the proponent include:

- three (3) resort precincts comprising 860 units and villas
- 18 hole golf course
- country club
- visitors centre
- education and research centre
- retail and commercial facilities
- restaurants and cafes
- swimming pool, barbecue facilities, playgrounds, tennis courts and club house for each residential precinct
- public parks and open space (including environmental buffers)
- public parking areas
- walking/cycle paths within the site (refer below)

- designated walking/cycle paths adjacent to the access road
- access to national park walking tracks (if approved for construction).

I have stated conditions in this report to ensure appropriate development and funding of community, tourism and leisure facilities for the Ella Bay development (Appendix 1, Condition 5).

5.1.6. Native title and cultural heritage

Native title

Lot 320 on Crown Plan N157629, County Nares, Parish Glandy, is freehold land and was freehold land prior to 23 December 1996.⁹ The valid grant of a freehold estate (other than certain types of Aboriginal and Torres Strait Islander land) on or before 23 December 1996 is a previous exclusive possession act under section 23B(2)(c)(viii) of the under the Commonwealth *Native Title Act 1993* (NTA) and wholly extinguishes native title under section 20 of the *Native Title (Queensland) Act 1993*. Native title is therefore considered extinguished over Lot 320.

An assessment of native title must be undertaken for the other lots that may be impacted by the Ella Bay Road upgrade and the new bypass road. However, section 24KA of the NTA allows for the establishment of public roads where native title is not extinguished.

I note the proponent is required to liaise with DNRM to ensure all native title requirements are met prior to commencing development.

Cultural heritage

The EIS (Volume 4 section 4.8) includes a summary of a cultural heritage survey of the area undertaken in 1993. The survey was updated in June 2007 and results included in the SEIS (Volume 4 section A2.14 Appendix A). I note the proponent has committed to undertake, prior to construction, a further cultural heritage survey on Ella Bay property and other land impacted by the development in accordance with a Cultural Heritage Management Plan (CHMP), which is a requirement of the *Aboriginal Cultural Heritage Act 2003* (Qld), and to manage all cultural heritage matters in accordance with the CHMP. A signed CHMP was included in Volume 3, section 3.7 of the additional information document (SEIS Submission Response dated June 2012).

I have stated a condition in this report to ensure the proponent engages with the traditional owners to finalise the CHMP requirements to protect cultural heritage (Appendix 1, Condition 34).

5.1.7. Safety/emergency management

The devastation caused by cyclones such as Larry and Yasi have highlighted the need for sound emergency management procedures to be in place for local residents, visitors, businesses and industry in the Cassowary Coast region.

⁹ The date the High Court handed down its decision in *Wik Peoples v Queensland*, finding that pastoral leases did not necessarily extinguish native title.

Due to the location and nature of the Ella Bay development; situated on the coast in a cyclone area, with a large construction workforce undertaking a range of activities and the expected permanent and temporary population, preparation and implementation of a risk management plan and emergency response plan is required for all stages of the development including when fully operational.

Emergency management for the Ella Bay development was addressed in the EIS (Volume 3 section 3.2.5) and SEIS (Volume 1 section 1.7.7). The additional information document (SEIS Submission Response dated June 2012) which provides updated information, states that the Ella Bay Road upgrade is proposed at a minimum elevation of 5 metres Australian Height Datum (AHD) for the whole length of the road to Ella Bay. In comparison the existing roads within Flying Fish Point are at a minimum elevation of 2.7 metres AHD. Analysis undertaken by BMT WBM Pty Ltd in September 2012 indicated that the:

- 100-year ARI design storm surge inundation level (including predicted sea level rise for climate change) at the Ella Bay shoreline is expected to be 2.98 metres AHD
- predicted 100-year ARI storm tide mean surface levels are lower than the dune top height of approximately 3.1 metres.

The additional information document (SEIS Submission Response dated June 2012) also indicated that:

- each residential precinct in the Ella Bay development will have a community centre which will be designed to the building guidelines for category 5 cyclone as defined by the *Design Guidelines of Queensland Public Cyclone Shelters* (Department of Public Works 2006). The shelters will be sited within the precinct (above the storm surge and flood inundation levels) and will be large enough to accommodate the projected population of the precinct at the recommended 1m² per person
- resort buildings will be constructed to appropriate Cyclone Rating for Region C building codes and will include a shelter to Cyclone Rating 5 for guests and staff
- management of services during and recovery from a disaster will be aided by the sustainability features of the development:
 - each building will be required to have rainwater supply tanks
 - each building will be required to generate solar electricity
 - backup and night time power supply will be by distributed generators
 - all power, and backup water supplies will be below ground
 - communications will be by fibre-optic cable and 3G network
- Additional emergency access options such as a helipad will be considered for the development.

I note the proponent has committed to:

- consult with the Department of Community Safety during the project development, in particular in relation to the disaster management strategies and requirements of shelter buildings
- develop and implement a cyclone, fire and emergency management plan as part of the EMP.

In its submission on the additional information document (SEIS Submission Response date June 2012) CCRC requested that the proponent provide an isolation plan with its development application to address any situation where access to the site might be cut off due to a natural event such as damage caused by landslide and cyclone. Note: SEWPaC has advised that any changes to the design of the development and/or access road as a result of requirements of the isolation plan may affect approval conditions set by SEWPaC. Therefore, I recommend the proponent consult with SEWPaC in considering any design changes.

I state conditions in this report to ensure the safety of Ella Bay workers, visitors and residents. (Appendix 1, conditions 37–7).

5.2. Infrastructure impacts

5.2.1. Infrastructure agreements

The EIS and SEIS documentation indicated that major infrastructure is required to support the Ella Bay development, including roads, sewerage, water supply, wastewater, electricity and telecommunications. It is noted that the proponent has committed to provide and fund all necessary infrastructure for the development so that local and state infrastructure providers are not affected.

The proponent has indicated that the operation and management responsibility for infrastructure within the development area will rest with the proponent and will be transitioned over to the body corporate once established. The access road, once fully completed, will become a council road and will be the responsibility of CCRC to maintain. The existing unpaved Ella Bay Road is a gazetted council road. Road impacts are addressed in Section 5.2.2 of this report.

DNPRSR and CCRC support the need for the proponent to provide a performance guarantee bond as surety for the restoration of the site to a safe and saleable condition in the circumstance the project is not completed. I state a condition in the report requiring the proponent to provide a performance guarantee bond for the project (Appendix 1, Condition 6).

I state a condition in this report to ensure appropriate infrastructure delivery for the development (Appendix 1, Condition 1).

5.2.2. Access road

Road options and design

Ella Bay can be accessed by passing through Innisfail, the Coconuts and Flying Fish Point. Access from Flying Fish Point to Ella Bay is via the existing unsealed Ella Bay Road. The EIS indicated the unsealed road currently conveys up to 150 vehicles per day.

As noted in Section 2.2.3 of this report the Ella Bay development requires the construction of an access road to the site to ensure safe and efficient travel for residents, visitors and employees. The majority of the proposed route follows the

course of the existing unsealed road through the Ella Bay National Park, though some widening is required. The access road will also include the construction of a road which bypasses Flying Fish Point and connects to Ella Bay Road.

I note the proponent has committed to fully fund the design and construction of the access road.

Numerous options for road access to the Ella Bay site have been discussed in the EIS and SEIS and various reports commissioned by the proponent (including a multi-criteria analysis (MCA) included in the SEIS and road design safety audit included in the additional information document (SEIS Submission Response dated June 2012)) and the University of South Australia (UOSA) study commissioned by DEWHA.

The EIS originally proposed permanent access to the site through the streets of Flying Fish Point to Ella Bay Road. Almost unanimously, the public submissions on the EIS, while appearing to support the concept of the Ella Bay development, indicated that permanent road access to the development through Flying Fish Point would be unacceptable due to impacts of increased vehicle numbers and noise on the local community lifestyle and the impact on the safety of local residents, particularly children and the elderly. Construction traffic impacts on local residents are addressed later in this section.

Based on this feedback, the proponent proposed access to the site via a new road that would bypass Flying Fish Point and join onto Ella Bay Road north east of the community (Option D in the SEIS). DEWHA commissioned the UOSA to undertake a peer report on the Ella Bay road access options. The UOSA study supported the proponent's findings that Option D may be the best access route towards the Ella Bay development on the ground of minimising negative impact on the residents in Flying Fish Point, transport sufficiency and road safety.

At the request of DEWHA, the proponent addressed the findings of the UOSA study. In the additional information document (SEIS Submission Response dated June 2012) the proponent presented a new road design which encompassed issues raised in the UOSA study. Following review of the new road design key agencies (including SEWPaC, WTMA and CCRC) have agreed that the narrower less-impact road option (that is, the current Ella Bay Road alignment (from approximately 90 metres north of Ruby Street) with Option D for the bypass road) discussed in the SEIS is the preferred option (refer section 1.4 Volume 1 and Appendix A2.6 Volume 4). While the road design is yet to be finalised the road will be constructed in accordance with the FNQROC Development Manual. SEWPaC has advised that, in parallel with CCRC approval, any variation to the design and alignment of the access road will require consideration by SEWPaC including potential variation to any EPBC approval conditions that may be applied to the Ella Bay development.

In its submission on the additional information document (SEIS Submission Response dated June 2012) CCRC indicated that the existing Ella Bay Road appears to be constructed outside the gazetted road reserve and this would need to be rectified as part of the road approval either by modifying the gazetted road corridor or relocating the road as part of the road upgrade. If this is in fact the case, I recognise this is a matter to be addressed by CCRC and the proponent whilst seeking road approvals.

However, my preference would be for a modification of the gazetted road corridor, as this option is likely to have less environmental impact.

Although significant work has been undertaken by the proponent on the most efficient and safe road design, I recognise that the final design of the road will be required to be approved by CCRC and be in accordance with relevant CCRC and safety requirements.

The various approvals related to the proposed road works are detailed in Section 4.2 of this report.

Potential impacts on the residents of Flying Fish Point and the Coconuts

As noted above, road access and traffic issues were the most prominent matters raised in submissions made on the EIS and SEIS by local residents. The local residents of Flying Fish Point and the Coconuts expressed concerns that their residential amenity could be disrupted by excessive road traffic during both the construction and operational phases of the Ella Bay project.

Currently around 1500 vehicles use Flying Fish Point Road. The proponent has proposed that the bypass section of the access road (including the 'cut and cover' tunnel) will be constructed once traffic numbers reach 1000 vehicle movements per day. This is expected to be around year six to seven of construction (that is, by the completion of stage 1 of the development). This means that the township of Flying Fish Point will face significant impacts for the first six or seven years of the development through increased traffic numbers, noise and dust from construction traffic. After that time the potential impacts on the township from traffic generated by the development is expected to be reduced. There may be a significant positive impact on the amenity of Flying Fish Point if the proponent applies to close the current access to Ella Bay Road to vehicular traffic (except emergency vehicles). Therefore, only vehicles wanting or needing to visit Flying Fish Point would impact on the township.

I note the proponent has included a draft traffic management plan (TMP) for the access road in Volume 4 of the additional information document (SEIS Submission Response dated June 2012) which includes strategies to reduce the likely temporary impacts on Flying Fish Point and the Coconuts. The objectives of the TMP are to:

- minimise disturbance and inconvenience for residents of Coconuts and Flying Fish Point through the Local Area Traffic Management Plan (LATMP) (refer Figure 5.4)
- minimise workforce traffic movements through Coconuts and Flying Fish Point
- manage traffic during construction
- communicate the plan to residents and workforce.



Figure 5.4 Local area traffic management in Flying Fish Point

To reduce the amount of construction traffic passing through the Coconuts and Flying Fish Point during stage 1 of the construction schedule, the proponent proposes to establish a vehicle movement control centre in Catelan Road approximately 1 kilometre west of the Coconuts off Flying Fish Point Road. From Catelan Road buses will transport the majority of workers through Flying Fish Point and onto the Ella Bay Road alignment.

The use of the Catelan Road centre will reduce the construction traffic movements through the Coconuts and Flying Fish Point to approximately 200 trips per day.

Approximately 470 vehicles are expected to access the Catelan Road centre thereby reducing vehicle movements through the local townships by more than half. Traffic movements for permanent residents, resort occupants and staff will gradually increase to approximately 800 from around year five of the development schedule, at which time construction on the bypass road will commence.

I recognise that an effective communication strategy for local residents, tourists and workers is imperative for all stages of construction of the Ella Bay development (particularly stage 1 prior to the bypass road being constructed). I endorse the proponent's proposed communication strategies including:

- workforce induction process and direct verbal briefings
- project specific signage to be placed at relevant intersections for route selection
- direct public consultation with the residents of Coconuts and Flying Fish Point (for example, letter box drops). Residents will also be able to provide feedback on the construction activities through a complaints hotline and website
- direct communication with Seahaven Prawn Farm, the only business to be affected by Ella Bay Road construction activities—will entail regular meetings, including by phone and through email
- media—the use of media before and regularly during the project to inform Ella Bay Road users about the start of significant works
- general public signage—to provide a continual method of communication for travelling residents, visitors and tourists
- special signage for sightings of cassowary.

Other potential impacts

The amount of vegetation clearing requirement for the road works is 2.8 hectares (refer Table 5.8 below).

Impacts of the access road on wildlife and vegetation are addressed in more detail in Section 5.3.3 of this report. Visual impacts of the road are addressed in Section 5.6 of this report.

The bitumen sealing and stabilisation of the existing section of Ella Bay Road is expected to have some positive impacts on the existing environment. These positive impacts are addressed in detail in Volume 4 of the additional information document (SEIS Submission Response dated June 2012) and include:

- reduction in dust generated by traffic on the road, thereby providing a cleaner environment for flora and fauna (for example, reducing the amount of smothering of vegetation and fauna such as frogs in the vicinity of the road)
- a rainwater drainage and filtering system along the entire length of the road will improve the quality of water reaching the GBRWHA by filtering sediment (mud and silt) and pollutants in the surface water
- reduction, and potential elimination of landslide/landslides within the WTQWHA (in the vicinity of the road).

The new access road and the upgrade of the Ella Bay Road will also provide currently unavailable opportunities for viewing and presentation of the WTQWHA and GBRWHA. Ella Bay Road is expected to become a high quality scenic drive and tourist attraction much in the same vein as the Kuranda Range Drive.

Note: The amount of vegetation required to be removed for the access road may be less than the 2.80 hectares identified above if a narrower road option is approved by CCRC.

Proponent's mitigation strategies for the access road

I note the proponent has committed to a number of strategies and plans which will reduce impacts resulting from the construction of the access road including:

- 'fauna-friendly' bridges and wildlife culverts at key locations allowing access to areas currently only accessible by crossing Ella Bay Road
- 'fence and funnel' strategy for the protection of wildlife
- cassowary management strategy
- environmental offsets strategy
- Ella Bay Road construction and management plan road
- rehabilitation and revegetation plan
- erosion and sediment control plan
- drainage plan
- weed management plan.

These strategies and plans are addressed in more detail in other sections of this report.

I note the proponent has also submitted a draft environmental offsets package to compensate for vegetation loss and negative impacts on ecological processes and fauna and flora, in particular those that cannot be fully mitigated as part of the project. The offsets package is addressed in Section 5.3.4 of this report.

Coordinator-General's conclusions—road

I recognise that the residents of Flying Fish Point and the Coconuts may be negatively impacted by the project's construction (and operation) during the first six to seven years of construction. However, once the by-pass road is constructed, the residents will gain benefits from less traffic passing through the township, than currently exists. I am satisfied that the short-term negative impacts on the Flying Fish Point residents can be suitably minimised, if the proponent's strategies in the draft TMP, LATMP and Ella Bay Road construction and management plan are strictly employed and monitored. After construction of the bypass road the residents of Flying Fish Point should gain the benefits of less through-traffic on the local roads. However, I have stated conditions in this report to ensure the potential impacts of the construction on the environment and construction traffic on the Flying Fish Point and the Coconuts residents are appropriately managed (Appendix 1, conditions 8–10).

I am satisfied that the potential for the project's access road to impact on flora and fauna, ecological processes and MNES can be adequately managed through the mitigation measures and commitments contained in the EIS documents and

subsequent documents, the EMPs and the agreed offsets package. However, I have stated another condition in this report to address potential impacts on flora and fauna resulting from construction of the access road (Appendix 1, Condition 11).

5.2.3. Council road infrastructure

As noted above the traffic numbers to be generated by the Ella Bay development through the streets of Innisfail, when fully operational, are expected to be just over 4000 vehicles per day (maximum daily two way traffic).

The EIS provides detail of expected traffic numbers along Ella Bay Road and a high level assessment of the impacts of the construction and operational traffic on the existing road network from the Bruce Highway through Innisfail to Ella Bay Road.

The EIS indicated that the townships of the Coconuts and Flying Fish Point will experience greater traffic numbers during stage 1 of construction. Impacts of increased traffic on the Coconuts community will continue after this time.

CCRC has recently expressed concern that the proposed development may place higher than expected demands on existing road infrastructure, most particularly the network connection from Innisfail through to Ella Bay Road.

The existing Cassowary Coast Transport Network Plan developed by CCRC in partnership with DTMR in 2011 does not take into account the Ella Bay development and any potential impacts on the local road network.

CCRC planning staff have advised that the transport network plan indicated that once a certain population threshold is reached on the northern side of the river there would be a need for an additional bridge across the Johnstone River and a road from the new bridge to the Bruce Highway. CCRC believes that the Ella Bay development could trigger the need for this bridge and road infrastructure.

I am aware that other development has recently been approved and constructed on the north shore of the Johnstone River including the Innisfail State College which will contribute significantly to traffic numbers. I understand that a substantial number of residential subdivisions have been also approved and future residential development proposed north of the Johnstone River which will also contribute to the road infrastructure trigger level being reached. The proponent may be required to provide a fair and equitable contribution to these works.

The CCRC has indicated that a local road impact and transport infrastructure study should be undertaken by the proponent to allow CCRC to determine potential impacts attributable to the development. The study would also allow CCRC to determine whether an infrastructure charge is required to be contributed by the proponent and/or whether certain roadworks, specifically relating to the impacts of the development on the local road network, as determined by a study, are required to be carried out by the proponent. Any road infrastructure charge or the required roadworks will likely be formalised in an infrastructure agreement with CCRC.

I conclude that the proponent should undertake additional local road network investigations in consultation with CCRC to ascertain the potential impacts of the Ella Bay development on the local network, and to provide a fair and equitable contribution

towards the cost of required roadworks relevant to the findings of the study and in accordance with the applicable planning scheme, priority infrastructure plan and legislative requirements. CCRC should consider all development proposed in the north of Innisfail when determining an appropriate level of contribution for the Ella Bay development and an appropriate timetable for funding.

SEWPaC has advised that, if additional roadworks are required as part of the Ella Bay development, the roadworks will require consideration by SEWPaC including potential variation to any EPBC approval conditions that may be applied to the development.

I have stated a condition in this report to ensure the impacts of the Ella Bay development on the local road network are assessed and that an appropriate contribution to relevant impacts is made by the proponent (Appendix 1, Condition 12).

5.2.4. Site roads

The Ella Bay development will lead to a significant increase in internal traffic flows within the property compared to the near non-existent current traffic flow. This increased traffic flow is likely to increase traffic interaction and mortality of cassowary, common mist frog and other fauna. Impacts on these species and mitigation strategies have been addressed in sections 5.3.3 and 5.3.4 of this report.

The proponent has proposed a transport strategy within the Ella Bay site to minimise traffic risks on fauna which includes the use of precinct fencing, design and enforcement of lower speed limits within precinct areas and along unfenced gated crossings, and opportunities to reduce traffic by encouraging the use of electric buggies, bicycles and shuttle busses.

The proponent has committed to fund, construct and maintain all roads within the Ella Bay development until roads are gazetted as council roads when the responsibility for the access road maintenance will be handed over to the CCRC. Site roads will connect all precincts and will include relevant traffic calming devices and wildlife protection features such as fauna underpasses and culverts to allow connectivity of all conservation areas.

All the roads within the precincts will be perimeter fenced and the precincts will be linked by bridges or low speed gated crossings. The roadways will be included within the precinct fencing to eliminate cassowary road trauma. On-site fauna fencing is addressed in section 5.2.10 of this report. The creeks will be crossed by elevated bridges (cassowary underpasses) to provide fauna habitat connectivity throughout the site to all Open Space/Recreation and Conservation areas. All the main internal roads servicing the resorts will have elevated bridges/underpasses. Only four secondary internal roads with low volume, controlled low speed 20 kilometres per hour traffic will have unfenced gated crossings of the open space or fauna corridor. The longest of these gated crossing will be 100 metres across the northern section of the north/south fauna corridor in the northern residential precinct. The speed will be controlled by traffic calming, signage and raised speed platforms.

The two gazetted unformed roads which exist within the Ella Bay site will require an application for a permanent road closure under the *Land Act 1994* to be made to DNRM. DNRM is likely to seek advice from CCRC, DNPRSR and DEHP concerning

the proposed road closure as it is near a national park. In considering the application DNRM is likely to consider whether:

- the road(s) is currently used or likely to be used in the future for access to the National Park
- there is an alternative road (or roads) in the vicinity of the proposed closure that could provide similar or better access
- the closure is likely to affect the public interest.

DNPRSR has advised that it does not presently manage or maintain walking tracks or visitor facilities within the Ella Bay National Park and therefore closure of these roads would not currently fetter the public interest in accessing national park facilities.

Specific road plans for the development site will be prepared at detailed design stages. However, the proponent has committed to include adequate parking areas within the site for visitors and residents to view the national park and to access proposed walking tracks in the national park.

I have stated a condition in this report to ensure the roads within the Ella Bay development meet CCRC's requirements. (Appendix 1, Condition 13).

5.2.5. Water supply

Water supply requirements and strategies for the Ella Bay development have been addressed in the EIS (Volume 3 section 3.5.3 and Volume section 4.3) and the SEIS (Volume 1 section 1.1 and section 1.5.3.3). A detailed integrated water management plan for the development was included in Volume 6 section 6.4b of the additional information document (SEIS Submission Response dated June 2012). Further clarification was received in an email from the proponent dated 15 August 2012. The plan addresses the provision of water supply and wastewater infrastructure for the proposed development at Ella Bay. I note the proponent has committed to provide and fund all necessary water cycle infrastructure for the Ella Bay development.

Water supply is discussed immediately below and wastewater/recycled water follow in Section 5.2.6.

Proponent's water supply strategy

The integrated water management plan indicated an estimated peak day water demand of 865 kilolitres per day (excluding irrigation demands) for the Ella Bay development.

The proposed water supply strategy for the Ella Bay development is as follows:

- The primary source of drinking (potable) water will be rainwater harvested from roof catchments. The water will be treated prior to use to ensure its suitability for consumption and will meet *Australian Drinking Water Guidelines* requirements.
- Water conservation initiatives will be implemented throughout the design of the development to minimise demands and improve the reliability of the supply.

- Groundwater from an on-site bore will be used as a back-up source of water. Suitable groundwater has been identified on the site during EIS investigations and is included as Reports 6.4e, 6.4f and 6.4g, Volume 6 of the additional information document (SEIS Submission Response).
- The primary source of non-potable water will be recycled water. This will be treated on-site to tertiary class A+ standard (with nutrient levels within levels approved by DEHP) and used for dual reticulation to households for toilet flushing, cold water laundry, residential garden watering and for fire fighting and above ground open space irrigation (uncontrolled/unrestricted access). Emergency back-up to essential recycled water uses, that is, toilets, will be provided by the recycled water supply. Class A+ recycled water will be supplied as per the *Queensland Public Health Amendment Regulation (No. 1 2008)* and the *Water Quality Guidelines for Recycled Water Schemes (DNRW 2008)*.
- Recycled water (treated to tertiary Class A+ standard and within nutrient levels approved by DEHP) to be used for controlled access or subsurface irrigation may be stored for extended periods, held in open storage or combined with harvested stormwater and will be irrigated at a minimum Class B standard, which surpasses the Queensland Water Recycling Guidelines recommendation of Class C.
- Stormwater harvesting will be used at the site to supplement the supply of water to the resort lagoons as part of the proposed swimming pool systems.

The integrated water management plan estimates that 63.3 per cent of demand for water will be supplied through rainwater harvesting, 33.7 per cent by recycled water and 3 per cent from groundwater. All houses and resort buildings will be fitted with appropriate sized water tanks.

EIS studies indicate that the groundwater quality is fresh with a very low total dissolved solids concentration, slightly acidic and soft metal concentrations are within the 2004 National Drinking Water Guidelines. Staggered measurements of pH, electrical conductivity and temperature measured during the pumping test show no trend of aquifer mixing or deterioration in quality from saltwater intrusion.

The EIS found that the residual impact of ground water abstraction will be negligible providing that the groundwater abstraction is monitored to confirm that any net drawdown on the upper aquifer is less than an average of 0.1 metre greater than tidal forcing amplitude at the northern vegetation boundary or at the dunal swale. I note the proponent has committed to undertake ongoing groundwater monitoring. However, to further protect the environment (including adjacent wetlands (WTQWHA), on-site creeks and the GBRWHA, I have stated a condition in this report requiring the proponent to develop and implement an ongoing groundwater monitoring program to monitor the quality of groundwater potentially impacted by any direct or indirect release of contaminants associated with the sewage treatment management process (refer Appendix 2). The outcome of the condition is to ensure there is no reduction in groundwater quality. Monitoring will allow action to be taken early if the abstraction of water is having a negative impact on the environment.

I note the proponent has committed to develop monitoring programs which detail the strategies and procedures to follow for monitoring the various aspects of the water supply system and water quality. These are addressed in Section 5.2.6 of this report.

5.2.6. Waste, waste water and other services

Waste management

EIS findings

Detail of the proposed waste management strategy for the Ella Bay development is included in the SEIS (Ecologically Sustainable Development Report, Volume 4, Appendix A.2.9). The additional information document (SEIS Submission Response dated June 2012) indicated that the proponent has committed to prepare a detailed waste management and minimisation sub-plan as part of the EMP. The plan will address both construction waste and operational waste. It is also noted that the proponent has committed to manage waste from the site in accordance with the Environmental Protection (Waste Management) Regulation 2000.

The EIS documentation indicated that there will be an emphasis on recycling of waste materials thereby minimising the need for movement of waste offsite by CCRC or a contractor waste collection service.

The SEIS indicated that sludge from on-site sewage treatment will be required to be transported off-site to landfill or re-use and this will be undertaken in accordance with relevant legislative requirements.

The potential impacts of waste management activities on the environment include:

- waste spills and loss of containment of waste resulting in impacts on soils, surface water, groundwater, terrestrial and marine fauna and human health
- littering and contamination of on-site streams and the adjacent WHAs
- plastic waste causing mortality to marine fauna
- odour and noise generation from waste handling and storage
- propagation of pests (both fauna and flora), vermin and disease vectors.

Some of the proponent's other proposed mitigation measures include:

- waste avoidance, minimisation, re-use and recycling principles to be used wherever possible
- organic waste processing (potential compost and worm farm)
- no disposal of hazardous wastes on the site
- wastes to be segregated in a waste collection area to assist in recovery and recycling.

Coordinator-General's conclusion—waste management

I have stated a condition in this report to ensure waste generated by the development is appropriately managed in accordance with government requirements (Appendix 1, Condition 25). The project's EMP (including the preparation of a waste management and minimisation plan) is addressed in Section 6 of this report.

Wastewater/recycle water

EIS findings

The EIS documentation proposes two treatment plants within the Ella Bay development site as the most viable and sustainable treatment option for the proposed scale of development. It is proposed that treatment plants be located within the Village Precinct and between the northern and western residential areas. Figure 2.2 in this report shows the location of proposed significant sewerage/recycling infrastructure.

Wastewater (greywater and blackwater) will be collected from households and resort and commercial premises via a reticulated low infiltration sewerage system. The collection system will drain to eight sewage pumping stations which will be strategically placed through the precincts. All premises in Ella Bay will be connected to the reticulated sewerage system. The wastewater will be pumped to the two treatment plants.

Treated water will be pumped from balancing storage tanks directly into the distribution system. Water that cannot be used immediately will be directed to two seasonal storages located within the Village Precinct and between the northern and western residential areas. The proposed seasonal storages include a combination of covered tanks and covered and uncovered lagoons. Service reservoirs will need to be developed.

The proponent is considering one of the following possible alternative sewerage systems which would be suitable for the Ella Bay development:

- a low infiltration 'smart' gravity sewerage system using plastic pipes and access chambers rather than conventional pipelines and concrete manholes
- vacuum sewerage (particularly well suited to very flat sites with high groundwater levels).

These options will be assessed and determined at the detailed design stage.

The sewage treatment plants will require approval from DEHP as an ERA (ERA 63—*sewage treatment*) and as such will require a development approval for a MCU. Detailed design of, and operation and management procedures for, the water recycling plants and sewerage system must be included as part of the ERA application (refer Appendix 2).

The plant will be designed to minimise its footprint, for example, using membrane bioreactor (MBR) technology, which GBRMPA has indicated is considered 'best practice' for these package plants, is proposed to be used to provide a small plant footprint and high quality treated water for reuse. The MBR plant will include inlet screens, reactor tank with membranes, disinfection using ultraviolet (UV) light and residual chlorination. GBRMPA has advised that MBR plants are successfully operating at Picnic Bay on Magnetic Island, and Horseshoe Bay, Cleveland Bay and Mount St John in Townsville.

Treatment residuals will be thickened on-site and then transported off-site for disposal or reuse depending on existing opportunities in the region.

A verification process will also be undertaken to ensure that the recycled water plants are capable of consistently producing class A+ recycled water. The potential impacts of odour and noise from the treatment plants will be assessed as part of the development application. However, plant noise will be managed through the choice of equipment, for example, submersible motors rather than surface mounted, the use of acoustic enclosures for particularly noisy equipment such as compressors or, if the plant is in a building, ensuring that the building has appropriate acoustic insulation.

As noted above, the Ella Bay development proposes to use recycled wastewater for:

- toilet flushing
- cold water laundry
- external uses such as car washing and garden watering
- irrigation of golf course and public open space
- firefighting.

The GBRMPA has recommended that there be no direct discharge of waste/recycled water to the ocean or creeks.

DEHP and GBRMPA queried the ability of the Ella Bay site to cope with the volume and nutrient levels of the water that would be irrigated from the treatment plants, as the Innisfail area is well known for its high rainfall and cyclone events, thereby making the area almost continually saturated. At the request of DEHP, the proponent's technical consultants reran the MEDLI testing and provided these to DEHP and GBRMPA for review. DEHP and GBRMPA have now agreed that there does not appear to be a significant risk of environmental harm to the existing quality of the groundwater and the surface water (which has the potential to reach the GBRWHA), associated with the reuse of treated effluent from the wastewater treatment plant, if strict controls are maintained, all conditions met and monitoring undertaken. At the request of GBRMPA, the ERA condition in Appendix 2 of this report includes a requirement for an EMP to be developed and implemented by the proponent to address the situation where the treatment plant's wet weather storage capacity has been exceeded.

Coordinator-General's conclusion—wastewater/recycled water

I state conditions in this report to protect the receiving environment by ensuring the appropriate management of wastewater for the development in accordance with government requirements (Appendix 1, conditions 14–15 and Appendix 2).

Stormwater management

The stormwater management objectives and strategy for the Ella Bay development are presented in Volume 6 section 6.4c and 6.4d and Volume 4 section 6 of the additional information document (SEIS Submission Response dated June 2012).

Following review of the EIS and SEIS a number of agencies raised issues in relation to stormwater runoff from the site and its effect on water quality in the GBRWHA.

I recognise that unless appropriately managed, the development could impact on the marine waters adjacent to Ella Bay and the access road by potentially discharging sediment, nutrients, other chemicals and litter. This in turn has the potential to impact

marine species in these waters, such as fish, dolphins and turtles. However, the proponent has committed to design and implement the project to avoid impacting water quality.

Development site

I note that the proponent has committed to ensure that the discharge from the development will be managed to meet designated water quality objectives through a number of measures including:

- erosion and sediment control plans (ESCP)
- water sensitive urban design (WSUD)
- 'best practice' golf course environmental management
- no development, with the exception of walking paths and some facilities like life saving structures, within the approved erosion prone area for the site
- no septic tanks
- no direct discharge of treated sewage to the marine environment.

With the use of ESCP and WSUD systems for the development and access road, potential impacts on marine habitat and fauna within Ella Bay, from the development impacts, in particular surface water sediment discharge, are expected to be neutral.

A summary of the proponent's proposed water quality mitigation measures is immediately below.

Erosion and sediment controls

- Use of erosion and sediment controls in accordance with *Soil Erosion and Sediment Control—Engineering Guidelines for Queensland Construction Sites* (Institution of Engineers Australia 1996) for all construction activities within ephemeral watercourse catchments that discharge to estuarine or marine waters.
- Maintenance of, at a minimum, a 25 metre buffer on both sides of all ephemeral watercourses within the proposed construction area.
- No construction activity in the approved erosion prone area for the site.
- Activities for the access road to be constructed in accordance with protection measures outlined in Volume 4 of the additional information document (SEIS Submission Response dated June 2012). These works will also be subject to a site specific erosion and sediment control management sub-plan. Refer access road section below.

Water sensitive urban design

- Employment of WSUD principles for all permanent control measures to mitigate litter, sediment, nutrient, hydrocarbon and chemical releases to adjacent estuarine and marine environments including the use of constructed wetland and swales and sediment treatment areas.
- Development of control measures in accordance with *Urban Stormwater Quality Planning Guidelines 2010* (DERM) and the *State Planning Policy (SPP 4/10) for Healthy Waters 2010* (2010) to protect water environmental values specified in the *Environmental Protection (Water) Policy 2009*.

Water quality monitoring

- Development and implementation of a water quality monitoring plan (WQMP) to monitor the effectiveness of proposed measures in maintaining of water quality. This is to be undertaken during the period when development approvals are being gained and before construction. The WQMP will:
 - be designed in accordance with relevant guidelines including:
 - *Queensland Water Quality Guidelines*
 - *Urban Stormwater Quality Planning Guidelines 2010*
 - *State Planning Policy (4/10) for Healthy Waters*
 - *ANZECC/ARMCANZ Guidelines*
 - *Water Quality Guidelines for the Great Barrier Reef Marine Park (GBRMPA 2010)*
 - measure nutrients, chlorophyll-a, herbicides, pesticides, copper, lead, total suspended solids, and possibly other analytes as determined during design of the monitoring program.

Stormwater treatment

The proponent has proposed developing and implementing a stormwater management system that treats stormwater in a series of purpose-built wetlands, detention basins and treatment systems, to ensure that untreated runoff from the project does not enter wetlands outside the project site. It is also planned to re-use treated water from the development to irrigate areas such golf course. This approach will reduce the volume of water used by the Ella Bay development and maximise the use of water, thereby limiting overall impact and reducing associated waste.

Reef Water Quality Protection Plan

I note the proponent has committed to meet the objectives of the *Reef Water Quality Protection Plan 2009* (RWQPP), a joint Australian and Queensland Government initiative, and intends to do this by employing erosion and sediment controls, WSUD and water quality monitoring (including groundwater).

The RWQPP identifies actions, mechanisms and partnerships to build on existing Government policies and industry and community initiatives to assist in halting and reversing the decline in the quality of water entering the Great Barrier Reef. The plan's objectives are: to reduce the load of pollutants from diffuse sources in the water entering the Great Barrier Reef; and to rehabilitate and conserve areas of Great Barrier Reef catchment that have a role in removing water borne pollutants.

Golf course management

I note the proponent has committed to developing and implementing a golf course management sub-plan as part of the EMP for the project which will address:

- using tertiary level class A+ wastewater for irrigation and supplementary fertilisers for the golf course.
- operating watering, fertilising and pest control in accordance with best practice.

Access road

The stormwater management objectives and strategy for the access road are presented in Volume 4 section 6 and section 10 of the additional information document (SEIS Submission Response dated June 2012).

I note the proponent has committed to prepare a construction management plan which will also cover all aspects of the Ella Bay Road construction including:

- site preparation
- clearing and earthworks
- drainage.

Current environment

Reduction in sediment and pollutants is a significant issue for the existing road alignment due to the surrounding Ella Bay and GBRWHA. The EIS indicated that the current situation is as follows:

- unsealed drains and cracked culverts
- flooding both north and south of Heath Point during intense rainfall events
- no treatment of road runoff
- undersized concrete pipe culverts
- presence of gross pollutants.

The storm water runoff from the WTQWHA flows down the Seymour Range and collects into ephemeral watercourses and discharges either directly into culverts or runs along a short length of table drain into the pipe culvert to transfer under the road. This storm water runoff from upstream of the road from the rainforest would be considered pristine.

There is no existing treatment of road runoff. The primary sources of sediment and areas of erosion are the table drains and the unsealed road itself. Runoff from the unsealed road generates high loads of sediment and suspended solids which combine on the discharge side of the culvert with the cleaner WTQWHA flows. The high sediment load in the creeks is pushed downstream sufficient to smother the base of stream beds with 20 to 30mm of fine silt approximately 30 metres from the GBRWHA.

Proposed management during construction

As noted above, the proponent has committed to use environmental erosion and sediment control best practice measures along the road alignment during the road construction to minimise the amount of suspended, dissolved solids and construction pollutants entering the watercourses. This includes the preparation of erosion and sediment control plans (ESCP's) for all phases of construction and land disturbing activities including each discrete catchment area. Each ESCP will be certified by an erosion and sediment control specialist. An erosion and sediment control specialist will be employed during construction phase to:

- prepare and certify ESCP's and provide technical advice
- ensure best practice erosion and sediment control is practised

- undertake ESCP and site audits
- train the construction personnel.

The process the proponent will follow is noted in Volume 4 section 10 of the additional information document (SEIS Submission Response dated June 2012).

Proposed management following construction

While management procedures are not yet finalised, for drainage from the west of the road, the proponent proposes the following processes:

- to catch gross pollutants and transfer runoff without mixing with roadside contamination
- runoff from the rainforest will be collected in table drains and transported to culverts
- different topographical areas will require different roadside drainage structures.

The drainage on the eastern side of the road alignment will vary depending on location and will include:

- first flush will be treated within the bioretention swale with excess flow overflowing the swale to the eastern vegetation
- the swale will consist of short lengths of 20 to 50 metres of vegetated bioretention pit with a drainage pipe collecting the seepage and discharging the filtered water into the adjoining vegetation
- the collection area of the swale will have rock check dams to increase the residence time of the storm water.
- the distance of the swale from the side of the road will allow grasses and other vegetation to aid the filtration of runoff.

Heath Point Park to north of WTQWHA -

- stormwater from the road surface will be channelled by asphalt kerbs into batter chutes, where required to direct the flow to the lower level rocks to minimise erosion
- asphalt kerbs will drain frequently with turn outs positioned according to gradient in order to reduce the potential for erosion
- due to the difficulty with the terrain and distance from the town no gross pollutant capture will be installed around Heath Point except at the proposed lookout carpark
- at the two ephemeral streams, vegetated bioretention swales will be installed leading into the creeks on both sides of the road and will provide a pollutant removal mechanism by biofiltration, enhanced sedimentation and particle adhesion
- the rock filled gabion wall at the discharge into the creek will be used as part of the bioretention basin.

North of WTQWHA to Ella Bay

- Storm water will be treated with bioretention swales as described in *Flying Fish Point to Heath Point* section above, except where the road is still elevated around the headland
- part of this section will also discharge from the road pavement and be treated as per the *Heath Point Park to north of WTQWHA* section above.

- bioretention swales will lead into the permanent streams.

Coordinator-General's conclusion—stormwater/water quality

As noted above, EMPs will be implemented for construction and road works to ensure the quality of water leaving the site during these periods is acceptable and that it is managed and monitored at all times. Post construction should see a significant reduction in the overall existing sediment load to creeks, adjacent wetland areas and the Reef Lagoon and ultimately the GBRWHA, having minimal effect on potential marine fauna.

The potential for the Ella Bay development and the construction of the access road to impact water quality in the GBRWHA (adjacent to the site) can be adequately managed through the mitigation measures and commitments in the EIS and subsequent documents, and the construction and operational EMPs. I have stated conditions in this report to ensure the appropriate management of marine water quality (Appendix 1, conditions 26–28). The project's EMP is addressed in Section 6 of this report.

5.2.7. Power supply

In the additional information document (SEIS Submission Response dated June 2012) the proponent proposes that the Ella Bay development will be fully self sufficient in its energy requirements through the use of up to date solar energy design and a natural gas powered station. This option was addressed on the SEIS (option 5 in the Ecologically Sustainable Development Report in the Appendices A2.9).

I state a condition in this report to ensure appropriate infrastructure delivery (including power supply) for the development (Appendix 1, Condition 1).

5.2.8. Telecommunications

There is no existing telecommunications infrastructure on the site. The EIS documentation (Volume 3 section 3.5.6 and Volume 8 A6.5 section 7.2) indicated that the telecommunications infrastructure at Ella Bay will include broadband, as well as the installation of a mobile phone tower. For broadband/3G usage, a microwave link will be established from Mount Bellenden Kerr to the site.

Although there is currently no existing fibre-optic infrastructure in Flying Fish Point or Innisfail, a fibre-optic cable will be placed under the access road during its construction for future connection. The proponent has indicated that the fibre-optic connection between Sydney and Cairns passes near Innisfail, however no 'tap off' connection has been provided to the town. It is expected this would be actioned as part of the national broadband network (NBN). I note the proponent has committed to fund connection to the fibre-optic network when connectivity is available.

I state a condition in this report to ensure appropriate infrastructure delivery (including telecommunications) for the development (Appendix 1, Condition 17).

5.2.9. Landscaping

Landscaping will be undertaken as part of the Ella Bay development and will be provided at no cost to local or state government. CCRC will be responsible for approving appropriate landscaping through the MCU process.

The proponent has indicated the following general policies for landscaping within the development site:

- use of vegetation native to the Ella Bay region and the WTQWHA in all aspects of landscaping to ensure continuity of vegetation
- re-use of certain types of vegetation in the landscaping program removed from the development site
- management of the landscaping program in accordance with the principles of ecological sustainable development (ESD).

I state a condition in this report to ensure the landscaping program for the Ella Bay development is undertaken in accordance with government requirements (Appendix 1, Condition 18).

5.2.10. Wildlife fencing

Based on a request from WTMA and DEHP following review of the SEIS, the proponent has presented a proposal for fencing of the development site and access road to minimise the impact of the development on wildlife, in particular the cassowary. The proponent's proposal is presented in Report 6.1k Part A Volume 6 of the additional information document (SEIS Submission Response dated June 2012). Other studies relating to the proposed fencing are included in Reports 6.1h, 6.1i and 6.1j Part A Volume 6.

I note that the proponent has committed to fully fund and construct both on-site fencing and access road wildlife fencing and gates and fund and manage their ongoing maintenance. The proponent has indicated that this would be initially through Satori and would then transition to the proposed Ella Bay development body corporate.

Site fencing

The objective of the proponent's proposal for site fencing is to limit cassowary/human interaction and thereby enhance the safety of the cassowary and people by excluding access to residential precincts and eliminating issues from human contact and associated activities whilst allowing movement of smaller fauna such as frogs and reptiles. The proposal involves fully fencing the boundaries of each precinct as indicated in Figure 5.5 below. The general alignment of the fencing will encompass the precinct boundaries leaving the Open Space and Conservation Zone areas as free space for fauna movement.

The proponent proposes that the fence structure be a 1200mm dark coloured aluminium pool fence with a 100mm gap underneath to allow movement of small animals. Fencing will be constructed on a staged basis as each precinct is developed.

The internal road system will be contained within the precinct fencing. The precincts will be linked by bridges or low speed gated crossings. In between the precincts, bridges will be used to allow cassowaries to pass along the fauna corridors. Between each of the fenced precinct areas the fencing will continue along the sides of the connecting road and bridges providing a continuous fence border between the precincts over the fauna corridors/conservation zones.

To ensure minimisation of potential human/cassowary interaction within the Ella Bay development, I have stated a condition in this report which includes the requirement for the proponent to fund, construct and maintain fencing around each of the development precincts (Appendix 1, Condition 1).



LEGEND

- CASSOWARY ACCESS - BRIDGE
- CASSOWARY ACCESS - CONTROLLED VEHICLE AREA
- FENCED AREAS
- VEHICLE BRIDGE

Figure 5.5 Proposed wildlife fencing and accessibility through Ella Bay

Access road fencing

SEWPaC and WTMA have raised the issue of fencing of Ella Bay Road to exclude cassowaries and other large fauna. Fencing in the road corridor will require approval by CCRC. The proponent will also be required to obtain a permit from WTMA to undertake roadworks in the WTQWHA. It is possible that WTMA and SEWPaC will condition the proponent to construct and maintain fencing along the access road.

The proponent has developed a fencing strategy to exclude cassowaries and other large fauna from the access road and to provide an escape route in the case where cassowary gain access to the road. It should be noted that the proponent does not propose to install fencing where:

- the road edge and surrounding slopes are steeper than 1:1 or where the embankment is vertically greater than 1.5 metres (for example, gabions walls)
- other structures such as guard rails and noise barriers provide an exclusion function.

Detailed maps of the proposed fencing are provided in Appendix 7 of the additional information document (SEIS Submission Response dated June 2012).

The proposed fencing and gating design was researched by the proponent on the property at Ella Bay. The proponent tested:

- material types, colours and strengths
- frame/support design
- maintenance efficiency.

The proponent's wildlife fencing strategy proposes the following:

- use of a high grade shadecloth fence to direct cassowaries to the fauna underpasses
- fencing to be integrated into the underpasses to funnel cassowaries to habitat continuity
- fencing to be used to exclude cassowaries from the roadway both physically and visually
- fence to be equipped with one-way escape gates at entrances and exits, bridges and at strategic locations along the roadway
- escape gates to be within 100 metres of known crossing points such that should the fence fail to prevent a cassowary gaining access to the road, the cassowary will not be trapped on the roadway
- escape gates at 25 locations along the access road (nineteen gates are proposed for the Ella Bay Road portion (that is, Stage 1) and six on bypass road (Stage 2)
- fence alignment to run three to twelve metres within the roadside vegetation, parallel to the road, to minimise visibility from the road
- fence to be constructed predominately requiring only hand pruning of native flora
- no significant or listed species to be cleared
- weeds to be cleared around the path of the fencing and surrounding area

- fence alignment to be made to fit around mature vegetation with the fence weaving between trees.

The proponent has indicated that the cassowary fencing and escape gates along the access road will require regular weekly inspection during the first year of operation and after extreme natural events. In the event of significant cyclone risk, the fence will be pulled to the ground; the top carrier wire will be manually removed from its clip to the post and relocated to the lower wire clip where both wires will be held together. The shade cloth fence will be effectively folded down to the ground and the shade cloth material tied every 2–3 metres in between posts by use of cable ties or similar to keep it rolled up and safe from damage. The proponent proposes that the fence only be pulled down immediately prior to cyclonic weather events, and then, only when it can be done in a safe manner.

The proponent also proposes to install and maintain frog fences for 25 metres either side of the three bridges and four of the culverts along Ella Bay Road to provide greater protection for frogs and small fauna that could access the road.

Impacts of the proponent's proposed fencing strategy on wildlife are addressed in Section 5.3.3 of this report.

Coordinator-General's conclusion—wildlife fencing

I concur that the proponent's strategy to fully fence each precinct of the Ella Bay development will provide a safer living environment for humans and cassowary than would be possible without the fencing. As noted above, I have stated a condition for the proponent to fund the construction and maintenance of the precinct fencing.

I accept that it may be determined by WTMA, SEWPaC and CCRC that there is a need for fauna sensitive design mechanisms along the access road to protect wildlife, in particular the cassowary. If so, I recommend that CCRC allow the cassowary fencing to be erected (and maintained) in the road corridor and that the proponent's fencing strategy be used as it likely to be 'best practice'.

The need for wildlife fencing along the access road will be determined during consultation on the condition I have stated in this report (Appendix 1, Condition 11). The condition requires the proponent to provide to CCRC a design and construction report for the access road based on the narrower less-impact road option discussed in the SEIS, and which addresses the requirements of the FNQROC Development Manual; Fauna Sensitive Road Design Manual and specific requirements of WTMA, SEWPaC and CCRC to minimise the impact of the road on cassowary.

While recognising that the proponent's commitment to fund, construct and maintain access road wildlife fencing, CCRC has indicated that, in the event the proponent/body corporate fails to maintain the fencing in perpetuity, CCRC will end up being responsible, as the fencing is proposed within the road corridor. Council has advised that it does not have the funding or staff resources to undertake the fencing maintenance task. Therefore, I suggest that if CCRC is ever required to take over responsibility of the access road wildlife fencing, that Council apply an applicable rate or charge to the residents and businesses within the Ella Bay development under section 94 of the *Local Government Act 2009*, which gives Council's the power to levy

rates and charges or through an infrastructure agreement with the body corporate. CCRC may also consider the applicability of a 'benefited levy' under section 92 of the Act.

I note the proponent has offered to undertake further cassowary studies which will be used to monitor current strategies, to mitigate road impacts on adjacent habitats and to develop new strategies (including achieving fencing maintenance efficiencies) based on this research.

5.3. Fauna and flora

5.3.1. Fauna

Context

All Queensland's threatened wildlife are protected under the *Nature Conservation Act 1992* (Qld) (NC Act) and listed under the *Nature Conservation (Wildlife) Regulation 2006*. The EPBC Act lists all of Australia's protected species and communities and migratory species.

The EPBC Act protected matters report run for the Ella Bay area (refer Appendix 2 Report 6.3a Volume 6 of the additional information document (SEIS Submission Response dated June 2012) lists 21 threatened fauna species that are known to, likely to or may occur in the area including three birds, three frogs, seven mammals, six reptiles, two fish.

Fauna surveys for the Ella Bay development were undertaken in 2006, 2008 and 2009. The 2006 studies were reported in the EIS whereas the subsequent surveys and reports are contained in Volume 6 of the additional information document (SEIS Submission response dated June 2012). The 2008 Fauna Survey Report was developed to supplement existing 2006 survey data and provide additional data on fauna found in the access road alignment area that was not included in the 2006 survey. This report was also subject to minor updates in 2011 to include results of more recent ecological studies.

Field surveys were conducted in accordance with the requirements of the EIS terms of reference and conducted to obtain ecological information relevant to the project and to ground-truth results from the desktop assessments.

EIS survey findings

Native fauna

A total of 142 terrestrial vertebrate species were identified over both 2006 and 2008 (86 and 120 respectively) surveys including 13 frogs, 15 reptiles, 87 birds and 27 mammals. Thirty-three butterfly/moth species were also identified in the project area over both surveys.

A total of nine freshwater fish species were identified during the aquatic surveys. Surveys of marine fauna were only carried out on the beachfront adjacent to the Ella Bay site and therefore no marine fish species were identified in the project area.

Thirteen species identified during the surveys are listed as threatened under Australian Government and/or State legislation including the endangered *Casuarinus casuarinus johnsonii* (southern cassowary) and *Litoria rheocola* (common mist frog). Table 5.1 lists the threatened species identified during the surveys.

Table 5.1 Threatened fauna species identified during 2006 and 2008 surveys

Scientific name	Common name	EPBC Act listing status	NC Act listing status
Birds			
<i>Casuarinus casuarinus johnsonii</i>	southern cassowary	Endangered	Endangered
<i>Esacus neglectus</i>	Beach stone-curlew	NA	Vulnerable
<i>Cyclopsitta diophthalma macleayana</i>	Macleay's fig parrot	NA	Vulnerable
<i>Ninox rufa queenslandica</i>	Rufous owl	NA	Vulnerable
<i>Accipiter novaehollandiae</i>	Grey goshawk	NA	Near Threatened
<i>Aerodramus Terraeregineae</i>	Australian swiftlet	NA	Near Threatened
Frogs			
<i>Litoria rheocola</i>	common mist frog	Endangered	Endangered
<i>Cophixalus infacetus</i>	Inelegant frog	NA	Near Threatened
<i>Litoria genimaculata</i>	New Guinea tree frog	NA	Near Threatened
Mammals			
<i>Pteropus conspicillatus</i>	Spectacled flying fox	Vulnerable	Near Threatened
<i>Taphozous australis</i>	Coastal sheath-tail bat	NA	Vulnerable
Reptiles			
<i>Crocodylus porosus</i>	Estuarine/saltwater crocodile	NA	Vulnerable
<i>Eulamprus tigrinus</i>	Yellow-blotched forest skink	NA	Near Threatened

The 2008 Fauna Survey Report also identifies 15 threatened terrestrial species listed under the EPBC Act and NC Act not identified during surveys with the potential to occur in the area based on suitable habitat or previous local records. These species are listed in Table 5.2.

Table 5.2 Threatened fauna not identified by surveys with the potential to occur

Scientific name	Common name	EPBC Act listing status	NC Act listing status
Birds			
<i>Sterna albifrons</i>	Little tern	NA	Endangered
<i>Rostatula australis</i>	Australian painted snipe	Vulnerable	
<i>Ephippiorhynchus asiaticus</i>	Black-necked stork	NA	Near Threatened
Frogs			
<i>Nyctimystes dayi</i>	Australian lacelid	Endangered	
Mammals			
<i>Dasyurus hallucatus</i>	Northern quoll	Endangered	Near Threatened
<i>Rhinolophus philippinensis macros</i>	Greater large-eared horseshoe bat	Endangered	Endangered
<i>Hipposideros semoni</i>	Semon's leaf-nosed bat	Endangered	Endangered
Reptiles			
<i>Dermochelys coriacea</i>	Leatherback turtle	Endangered	Endangered
<i>Caretta caretta</i>	Loggerhead turtle	Endangered	Endangered
<i>Lepidochelys olivacea</i>	Olive ridley	Endangered	Endangered
<i>Chelonia mydas</i>	Green turtle	Vulnerable	Vulnerable
<i>Eretmochelys imbricate</i>	Hawksbill turtle	Vulnerable	Vulnerable
<i>Natator depressus</i>	Flatback turtle	Vulnerable	Vulnerable
<i>Coeranoscincus frontalis</i>	Limbless snake-tooth skink		Near Threatened
Other fauna			
<i>Hypochrysops apollo Apollo</i>	Apollo jewel butterfly		Vulnerable

Queensland database searches (including Wildlife Online, Queensland Museum and Birds Australia New Atlas) identified a further four threatened terrestrial species listed under the NC Act not identified by survey, that have the potential to occur in the area. These are included in Table 5.3.

Table 5.3 Threatened species identified in Queensland database search

Scientific name	Common name	NC Act listing status	Database
Birds			
<i>Neochmia phaeton phaeton</i>	Crimson Finch	Vulnerable	Birds Australia, Wildlife Online
<i>Nettapus pulchellus</i>	Cotton Pygmy-goose	Near Threatened	Birds Australia, Wildlife Online
Mammals			
<i>Dendrolagus lumholtzi</i>	Lumholtz's Tree Kangaroo	Near Threatened	Queensland Museum
Other fauna			
<i>Hypochrysops apollo Apollo</i>	Apollo Jewel Butterfly (Wet Tropics subspecies)	Vulnerable	Wildlife Online

Southern cassowary

The significance of the southern cassowary (also referenced as cassowary throughout this report) to the Wet Tropics region, the potential impacts of the construction and operation of the Ella Bay development on the Graham–Seymour Range cassowary sub-population and the proponent's proposed mitigation measures have been thoroughly documented and analysed during the EIS process. Most of this information is provided in the expert reports attached to the EIS and additional information document (SEIS Submission Response date June 2012) including:

- Section 4.2 Volume 1 (MNES)
- Report 3.2 Volume 3 (southern cassowary management sub-plan)
- Section 5 Volume 4 (Road Design and Design Criteria)
- Section 8 Volume 4 (Fauna Sensitive Road Design)
- Section 12 Volume 4 (Road Operation Management and Monitoring)
- Volume 5 (Offset Package Proposal)
- Reports 6.1a to 6.1m Volume 6 (Cassowary Reports—including survey results and fence and escape gate trial results)
- Report 6.2f Volume 6 (Cassowary Specific Revegetation).

The cassowary is a frugivore (fruit eater) and an essential element in the sustainability of the Wet Tropics rainforests through dispersal of large seeded fruits. It is estimated that only between 1200 and 1500 cassowaries exist in the wild in the Wet Tropics.

The primary habitat of the cassowary is rainforest and associated vegetation mosaics, although they also use mangroves, melaleuca and various eucalypt woodlands, swamps and swamp forests. Their habitat is required to have a high diversity of fruiting trees and a ready supply of water.

A number of small sub-populations have formed through reduced habitat connectivity in the east-west and north-south corridors from extensive agricultural and urban clearing, and existence of the Bruce Highway and other road corridors. The sub-populations

face a decline in numbers due to the reduction of available habitat and on-going threats associated with urban and agricultural development.

A cassowary survey, assessment and population viability analysis (PVA) for the Ella Bay development and access road area was undertaken in 2006 and 2007 by cassowary expert Professor Les Moore and included in the EIS and SEIS. The PVA, included in the SEIS, indicated that the cassowaries identified along the Ella Bay access road and around the Ella Bay property are part of the Graham–Seymour Range population which is estimated to have around 51-73 independent birds. In the PVA Professor Moore also indicated that the Graham–Seymour Range cassowary population, along with other coastal cassowary subpopulations south of Cairns, is undergoing a population decline and extinction of the sub-population appears inevitable and likely within 60 years.

Moore suggests that this decline is caused by inadequate patch size, isolation from the main habitat blocks to the west, cyclone-induced mortality, and high levels of historical and contemporary anthropogenic impact including urban and agricultural encroachment into their habitat and associated edge effects. All of these impacts are cumulative and will therefore continue to contribute to the decline of the Graham–Seymour Range and sub-populations. Moore contends that the development of the Ella Bay property with the proposed revegetation, mitigation and research commitments proposed by the proponent the local cassowary population has the potential to reverse the PVA outcome through increased habitat connectivity, availability of fruiting plants and exclusion from and management of roads.

Further surveys were undertaken in February and November 2009 and April and November 2010 (Peter Buosi). Surveys were undertaken for all seasons and after cyclones. All surveys (that is, 2006, 2007 and 2010) are included in Reports 6.1b-e and Report 6.1L Volume 6 of the additional information document (SEIS Submission Response dated June 2012).

In summary, a comparison of the surveys indicated that the:

- number of adult cassowaries recorded in 2006 to 2010 in the immediate vicinity of Ella Bay development and the access road has increased from six adults to ten adults
- number of females reported total of two (possibly three) is lower than expected from the sex bias ratio of 1.5:1 however, there is ambiguity in sex determination through monitoring photographs and the extent of the surveyed area
- number of sub-adults recorded has increased since 2006 from zero to between three and five probably representing movement of the sub-adults around Ella Bay
- age class structure and recruitment appears to be sustainable
- total number of cassowaries, of females and of subadults for recruitment has shown an increase in reported numbers.

The *Recovery Plan for the Southern Cassowary Casuarius casuarius johnsonii* (EPA 2007) has been developed to protect cassowaries, habitats and corridors from threats through better planning, monitoring and community involvement.

Shorebirds

The Ella Bay area is not a known breeding colony for shorebirds. However, the surveys conducted in 2006 and 2008 for the EIS recorded bird activity on the shoreline, beach and wetland areas including the *Haliaeetus leucogaster* (Whitebellied Sea-Eagle), kingfisher species and the *Esacus neglectus* (beach stone-curlew). The beach and shoreline habitat is also suitable foraging habitat for wading birds generally, including conservation significant migratory species, such as sandpipers and plovers.

The EPBC Act protected matters report identified 18 migratory bird species that have the potential to occur in the area including *Haliaeetus leucogaster* (White-bellied Sea-Eagle); *Monarcha melanopsis* (Black-faced Monarch); *Nettapus coromandelianus albipennis* (Australian Cotton Pygmy-goose) and *Ardea ibis* (Cattle Egret).

Stream-dwelling frogs

The 2006 and 2008 EIS fauna surveys identified the endangered frog species the *Litoria rheocola* (common mist frog) in the upstream habitat of the Ella Bay development site. It was also recorded in the 2009 *Batrachochytrium dendrobatidis* (Chytrid fungus) survey of the Ella Bay region and surrounds (Report 6.3b Volume 6 of the additional information document (SEIS Submission Response dated June 2012)) which was commissioned by the proponent at the request of SEWPaC. The common mist frogs reported in this survey was confirmed as infected by Chytrid fungus.

Habitat suitable for the *Nyctimystes dayi* (Australian Lacelid) is also present within the Ella Bay development site and along the access road, although the species was not observed during surveys.

Suitable habitat for the stream-dwelling frogs is confined to the southern section of the major north-south creekline on the southern boundary and the south-western corner of the property where riffle zones are present. The habitat is primarily located upstream and away from the proposed development area, and with appropriate controls, as set out in the stream-dwelling rainforest frog species management sub-plan, will not be affected by construction or operation activities.

The common mist frog and the Australian Lacelid were acknowledged in the *Stream-dwelling Rainforest Frogs of the Wet Tropics Biogeographic Region of the North-east Queensland Recovery Plan 2000-2004*.¹⁰

Spectacled flying-fox

The EIS fauna report indicated that the spectacled flying-fox is the only Australian mainland flying-fox species that is specialised to rainforest and they are a major dispersal agent of rainforest seeds. Hundreds to tens of thousands of the flying-foxes can roost at a camp and they can move up to 20 kilometres from camps in search of fruit and disperse seeds.

During the EIS field surveys several individual spectacled flying-foxes were observed feeding in a large fruiting *Szygium* near the entrance to Little Cove (adjacent to the

¹⁰ Queensland Parks and Wildlife Service, *Stream-dwelling rainforest frogs of the wet tropics Biogeographic Region of the North-east Queensland Recovery Plan 2000-2004*, Queensland Parks and Wildlife Service, Brisbane, 2000.

southern boundary of Ella Bay) and one individual was seen within the Ella Bay site. Individuals were also observed feeding in trees at Flying Fish Point (approximately five kilometres south of Ella Bay). A large permanent camp of spectacled flying-foxes was observed in a melaleuca wetland in Innisfail, approximately seven kilometres south of Ella Bay. No camps were recorded from the study area.

There is no specific recovery plan for the spectacled flying-fox, although the species is included in the publication *The Action Plan for Australian Bats*.¹¹

Large-eared horseshoe bat and Semon's leaf-nosed bat

Both species of bat are listed as endangered under the NC and EPBC Acts. Although neither species were identified during the 2006 and 2008 fauna surveys and had no database record for the region, they were identified as likely to occur in the project area due to suitable habitat conditions.

Northern quoll

The northern quoll is listed as endangered under the EPBC Act and near threatened under the NC Act. Quolls were not identified during the 2006 and 2008 surveys and had no database record for the region, however they are identified as 'likely to occur' in the project area due to suitable habitat conditions.

Marine mammals

No marine mammals were identified by survey but are likely to frequent the Reef Lagoon area adjacent to the Ella Bay site. The EPBC Act protected matters report tool identified seven marine migratory mammal species which have the potential to occur in marine waters adjacent to the Ella Bay site including *Dugong dugon* (Dugong); *Sousa chinensis* (Indo-Pacific Humpback Dolphin) and *Megaptera novaeangliae* (Humpback Whale).

Terrestrial reptiles

Surveys conducted in 2008 identified two *Eulamprus tigrinus* (yellow-blotched forest skink) which is listed as near threatened under the NC Act.

Marine turtles

As noted above no marine turtles were reported during the EIS surveys. However, turtle nesting near the Ella Bay beach was recorded by Constable in 2008/2009.

The failure to locate marine turtles during the EIS surveys is not unexpected as the beach in the vicinity of the Ella Bay site is limited in suitability for turtle nesting as it is steeply sloping with dense foreshore vegetation and limited low dunes suitable for nesting. The low dunes are subject to overtopping in extreme weather from wave run-up that may inundate nests. Dune vegetation includes several exotic weeds (for example, *Sphagneticola trilobata* (Singapore daisy)), which can discourage turtle nesting. The foreshore adjoining the site, and to the north appears to be regularly affected by coastal process. Erosion scarps are indicative of widespread loss of the

¹¹ Commonwealth of Australia 1999, *The Action Plan for Australian Bats*, Environment Australia, Canberra, 1999.

upper beach and fore dunes; elsewhere, sand has recently been deposited around the base of fore dune trees (Thorogood 2009).

The high levels of predation associated with mainland sites (feral pigs and dogs), is also likely to contribute to a lower level of hatching success for nests along the Ella Bay coast, when compared to offshore rookeries.

DEHP has advised that the presence of turtles in Ella Bay area is not unexpected, but agree with Thorogood that the beach in the vicinity of the proposed development should not be identified as a turtle rookery with significant concentrations of turtle nesting activity.

The *Recovery Plan for Marine Turtles in Australia* has been developed to reduce detrimental impacts on Australian populations of marine turtles and hence promote their recovery in the wild.¹²

The six marine turtle species identified in the Thorogood report are all conservationally significant under the NC and EPBC Acts and listed as migratory under the EPBC Act. Although no turtles were identified in the surveys, the EPBC Act protected matters report indicated that all of the six species listed in Table 5.2 may occur in the coastal inshore waters of Ella Bay.

Crocodiles

Surveys identified one individual *Crocodylus porosus* (estuarine crocodile) 20 metres offshore at the southern part of the Ella Bay site and evidence of this species along the bank of the lagoon on the north-eastern side of the site. This species is listed as vulnerable under the NC Act and identified as a migratory species that may occur in the project area in the EPBC Act protected matters report.

Freshwater fish

Nine freshwater fish species were recorded during the 2006 and 2008 surveys. Two species were common throughout the study area on both surveys:

- *Kuhlia rupestris* (jungle perch)
- *Hyseleoteris compressa* (empire gudgeon).

All other species were recorded in one or two sites only and include:

- *Anguilla reinhardti* (marbled eel)
- *Cairnsichthys rhombosomoides* (Cairns rainbowfish)
- *Melanotaenia maccullochi* (McCulloch's rainbowfish)
- *Melanotaenia splendida splendida* (eastern rainbowfish)
- *Pseudomugil signifier* (Pacific blue-eye)
- *Leiopotherapan unicolour* (spangled perch)
- *Bunaka gyrinoides* (greenback gauvinia).

None of these species are listed under Commonwealth or State legislation, however the Cairns rainbowfish is listed on the International Union for the Conservation of

¹² Commonwealth of Australia, *Recovery Plan for Marine Turtles in Australia*, Environment Australia, Canberra, 2003.

Nature (IUCN) Red List (2006 Red List of Threatened Species) as vulnerable because of its restricted distribution and uncommon occurrence.

Marine fish

No marine fish species were identified in the 2006 and 2008 fauna surveys. The EPBC Act protected matters report identified one migratory species of marine fish *Rhincodon typus* (whale shark) that may occur within the coastal waters adjacent to the Ella Bay site.

Introduced fauna

A total of five introduced species were identified over both surveys including the *Bufo marinus* (cane toad), *Hemidactylus frenatus* (house gecko), *Acridotheres tristis* (common myna), *Oryctolagus cuniculus* (rabbit) and *Sus scrofa* (pig).

Rabbit and pig are recognised as Class 2 pests, under the *Land Protection (Pest and Stock Route Management) Act 2002* which are defined as being established in Queensland and have, or could have a substantial adverse economic, environmental or social impact.

5.3.2. Flora

Terrestrial flora

Vegetation and flora species are addressed in the EIS (section 4.7.1.1 Volume 4 and Report A6.1 Volume 8), SEIS (section 1.2 Volume 1) and the additional information document (SEIS Submission Response dated June 2012) (Reports 6.2a-g Volume 6).

An online search of the EPBC database indicated that 14 threatened plant species, or habitats for these plants, are likely to occur within the locality of the subject site. A search of the DEHP Queensland Herbariums HERBRECS database and the Wildlife Online Database reveals 22 species listed in the NC Regulation that are likely to occur within the locality. These species are listed in Table 5.4.

Table 5.4 Plant species in the Ella Bay area

Species common name	NC Act listing status	EPBC Act listing status	Likelihood of occurrence
<i>Aphyllorchis queenslandica</i>	Near threatened		Likely
<i>Aponogen bullosus</i>	Endangered	Endangered	Unlikely
<i>Aponogen proliferus</i>	Endangered	Endangered	Possible
<i>Arenga australasica</i> Australian Arenga Palm		Vulnerable	Likely
<i>Canarium acutifolium</i> var. <i>acutifolium</i>		Vulnerable	Likely
<i>Carronia pedicellata</i>		Endangered	Likely
<i>Dendrobium mirbelianum</i> Dendrobium Orchid	Endangered	Endangered	Likely
<i>Dendrobium superbiens</i> Dendrobium Orchid		Vulnerable	Likely

Species common name	NC Act listing status	EPBC Act listing status	Likelihood of occurrence
<i>Dioclea hexandra</i>	Vulnerable		Likely
<i>Eleocharis retrofleca</i>	Vulnerable	Vulnerable	Unlikely
<i>Elaeocarpus stellaris</i>	Near threatened		Possible
<i>Endiandra globosa</i> Ball-fruited Walnut	Near threatened		Identified
<i>Fimbristylis adjuncta</i>	Endangered	Endangered	Possible
<i>Garnotia stricta var. longiseta</i>	Near threatened		Possible
<i>Hodgkinsonia frutescens</i> Atherton Turkey Bush		Vulnerable	Likely
<i>Hupzeria phlegmatioides</i> Layered Tassel-fern	Vulnerable	Vulnerable	Likely
<i>Hupzeria prolifera</i> Square Tassel-fern	Near threatened	Vulnerable	Likely
<i>Icnanthus pallens var major</i>	Near threatened		Identified by survey
<i>Ilex sp.</i> (Gadgarra B.P. Hyland RFK2011)	Near threatened		Possible
<i>Microsorium membranifolium</i>	Near threatened		Possible
<i>Nepenthes mirabilis</i> Pitcher Plant	Endangered		Unlikely
<i>Phaius tancarvilleae</i>		Endangered	Possible
<i>Piper mestonii</i>	Near threatened		Likely
<i>Polyscias bellendkerensis</i>	Vulnerable	Vulnerable	Likely
<i>Pseuduvaria villosa</i>	Near threatened		Possible
<i>Rourea brachyandra</i>	Near threatened		Identified by survey
<i>Taeniophyllum muelleri</i> Minute Orchid, Ribbon-root Orchid		Vulnerable	Likely

Flora surveys on the Ella Bay site were undertaken in 2006 and 2007, 2008, and 2009. The 2006 studies were reported in the EIS whereas the subsequent surveys and reports are contained in Report 6.2 Volume 6 of the additional information document (SEIS Submission Response dated June 2012). A baseline survey was also undertaken in October 2008 to establish pre-development monitoring. The 2007 vegetation survey also included a detailed survey of the road alignment.

The 2008 flora investigation recorded three plant species considered significant under the NC Act. *Endiandra globosa* (Ball-fruited Walnut), *Icnanthus pallens var. major* and *Rourea brachyandra* (Water vine) are all listed as near threatened under the NC Act.

The 2008 flora investigation states that no species scheduled as significant under the EPBC Act were identified during the survey although several species are identified as likely to occur within the project area (refer Table 5.4). While vegetation surveys in

2006 and 2008 failed to locate any individuals of these species, despite targeted searching, their presence cannot be discounted.

Descriptions of the endangered species are reported in Volume 8 Appendices A6.1 and A6.7 of the EIS and Report 3.6 Volume 3 and Report 6.2a Volume 6 of the additional information document (SEIS Submission Response dated June 2012). None of the listed flora species present on site are the subject of any current species recovery plan.

Terrestrial ecological communities

Across all project components, the 2008 survey identified 18 Queensland regional ecosystems (REs) with one of these being listed under the VMA as endangered, thirteen as of concern and four as least concern (previously referred to as not of concern). These REs are listed in Table 5.5.

Table 5.5 Regional ecosystems in the project area

Regional ecosystem	Description	Vegetation Management Status (VMA)	Component vegetation communities	Location identified by survey
Land Zone 1—Estuarine Muds				
7.1.1	Mangrove low closed forest to open shrubland	Least Concern	E22a	Southern access corridor and beach
Land Zone 2—Sand Dunes and Dune Swales				
7.2.1i 7.2.1.d 7.2.1	Mesophyll vine forest. Beach ridges and sand plains of beach origin, mainly in small patches in the lee of coastal beach ridges in very high rainfall areas.	Endangered	D2b	Ella Bay development site Southern access corridor and beach
7.2.4	<i>Eucalyptus</i> spp. (often <i>E.pellita</i> (Red Stringybark) or <i>Corymbia intermedia</i> (pink bloodwood)) open forest on swampy sandplains of beach origin, and Pleistocene beach ridges.	Of-concern	D91	Ella Bay development site
7.2.5	Mesophyll to notophyll vine forest of <i>Syzygium forte</i> subsp. <i>forte</i> (white apple) on sands of beach origin.	Of-concern	D75x	Ella Bay development site Southern access corridor and beach
7.2.7a	Coastal foredune complex with <i>Casuarina equisetifolia</i> .	Of-concern	D44	Ella Bay development site Southern access corridor and beach

Regional ecosystem	Description	Vegetation Management Status (VMA)	Component vegetation communities	Location identified by survey
7.2.8	<i>Melaleuca leucadendra</i> (weeping tea tree) open forest to woodland. Sands of beach origin.	Of-concern	DS38	Ella Bay development site Southern access corridor and beach
7.2.9	<i>Melaleuca quinquenervia</i> (swamp paperbark) shrubland to closed forest, or <i>Lepironia articulata</i> (grey sedge) open to closed sedgeland. Dune swales and swampy sandplains of beach origin.	Of-concern	DS33	Ella Bay development site
Land Zone 3—Alluvial Plains, Riverine Flood Plains, Drainage depression and Swamps				
7.3.3a	Mesophyll vine forest with <i>Archontophoenix alexandrae</i> (feather palm).	Of-concern	A3a	Ella Bay development site Southern access corridor and beach
7.3.10a	Simple to complex mesophyll to notophyll vine forest on moderate to poorly drained alluvial plains of moderate fertility.	Of concern	A2a	Ella Bay development site Southern access corridor and beach
7.3.10c	Mesophyll vine forest with scattered <i>Archontophoenix alexandrae</i> (feather palm) in the sub-canopy. Seasonally inundated lowland alluvial plains.	Of-concern	A72x	Ella Bay development site
7.3.25a	<i>Melaleuca leucadendra</i> open forest and woodland. Stream levees and prior streams on well-drained sandy loam alluvial soils.	Of-concern	A38	Ella Bay development site Southern access corridor and beach

Land Zone 11—Metamorphic Rocks				
7.11.1	Simple-complex mesophyll to notophyll vine forest on moderately to poorly drained metamorphics (excluding amphibolites) of moderate fertility of the moist and wet lowlands and foothills.	Least Concern	M2a	Ella Bay development site Southern access corridor and beach
7.11.1a	Mesophyll vine forest. Very wet and wet lowlands and foothills.	Least Concern	M2a(a)	Ella Bay development site Southern access corridor and beach
7.11.1b	Mesophyll vine forest recovering from disturbance, with <i>Acacia</i> canopy emergents. Very wet and wet lowlands and foothills.	Least Concern	M12a	Ella Bay development site
7.11.8b	<i>Acacia mangium</i> and <i>A. celsa</i> open to closed forest. Very wet and wet lowlands and foothills.	Of-concern	M12c	Ella Bay development site
7.11.24a	Closed vineland of wind disturbed vine forest.	Of-concern	M12ax(w)	Ella Bay development site
7.11.26	Rock pavement.	Of-concern	M21	Southern access corridor and beach
7.11.34a	Complex of shrubland, low heathy or shrubby woodlands or open forests dominated by <i>Corybia tessellaris</i> and <i>Lophostemon suaveolens</i> .	Of-concern	M91v	Southern access corridor and beach

The EPBC critically endangered ecological community—Littoral Rainforest and Coastal Vine Thickets of Eastern Australia (littoral rainforest) was identified in areas marginal to the development site and adjacent to the proposed access corridor. Littoral rainforest is represented by RE 7.2.1a-I and 7.2.5a on Ella Bay property and along Ella Bay Road.

RE 7.2.1 is described as mesophyll vine forest on beach ridges and sand plains of beach origin, occurring mainly in small patches in the lee of coastal beach ridges in very high rainfall areas. RE 7.2.5 is described as mesophyll to notophyll vine forest of *Syzygium forte* subsp. *forte* on sands of beach origin.

Within the Ella Bay site the littoral rainforest communities RE 7.2.1 and 7.2.1i occur on the northern boundary adjacent to the golf course to the north of the Northern

Environmental impacts

Ella Bay Integrated Resort:

Coordinator-General's report on the environmental impact statement

Residential Precinct refer to Figure 4:11 (Volume 6.2a *Vegetation Survey Report*). Refer red-striped areas in Figure 5.4 below. Unlike most of the other vegetation on the site the canopy features of this community are relatively intact. The site has some previous agriculture based edge effect, logging tracks, and minor clearing. The area has small pockets of the noxious weed *Annona glabra* (pond apple).

RE 7.2.5 occurs on the foredune in front of the Village Precinct predominately on the Esplanade with only a thin strip of less than 50 metres wide on the Ella Bay property. Refer solid red area in Figure 5.6 below. The rehabilitation of this area will require extensive weed management and revegetation.

The management and conservation of the littoral rainforest sites are addressed in Section 5.3.4 (Habitat protection strategies sub-section) of this report.



Figure 5.6 Conservation status of vegetation communities and clearing

Marine flora

The vegetation survey undertaken for the EIS indicated that species that are considered to be marine plants protected under the *Fisheries Act 1994* are present within the wetlands on and behind the frontal dunes. *Hibiscus tiliacius* and mangroves are interspersed with other terrestrial flora (dominated by Coastal She-oak (*Casuarina equisetifolia*)) in this area. However, a detailed flora survey, particularly of the proposed disturbance paths for beach access, has not been undertaken.

The Conceptual Surface Water and Groundwater Hydrology Models (Volume 4 Appendix A.2.1 of the EIS) indicate that the site is a freshwater system, with only occasional 'outbreaks' of the interdunal wetland to Ella Bay during extended wet periods. Therefore, the vegetation on site reflects a predominantly freshwater environment.

5.3.3. Potential impacts on terrestrial ecology

The Ella Bay development and access road has the potential to have direct and indirect short-term and long-term impacts on threatened species and communities. Short-term impacts would be those that occur during the construction and initial operation of the project. Longer-term impacts would occur on an ongoing basis during the operation of the development. Mitigation measures proposed by the proponent and conditions specified in this report would ensure the avoidance or minimisation of potential impacts.

The EIS indicated that the potential short-term risks of the project may include:

- injury and/or death of flora and fauna during vegetation clearing required for the development
- potential disturbance to flora and fauna from activities required for the construction of roads, buildings and other infrastructure including dust, noise and vibration, lighting, root damage to plants
- potential traffic related wildlife injury or deaths on the access road and roads within the project area
- potential introduction and/or spread of weeds and pests into cleared and disturbed areas
- hydrological and water quality impacts on creeks, wetlands, surface water run-off, groundwater and the marine waters.

The EIS indicated that the potential long-term risks of the project may include:

- loss of remnant and regrowth vegetation and habitat and a result of vegetation clearing and edge-related effects of development
- potential spread of weeds and pests into cleared and disturbed areas
- fragmentation of the landscape affecting flora connectivity and fauna movement
- hydrological and water quality impacts on creeks, wetlands, surface water run-off, groundwater and the marine waters
- potential traffic-related wildlife injury or deaths on roads within or around the project area
- noise and lighting impacts on fauna.

A summary of likely impacts on endangered species are included in the sections immediately below.

Proposed mitigation measures for the Ella Bay development are addressed in sections 5.3.4 and 5.3.6 of this report.

Terrestrial fauna

Southern cassowary

Habitat loss

Construction of the Ella Bay development will lead to a loss of 5.89 hectares of existing cassowary habitat. This includes clearing and isolation of habitat of 2.02 hectares within the Ella Bay property and 3.87 hectares of vegetation loss along the access road (refer Table 5.6). I note that there is a potential risk that an additional 17.5 hectares of cassowary habitat could be isolated should the proposed cassowary underpass along the access road not operate successfully.

Table 5.6 Cassowary habitat clearing and isolation

	WTQWHA of concern	WTQWHA essential cassowary habitat	Essential cassowary habitat	General cassowary habitat	Of concern RE	Total area
Clearing						
Ella Bay access road	0.33 ha	0.33 ha	1.80 ha		0.34 ha	2.80 ha
Ella Bay development			0.70 ha		0.25 ha	0.95 ha
Total clearing	0.33 ha	0.33 ha	2.50 ha		0.59 ha	3.75 ha
Isolation						
Ella Bay access road	0.02 ha		1.05 ha			1.07 ha
Ella Bay development				1.07 ha		1.07 ha
Total isolation	0.02 ha		1.05 ha	1.07 ha		2.14 ha
Total clearing/isolation	0.35 ha	0.33 ha	3.55 ha	1.07 ha	0.59 ha	5.89 ha

The total revegetation and rehabilitation area on site will be greater than 110 hectares, therefore a net gain of over 104 hectares of habitat is provided. The proposed revegetation provides an opportunity to subtly change the foraging habits of the cassowaries with the focus of encouraging cassowaries away from the dunal swale and resort areas.

Habitat degradation

Activities relating to the Ella Bay development that have the potential to degrade cassowary habitat include:

- trespass creating edge effect of construction workers and equipment; residents and visitors
- noise and dust disturbance may cause the birds to withdraw from adjacent forest
- weeds, exotic plants and pathogens may be introduced into adjoining cassowary habitat
- nutrient runoff and water quality contamination may degrade adjoining cassowary habitat and water supply
- encroachment, dumping and littering by residents and guests
- disturbance from increased human activity, noise levels and night lighting along streets and in residences.

The major threats to potential habitat degradation along Ella Bay Road are:

- disturbance from increased traffic noise and light
- pollutants from road runoff
- the introduction of weeds along the road from the disturbance caused by roadworks.

Construction activities at the Ella Bay property and along Ella Bay Road have the potential to impact cassowary habitat connectivity or create barriers to traditional movement corridors.

There will be increased traffic flows within the Ella Bay site and along the Ella Bay access road during the construction and operation of the development. This may mean cassowaries accessing the road corridor; being isolated in the road corridor and increased risk of road death to cassowaries occupying adjacent or nearby habitat.

Greater traffic numbers will also increase the noise and light into the rainforest.

The increased level of human activity at the Ella Bay site and along the access road during the construction and operation of the development increases the risk of negative human interactions with the cassowary. Inappropriate litter disposal can attract cassowaries to the site and there is the risk of habituation due to feeding.

The daily operation of the resort will experience the presence of domestic animals whether from inadvertent accompaniment, stray or dumped animals and feral predators. To manage potential interaction:

- no cats or dogs, apart from guide and assistance dogs, will be permitted within the development
- any domestic cats and dogs found within Ella Bay development will be removed by body corporate staff
- wild or feral dogs and cats will be actively controlled with the feral pig control program.

Feral pigs are classed as a pest in the WTQWHA and are primarily responsible for habitat degradation. Pigs are also thought to contribute to egg predation on the cassowaries and turtles. The proponent has instigated a feral pig trapping and baiting program and over 100 pigs have been culled to date.

The additional information document (SEIS Submission Response dated June 2012) (Report 6.1m Volume 6) suggests that the major threat to cassowaries at the Ella Bay

site is not from the pigs but from the indiscriminate killing by hunting pig dogs. The Wet Tropics is a popular area for pig dog hunting and the locals have developed a culture of pigging and organise special events to capture pigs.

Pig hunting will not be allowed on the development and the proponent will develop and implement a pest management sub-plan to remove pigs and other feral animals from the site.

Cyclone events are one of the major impacts on the survival of the cassowary. Cassowaries have proven to be extremely vulnerable to disruption to the fruit cycle following the destruction of a significant cyclone.

The possibility of avian diseases in cassowaries is serious given worldwide evidence that wildlife diseases pose a growing threat in conservation biology. It may become a management issue particularly for local populations under stress. Known diseases include internal parasites (particularly ascarids), *aspergillosis*, *Aspergillus fumigatus*, and avian tuberculosis (TB), *Mycobacterium avium*.

The *Recovery Plan for the Southern Cassowary* identifies the major factors contributing to the decline of the cassowary as habitat loss, fragmentation and modification, traffic accidents, visitor impacts, dogs, competition and nest predation by pigs, catastrophic events and disease.

The specific objectives of the recovery plan are to:

- protect essential cassowary habitat and landscape corridors
- institute a more coordinated and stronger planning response to development issues in cassowary habitat
- implement strategies to protect cassowary populations by minimising the adverse impacts of roads, dogs, pigs and cyclone events
- develop an effective cassowary rescue, rehabilitation and release programme
- cassowary populations are monitored to assess population size, trends and status
- improve understanding of cassowary ecology and threats to its survival
- engage the community in cassowary conservation and education.

The proponent, in consultation with cassowary experts Professor Les Moore, Peter Buosi and Terrain (consultants), has developed a southern cassowary management sub-plan (one of a suite of sub-plans which makes up the EMP for the development)—refer Report 3.2 Volume 3 of the additional information document (SEIS Submission Response dated June 2012), purposely in concordance with the recovery plan, that takes an integrated, holistic approach to mitigate key risk areas identified for cassowary. The aim of the sub-plan is to:

- protect and enhance cassowary habitat within the Ella Bay site
- protect the cassowary from feral pests and domestic animals
- minimise the impact of increased traffic on the cassowary population
- protect the cassowary from the impacts of a cyclone
- minimise the impacts of human disturbance and interaction.

The proponent contends that the Ella Bay development (including mitigation strategies and offsets) will:

- be a catalyst in saving the cassowary from possible extinction
- make Ella Bay a safe environment for the cassowary and for people at all times
- help slow the rate of decline of the cassowary and ultimately reverse it.

The proponent has also produced a Fauna Sensitive Road Design Report (Section 8 Volume 4 of the additional information document (SEIS Submission Response dated June 2012) which provides detail of the specific mitigation measures to protect fauna potentially impacted by the access road and the internal roads.

A summary of mitigation measures are included in sections 5.3.4 and 5.3.6 of this report.

Shorebirds and migratory birds

The EIS has identified potential threats to shore birds relevant to the construction and operation of the Ella Bay development including:

- construction dust and noise
- habitat loss
- feral pests
- domestic animals
- increased human activity/interference
- disturbance by artificial lighting.

I concur with the conclusions of the EIS that the level of threat of the development to shorebirds is expected to be minimal. I note the proponent has committed to a number of strategies to minimise any impacts including:

- developing and implementing a beach stone-curlew management sub-plan (a component of the overall EMP for the development) to protect the shorebirds that visit the Ella Bay shoreline
- developing and implementing a pest management sub-plan to provide greater protection for bird species
- prohibiting of domestic cats and dogs, apart from guide and assistance dogs, in the Ella Bay development body corporate laws.

A summary of mitigation measures are included in sections 5.3.4 and 5.3.6 of this report.

Stream-dwelling frogs

The EIS has identified potential threats to stream-dwelling frogs from construction and operation activities of the Ella Bay development and access road upgrade including:

- loss of habitat near the access road (alteration of streamside vegetation)
- increased risk of road kill near Ella Bay Road creek crossings due to increased traffic
- degradation of water quality through sediment, erosion or contamination

- inappropriate weed control measures in riparian areas
- increased chance of further spread of pathogens such as Chytrid Fungus (refer below).

The EIS concludes that there will be no increase in threats to the long-term existence of the common mist frog and the Australian lacelid populations resulting from the proposed development. On site, the conservation covenants proposed for the development (refer Section 5.3.4 of this report) will encompass the riparian areas which will be revegetated and rehabilitated while the establishment of constructed wetlands and swales for stormwater management (refer section 5.2.6 of this report) will have the potential to increase the available habitat and resilience of these species. I agree with the EIS's conclusion that the proposed activities at the Ella Bay development site or the access road upgrade construction and operation will not interfere with the recovery process, with mitigation measures contributing to a net positive impact.

Management practices to mitigate the impact of the Ella Bay development on stream-dwelling frogs are addressed in the stream-dwelling rainforest frog species management sub-plan (Report 3.3 Volume 3 of the additional information document (SEIS Submission Response dated June 2012)). A frog monitoring program has been included in the sub-plan which will determine the ongoing status of the species on-site. Frog fencing is also proposed on the access road 25 metres either side of three of the bridges and four of the culverts.

A summary of mitigation measures are included in sections 5.3.4 and 5.3.6 of this report.

Chytrid Fungus

Chytrid Fungus has been linked with dramatic frog population declines and extinctions, particularly in high-altitude rainforest areas, and is listed as a key threatening process under the EPBC Act. It appears to have been introduced into south-eastern Queensland in the 1970s. It rapidly dispersed up the east coast most likely by natural means, since it reached many remote sites in the Wet Tropics more or less simultaneously. It caused declines and disappearances of populations of eight species in the Wet Tropics at all sites above 400 metres elevation. However, intensive monitoring has never been shown to cause declines or disappearances at sites below 400 metres, despite being endemic at all such sites in the Wet Tropics that have been adequately sampled.

A survey conducted by James Cook University for the Ella Bay EIS process confirmed the presence of Chytrid Fungus on the Ella Bay site. It also occurs at multiple sites within 20 kilometres of the Ella Bay site. As a precautionary measure, the proponent has committed to the adherence to an amphibian hygiene protocol for the manual handling of frogs to ensure that activities associated with the Ella Bay development do not contribute to the spread of the pathogen. The stream-dwelling rainforest frog species management sub-plan includes procedures on handling and hygiene protocol of frogs.

Spectacled flying-fox

The EIS indicated that the main threat to the spectacled flying-fox throughout Australia is habitat clearing (including fragmentation and modification) to facilitate agriculture and silviculture. While this has slowed, it still poses a threat. In addition, large numbers have been lost through crop protection activities such as shooting, electrocution and roost harassment around orchards; pathogens including diseases and tick infestation; and collision with human infrastructure such as fences and powerlines.

Ixodes holocyclus (paralysis tick) kills hundreds of spectacled flying-foxes on the Atherton Tablelands each year. It is only on the high altitude, above 700 metres, where ticks become a problem.

The Australian bat *Lyssavirus*, a new virus (related to rabies virus) was discovered in Australian bats in 1996. It has been detected from four species of fruit bat including the spectacled flying-fox.

While the Ella Bay site is not critical for spectacled flying-foxes, a number of the potential impacts relevant to the development area from the construction and operation of the Ella Bay Integrated Resort and access road have been addressed in spectacled flying-fox management sub-plan (Report 3.4 Volume 3 of the additional information document (SEIS Submission Response dated June 2012)). The potential impacts include:

- loss of habitat including food resources
- increased human activity
- construction dust and noise
- disturbance of camps (if identified on-site)
- spread of pathogens (for example, *Lyssavirus*)
- spread of weeds
- increased lighting
- mortality due to fencing or power lines.

The proponent has prepared the spectacled flying-fox management sub-plan to assist in the implementation of appropriate environmental management measures to protect any spectacled flying-foxes during planning, construction and operation of the Ella Bay development. Significant consideration was given to ensure that their habitat is not detrimentally altered as a result of this process.

I note the sub-plan includes strategies for the retention and enhancement of all spectacled flying-fox habitat within the Ella Bay site, the preservation and persistence of the surrounding populations, ensuring that individuals of this bat species are not harmed during the clearing and construction process; and to ensure the long-term future of spectacled flying-fox within the local area by protecting their habitat from any detrimental processes as a result of the construction and operation of the Ella Bay development.

A summary of mitigation measures are included in sections 5.3.4 and 5.3.6 of this report.

Terrestrial flora

As noted above, targeted surveys in the development between 2006 and 2008 located four plant species considered significant under the NC Act. As there is only minor clearing required for the development and vegetated areas will be protected by conservation covenant, no unacceptable impact is expected on these species.

However, in the significant flora management sub-plan in Volume 3 of the additional information document (SEIS Submission Response dated June 2012), I note that the proponent has committed to several vegetation mitigation strategies that will provide appropriate protection for these species, if located during clearing works, for example, a suitably qualified botanist will accompany surveyors marking the currently unformed sections of the access road and any tracks, roads or buildings on the Ella Bay site to check for the presence of listed species.

Listed species relative to the region will be incorporated into the revegetation planting schedule providing they are able to be grown from local seed.

Clearing native vegetation

Throughout the EIS process the proponent has continued to review and revise the master plan and the development and access road footprint to ensure the least possible impact on the local environment. The development and access road footprint have been reconfigured to avoid threatened REs from its boundaries, increase the width of fauna corridors and increase buffers to tidal lands, wetlands and waterways. I have stated a condition in this report to reflect this requirement (Appendix 1, Condition 2).

Vegetation investigations indicate that approximately 3.75 hectares of vegetation would need to be disturbed for the development, approximately 0.95 hectares within the development site and approximately 2.80 hectares for the access road. Table 5.7 and Table 5.8 list the REs to be cleared for the development and the access road. No REs listed as 'endangered' need to be removed. It should be noted that the amount of vegetation to be cleared for the access road may be less if a narrower road option, as recommended, is approved by CCRC. A table displaying the proposed vegetation clearing and offsets requirements is included in Appendix 6.

Table 5.7 Regional ecosystems to be cleared on site (approximate)

RE description	Clearing area
Clearing Non-remnant	0.10 ha
Clearing Not of Concern	
7.3.10a	0.22 ha
7.11.1a	0.38 ha
Clearing of-concern	
7.11.8b	0.25 ha
Total clearing	0.95 ha

Table 5.8 Regional ecosystems to be cleared for access road

Stage 1							
	Ella Bay NP/WHA	State Land	Esplanade	EBR Road Reserve	Alice St Road Reserve	Ella Bay	Totals
7.2.5			0				0
7.3.10a				0.16			0.16
7.11.1	0.32			0.03			0.35
7.11.1a			0.12				0.12
7.11.8.b			0.26			0.08	0.34
7.11.34a	0.33		0.1				0.43
non remnant				0.03			0.03
Little Cove						0.61	0.61
Total Clearing	0.65	0	0.48	0.19	0		1.32

Stage 2							
	Ella Bay NP/WHA	State Land	Esplanade	EBR Road Reserve	Alice St Road Reserve	Ella Bay	Totals
7.3.10a	0.003	0.01					0.01
7.11.1		0.95			0.52		1.47
non remnant		0.03					0.03
Total Clearing	0.00	0.96			0.52		1.48

 These numbers not included in clearing quantities for Offset.

To mitigate the loss of the REs the proponent is required to secure an environmental offset that addresses the requirements of the Queensland Government. This matter is discussed under Section 5.3.4 (Offsets strategy sub-section) below.

The specific amount of vegetation to be removed will be finalised prior to seeking vegetation clearing approval from DNRM. The proponent has committed to avoid and minimise environmental impacts of the Ella Bay development by ensuring the smallest development footprint as possible.

Terrestrial ecological communities

The proponent has configured the development and access road footprint to avoid threatened REs from its boundaries. However, there is a risk to the littoral rainforest communities from human interference particularly the communities on the foredune in front of the Village Precinct predominantly on the gazetted esplanade.

The rehabilitation of this area will require extensive weed management and revegetation. The proponent proposes to have a nature path within this area of vegetation to highlight the ecological rehabilitation through removal of the pond apple, the revegetation of the area and the ecology of the dunal swale. The nature walk will be non-invasive and no clearing or significant pruning required. The path is expected to weave through areas currently infested with the pond apple. Each of the pathways will be signposted restricting access to the pathways only.

The property boundary will also be fenced by the precinct fence in this area and access to the beach will be by two pathways.

5.3.4. Mitigation measures—terrestrial ecology

The revised master plan for the Ella Bay development, included in the additional information document (SEIS Submission Response dated June 2012), incorporates a number of design elements that are intended to negate or minimise potential impacts of the project including:

- avoid clearing of endangered REs and no clearing of littoral rainforest communities
- no development in vegetated habitat known to support significant fauna species
- incorporating vegetated corridors within the development site to allow flora and fauna dispersal across the site
- maintenance of riparian corridors adjacent to ephemeral creeks
- incorporation of formal road crossing infrastructure at key fauna corridor locations
- revegetating and rehabilitating vegetation across the development to increase landscape permeability for flora and fauna
- no disturbance to tidal habitats.

I consider these design elements to be essential for the development.

Terrestrial fauna, flora and communities

In Volumes 3, 4, 5 and 6 of the additional Information document (SEIS Submission Response dated June 2012), the proponent has proposed a suite of management strategies to mitigate and /or offset potential construction and operational impacts on terrestrial, fauna, flora and communities. These are summarised in the subsections below. For more specific management activities relating to the species discussed above refer to the following sections of the additional information document (SEIS Submission Response dated June 2012):

- Southern cassowary
 - Report 3.2 Volume 3—southern cassowary management sub-plan
 - Reports 6.1g-k, 6.1m and 6.2f Volume 6—cassowary fencing, gating and underpasses
 - Section 4.2 Volume 1—MNES
- Stream-dwelling frogs
 - Report 3.3 Volume 3—stream-dwelling rainforest frog species management sub-plan

- Section 4.3 Volume 1—MNES
- spectacled flying-fox
 - Report 3.4 Volume 4—spectacled flying-fox management sub-plan
 - Section 4.4 Volume 1—MNES
- Marine turtles
 - Report 3.5 Volume 3—marine turtle species management sub-plan
 - Section 4.5 Volume 1—MNES.

Habitat protection strategies

Strategies

As part of the EIS process, the proponent has committed to a number of strategies to protect important regional habitat. The strategies are included in various reports in the additional information document (SEIS Submission Response dated June 2012) including:

- significant flora management sub-plan (Report 3.6 Volume 3)
- vegetation management plan for the littoral rainforest (Report 6.2e Volume6)
- weed management sub-plan (Report 3.8 Volume 3)
- conservation zones at Ella Bay (Report 6.5f Volume 6)
- offsets package proposal (Volume 5)
- southern cassowary management sub-plan (Report 3.2 Volume 3)
- stream-dwelling rainforest frog species management sub-plan (Report 3.3. Volume 3).

The proponent's strategies include:

- securing regrowth (near remnant) vegetation within and outside the Ella Bay site which is representative of the REs to be cleared for, and essential habitat to be impacted by, the project. The offset properties have been purchased by the proponent
- purchasing strategic land parcels that have been identified as key linkages or habitats for cassowary (Note: offset properties already purchased)
- revegetation and rehabilitation of existing cleared areas of land within the Ella Bay site, with a view to reinstating pre-clearing vegetation types (including appropriate fruiting vegetation for the cassowary in the western and central areas) (refer Figure 5.7)
- seeking protection status for the revegetated and rehabilitated corridors and areas on site (refer below)
- undertaking various research projects relating to cassowary and cassowary habitat
- undertaking a weed removal and management program for the Ella Bay site, the offset land and the access road corridor
- implementing the marine turtle species management sub-plan and a beach stone-curlew management sub-plan (including a community education/awareness program) to manage the sensitive areas for turtles and shorebirds

- developing and implementing road management plans for construction and operation (including wildlife fencing and escape gating, fauna underpass and culverts, calming device and appropriate speed limits)
- prohibiting all dogs, apart from guide and assistance dogs, and cats from the resort and residential areas
- installing precinct fencing to limit human/cassowary interface and provide greater protection for wildlife (in particular the cassowary) and access to suitable habitat and water supply
- actively managing pest and feral animal eradication program within the Ella Bay development site with particular emphasis on the eradication of feral pigs
- education programs for residence, visitors and staff highlighting the importance of the Ella Bay terrestrial and marine environment (including littoral rainforest and cassowary).

I concur that all these strategies are an essential part of the development.



LEGEND

	REVEGETATION STAGE A
	REVEGETATION STAGE B
	REVEGETATION STAGE C
	REVEGETATION STAGE D
	REVEGETATION STAGE E
	REVEGETATION STAGE F
	WETLAND REVEGETATION

Figure 5.7 Proposed Ella Bay revegetation staging plan

Conservation zones

As part of the offset proposal (refer below) the proponent has purchased properties totalling 63.62 hectares located within a strategic regional habitat connectivity corridor; identified within the *Recovery Plan for the Southern Cassowary* as an area of key ecological function, broad movement corridors and appropriate rehabilitating habitat. The corridor is also identified as a priority corridor in the Wet Tropics Conservation Strategy (WTMA 2004) and was supported by research undertaken by Terrain NRM in 2008 as part of the proponent's offsets package. The land is contiguous with Eubenagee Swamp National Park on the south and western boundary and WTQWHA on the northern boundary). I note the proponent has committed to donate this land to National Park and to revegetate and manage, or provide funding for the revegetation and management of, the land for five years.

As noted in Section 5.1.3 of this report the proponent has proposed that the majority of the vegetated habitat within the Ella Bay property will be protected and managed by conservation management zones as noted in Table 5.9.

Table 5.9 Proposed Ella Bay conservation zones

Conservation zone	Purpose	Area (hectares)
Zone A	Transfer to National Park	62.8
Zone B	Nature conservation	67.8
Zone C	Fauna corridor	87.3
Zone D	Setback and easement	58.9
Total		276.6

The conservation zones are represented in Figure 5.3 of this report.

The proponent has established the zones according to the integrity, remoteness from disturbance, intended physical, social setting and management purpose of different parts of the area. The zone nomenclature follows the methodology used by the *Wet Tropics Management Authority Management Plan* (WTMA 2009).

Zone A

Zone A comprises 62.8 hectares of high integrity land which will be transferred and incorporated into Ella Bay National Park.

The primary purpose of Zone A is protection of endangered vegetation, essential cassowary habitat, and Ella Bay Swamp through transfer to National Park.

The 40.18 hectares (A.1 on Figure 5.3) in the northern area will:

- include the southernmost extent of the Nationally Significant Wetland; Ella Bay Swamp
- support and assist the *Recovery Plan for the Southern Cassowary* by conserving essential cassowary habitat
- protect EPBC critically endangered, VMA endangered and of-concern vegetation communities.

The 22.62 hectares (A.2) in the south western area will:

- widen the existing narrow World Heritage area linkage
- add a section of land to the Ella Bay National Park to provide a near contiguous linkage to the geographically isolated southern section of Ella Bay National Park
- support and assist the *Recovery Plan for the Southern Cassowary* by conserving essential cassowary habitat and protecting an important regional cassowary habitat corridor.

Zone B

Zone B comprises 67.8 hectares adjacent to and borders Zone A. Zone B will be registered as a conservation covenant under the *Land Title Act 1994*.

The primary purpose of Zone B is protection of endangered vegetation, essential cassowary habitat and as a buffer to Zone A land transferred to National Park.

The 55.8 hectares (B.1) in the northern area will:

- serve as a 300m (minimum) buffer to Zone A (A.1) in the North and to the Nationally Significant Wetland—Ella Bay Swamp
- support and assist the *Recovery Plan for the Southern Cassowary* by conserving essential cassowary habitat
- protect EPBC critically endangered, VMA endangered and of-concern vegetation communities.

The 12.0 hectares (B.2) in the south western area will:

- serve as a 100 metre buffer to Zone A (A.2) on the west
- support and assist the *Recovery Plan for the Southern Cassowary* by conserving essential cassowary habitat and protecting an important regional cassowary habitat corridor.

Zone C

Zone C consists of 87.3 hectares comprising 100 metre wide buffers and fauna corridors. Zone C will be registered as a conservation covenant under the *Land Title Act 1994*. Zone C is comprised of land on which, or adjacent to which, there is disturbance associated with community services infrastructure.

The primary purpose of Zone C is for rehabilitation and protection of vegetation, cassowary habitat and as a buffer to the National Park.

The Western boundary and Southern boundaries will:

- serve as a 100 metre (minimum) buffer to Ella Bay National Park
- be revegetated to support and assist the *Recovery Plan for the Southern Cassowary* by conserving essential cassowary habitat.

The East West and North South corridor will:

- serve as a 100 metre (minimum) riparian fauna corridor
- be revegetated and rehabilitated to support and assist the *Recovery Plan for the Southern Cassowary* by conserving essential cassowary habitat

- protect of-concern vegetation communities.

The Coastal corridor will:

- serve as a coastal fauna corridor
- be revegetated and rehabilitated to support and assist the *Recovery Plan for the Southern Cassowary* by conserving essential cassowary habitat
- protect EPBC endangered and of-concern vegetation communities.

Zone D

Zone D consists of 58.9 hectares of setbacks and easements and will be protected by body corporate bylaws and under the *Regional Vegetation Management Code for Coastal Bioregions*. The area will be defined by surveyed boundary.

Zone D is comprised of land on which, or adjacent to which, community services infrastructure will be located.

This area provides:

- a setback from the riparian border of identified watercourses on the site;
- a 50-metre setback in the north-east between vegetation (Zone B.1) and the resort
- a 20-metre easement through Zone C to connect the precincts across covenanted areas.

In relation to the proponent's proposed East West and North South corridor in Zone C (refer above) SEWPaC has advised that this corridor width will be required to be increased to 200 metres, in keeping with the Significant Impact Guidelines for the Endangered Southern Cassowary (*Casuarius casuarius johnsonii*) Wet Tropics Population (Commonwealth of Australia 2010), or as near as possible, where such an increase in width will not impact on the location and extent of currently planned building structures. A condition in this report provides for SEWPaC involvement in the final determination of the conservation zones with in the Ella Bay site (Appendix 1, Condition 3).

The proposed conservation zones, fauna corridors along with the proposed fauna underpasses will maintain unimpeded cassowary movement access around the Ella Bay site (post development).

I am satisfied with the proposed arrangements for the conservation areas with in the Ella Bay site.

Revegetation/rehabilitation

Revegetation of approximately 50 hectares will provide approximately 30 per cent more cassowary habitat within the Ella Bay site. Of this revegetation approximately 45 hectares will be high quality cassowary fruiting habitat and five hectares will be non-fruiting habitat which will become general habitat. Non-fruiting revegetation will be used to the east of the main north/south creek so that cassowaries will not be enticed to the resort areas.

Rehabilitation totalling 64 hectares will change weed infested non-remnant habitat of which approximately half is mapped currently as rehabilitating habitat, into essential or

general habitat. The additional information document (SEIS Submission response) states that the future habitat designation after completion of the development and maturity of the vegetation is expected to be:

- essential habitat—238 hectares
- general habitat—39 hectares.

I state a condition in this report to ensure the proponent's revegetation and rehabilitation strategies is considered by DEHP and appropriately addressed by the proponent (Appendix 1, Condition 28).

Availability of water supply

There is also expected to be an increase in the availability of permanent water for wildlife from the constructed wetlands to manage stormwater. The constructed wetlands will contain both ephemeral water and permanent water to sustain the vegetation mix necessary for nutrient removal. By nature of purpose the constructed wetlands will be located adjacent to the creeks and often within the fauna corridor. The provision of additional extensive permanent water will reduce the requirement for cassowaries to access the dunal swale.

Water quality

The proponent has made a number of commitments during the EIS process to negate or minimise potential water quality impacts on fauna in and around Ella Bay, particularly those species living in the creeks and streams (for example, freshwater fish and frogs) and those fauna using them as drinking sources (for example, cassowary). These commitments include development and implementation of:

- wastewater/recycle water treatment to tertiary class A+ standard with nutrient levels within levels approved by DEHP
- erosion and sediment controls
- water sensitive urban design
- water quality monitoring
- stormwater treatment
- Reef Water Quality Protection Plan objectives
- best practice golf course management.

These strategies are addressed in detail in Section 5.2.6 of this report.

Connectivity preservation strategies

The construction of the Ella Bay development and access road has the potential to reduce habitat connectivity of the area. The proponent has committed to a number of measures to reduce the impact of fragmentation of fauna communities.

Habitat connectivity on the site will be managed through conservation zone management noted in the Habitat management strategies sub-section above. Connectivity will be maintained within the on-site road network by use of fauna underpasses and culverts in key locations. I note the proponent has committed to develop and implement a road network and transport management sub-plan for Ella

Bay development as part of the EMP for the development. The plan will include on-site speed limits of 40 kilometres per hour, traffic calming and management for the fauna corridor road crossings.

On the access road the proponent proposes a number of fauna underpasses and a fauna over pass (Flying Fish Point bypass section) at known cassowary movement corridors. The road will also include a number of culverts to allow small macropods to travel under the road, thereby providing additional means of connectivity in the vicinity of the access road. The proponent also put forward a strategy to partially fence, and to provide one-way cassowary gates, on the access road to allow escape from the road in the case of a cassowary straying onto the roadway. The proponent proposes that the road entrance to the fenced section has warning signs, traffic calming devices to alert drivers to the likely presence of cassowaries and other wildlife. The proponent also proposed that the access road include strategically positioned frog fencing near bridges and culverts. The proponent's road management strategies are addressed below.

As noted earlier in this report, I state a condition that will specify requirements for road design (including reduced speed limits and the requirement for formal fauna crossing points and fauna culverts) to ensure the appropriate protection of wildlife (Appendix 1, Condition 11). The condition also requires the proponent to include in road designs the preferred fauna sensitive design standards included in the *Fauna Sensitive Road Design Manual—Volume 2: Preferred Practices* (DTMR 2010) and Council requirements.

Offsets strategy

State

The proponent has submitted a proposed compensatory offsets package for consideration as part of the EIS process for the project. Specific details of the proposal are included in Volume 5 of the additional information document (SEIS Submission Response).

The proponent has developed the offsets package for residual impacts from the proposed development and road upgrade (including clearing, habitat isolation and edge effects) after all available impact mitigation strategies have been exhausted. The offset package has been based on the *Policy for Vegetation Management Offsets—version 3* (DERM 30 September 2011); the *Regional Vegetation Management Code for Coastal Bioregions—version 3* (DERM 6 November 2009) and the *Queensland Biodiversity Offsets Policy—version 1* (DERM 3 October 2011) (QBOP) for Queensland Government purposes; and the EPBC Act *Environmental Offsets Policy* (October 2012) for Commonwealth purposes.

A summary of the vegetation clearing, habitat isolation and edge effects impacts and the proponent's proposed offsets to address state and Commonwealth requirements are included in Appendix 6 of this report. In summary, the proponent's offset proposal involves:

- 62.78 hectares of land from the Ella Bay site to be handed over to the State for National Park

- 63.62 hectares of land purchased to be handed over to the State for National Park. This land (Lots 5RP747500, 6RP713994, and 7RP713994) is contiguous with Eubenangee Swamp National Park on the south and western boundary and WTQWHA on the northern boundary and is noted as suitable land for corridor purposes in the *Recovery Plan for the Southern Cassowary*
- implementation of a management strategy for the Eubenangee offset land including the management of revegetation and weed removal for a period of 5 years
- implementation of the conservation zones within the Ella Bay site (including handing over of 62.78 hectares to the State for National Park; 67.8 hectares registered as conservation covenant (to act as a buffer to the National Park); 87.3 hectares registered as conservation covenant (for fauna corridors); and the revegetation of each of these areas
- various research projects including:
 - cassowary tracking project
 - cassowary diet and DNA analysis research
 - cassowary fencing and escape gate research
 - impact of Ella Bay development of cassowaries, fauna and flora.

The proponent has placed a dollar value on the offsets package of \$1.89 million comprising \$1.6 million for the land and revegetation components and \$290,000 for the research activities.

As part of the offset proposal the proponent has purchased a property totalling 63.62 hectares located within a strategic regional habitat connectivity corridor; identified within the *Recovery Plan for the Southern Cassowary* as an area of key ecological function, broad movement corridors and appropriate rehabilitating habitat. The corridor is also identified as a priority corridor in the Wet Tropics Conservation Strategy (WTMA 2004) and was supported by research undertaken by Terrain NRM for the SEIS.

DNRM has advised that the regrowth vegetation in the wildlife corridors in the Ella Bay site is not protected, therefore this vegetation could serve as an offset for the proposed clearing of essential habitat and of concern remnant vegetation, provided the corridors are protected. I note the proponent will seek to have a conservation covenant, under the *Land Title Act 1994*, placed over the fauna corridors (approximately 87.3 hectares) and nature conservation area (approximately 67.8 hectares). The conservation covenant will specify timely preparation of a management plan and the maintenance and revegetation of the corridors. The development also includes approximately 58.8 hectares of setbacks and easements which are to be protected by body corporate bylaws and under the *Regional Vegetation Management Code for Coastal Bioregions*. This is addressed in more detail below.

Advice from DEHP indicated that some elements of the offsets proposal do not meet the requirements of the QBOP, however the activities proposed as a package have merit and are likely to exceed the outcomes achieved if the QBOP were strictly applied. While not applying to developments that are declared to be a significant project under section 26(1)(a) of the SDPWOA, the QBOP provides for the Coordinator-General to consider QBOP in consideration of offset requirements for declared projects.

Based on advice from DNRM and DEHP, I am satisfied that the proponents proposed offsets strategy presented in Volume 5 of the additional information document (SEIS Submission Response dated June 2012) meets relevant State requirements.

I state a condition in this report requiring the proponent to secure offsets for the proposed clearing of remnant vegetation, prior to a preliminary approval for an MCU on the site (Appendix 1, Condition 35).

I also state a condition in this report that requires the proponent to undertake a complete plant/flora survey on the proposed clearing sites, in consultation with the Wildlife Branch of DEHP (Appendix 1, Condition 29).

Commonwealth

Offsets are regulated by SEWPaC as per the EPBC Act *Environmental Offsets Policy* (October 2012). This document provides principles for offsetting unavoidable impacts on MNES. The proponent is aware that it will need to meet the relevant offset requirements of the Commonwealth and has submitted a draft offsets strategy to SEWPaC for consideration. The Commonwealth offset requirement may be over and above that required by the Queensland Government.

SEWPaC has indicated its general acceptance of the suitability of the direct offsets proposed by the proponent. However, some minor changes to the timing of securing offsets may be a Commonwealth requirement.

Environmental management/wildlife management plans

The proponent's proposed EMPs strategy for the project, which includes a number of wildlife management plans, is included in Volume 3 of the additional Information document (SEIS Submission Response dated June 2012). A number of draft EMP sub-plans are included in the document including:

- southern cassowary management
- stream-dwelling rainforest frog species management
- spectacled flying-fox management
- marine turtle species management
- significant flora management
- weed management.

These sub-plans provide specific detail of protection and mitigation measures proposed by the proponent for each species.

The proponent has committed to prepare and submit the other sub-plans with the development application to CCRC. These include sub-plans for:

- erosion and sediment control
- revegetation and rehabilitation management
- feral pest and wallaby management
- conservation and wetland management
- sewerage and recycled water management.

The draft documents include the proponent's committed mitigation measures for all components of the construction and operational stages of the development relative to the specific sub-plans categories. The draft EMPs are designed to ensure that identified environmental impacts relating to the project are avoided or minimised. EMPs are addressed in more detail in Section 6 of this report.

Road management strategies for wildlife protection

The proponent's road management mitigation strategies are included in the *Ella Bay Road Design and Environmental Management Report* (Volume Four of the additional information document (SEIS Submission Response dated June 2012)). The proponent's road strategies are addressed in sections 5.2.2 and 5.2.4 of this report. The proponent's wildlife fence and escape gate strategy is addressed in Section 5.2.10 of this report. The proponent's proposed strategies include:

- 60 kilometres per hour speed limit (except in locations where a speed of 40 kilometres per hour is required for safety reasons)
- Installing/constructing:
 - traffic calming devices such as chicanes and/or raised speed platforms, transverse line markings and cassowary/wildlife signage to reduce operational speed
 - three fauna underpasses
 - one fauna overpass (Stage 2)
 - four small fauna underpasses
 - cassowary fencing at significant sections of the road (except sections that are too steep for most wildlife) to direct cassowary to safe crossings
 - 25 'one-way' escape gates in case cassowary to get in the road corridor (19 on the Stage 1 section and 6 on the Stage 2 section)
 - frog fence 25 metres either side of the fauna underpasses and culverts
 - 19 pipe culverts will be replaced with box culverts to allow great movement of small fauna under the road
- water sensitive road design will be incorporated into the road design. This will include an approved rainwater drainage and filtering system along its entire length to ensure that the expected large quantity of rainwater and potential pollutants flowing from the road are appropriately filtered to an acceptable standard prior to making its way to the GBRWHA
- revegetation will take place as each stage or partial stage of works is completed and will include endemic non-cassowary food plant species that suit the criteria for the roadside vegetation; blend with the surrounding vegetation and complement the natural surroundings; and seal the edge of the forest to reduce the potential of edge effects
- mature trees will be protected where possible to provide canopy shading and protect essential habitat.

I note the proponent has committed to undertake ongoing monitoring of impacts on the cassowary as a direct result of the road management strategies proposed. I state a

condition in this report requiring the proponent to include fauna sensitive design elements in the final road design for the Ella Bay site and access road in consultation with WTMA, DEHP and CCRC (Appendix 1, Condition 11). I also state a condition in this report to ensure that a wildlife monitoring program on the access road is implemented and results used to refine road management strategies, if necessary (Appendix 1, Condition 30).

Precinct wildlife fencing strategy

The proponent's precinct wildlife fencing strategy is addressed in the southern cassowary management sub-plan and summarised in Section 5.2.10 of this report. The strategy includes the following measures to provide protection for wildlife, in particular the cassowary:

- boundaries of each precinct fully fenced allowing movement of fauna such as cassowary, frogs and reptiles throughout the flora corridors/conservation zones
- fence will be a 1200mm dark coloured aluminium pool fence with a 100mm gap underneath to allow movement of small animals
- fencing to be constructed on a staged basis as each precinct is constructed
- low speed (that is, 40 kilometres per hour) internal road system will be contained within the precinct fencing
- precincts to be linked by bridges or low speed gated crossings (20 kilometres per hour)
- bridges to be used to allow cassowaries to pass along the fauna corridors free of traffic interaction.

The proponent has also committed to develop and implement:

- guidelines on the appropriate methods for removing cassowaries from residential or resort areas
- a program of induction courses to educate residents, visitors and staff on appropriate behaviour around cassowaries including:
 - appropriate behaviour in cassowary habitat
 - specific responses and behaviour for golfers
 - strictly 'no feeding' policy (regulated and enforced)
- a cassowary incident reporting system
- an internal fencing strategy to prevent access by cassowaries to the Ella Bay development and interaction with people
- a system of daily monitoring to ensure:
 - no cassowaries have gained access to the residential or resort areas
 - no unauthorised pathways have been established in restricted access areas.

Public awareness/education

Introducing public awareness and education programs to educate workers, residents and visitors on the Ella Bay environment to minimise potential impacts on terrestrial species including the cassowary:

- developing induction course for all staff and sub-contractors concerning appropriate behaviour around cassowary
- inducting all resort guests through the Welcome Centre
- establishing a research and education precinct incorporating a collaborative research institute, cassowary research station.

Coordinator-General's conclusion—terrestrial ecology

I am satisfied that the proposed vegetation clearing is necessary for the development of the project. I am also satisfied that the proponent will be able to meet the state's offsets requirements.

As a consequence of development approval for the project, there is expected to be a substantial net gain of protected vegetation of approximately 214 hectares within the Ella Bay site (including 155 hectares under conservation covenant), a net gain of cassowary habitat of over 104 hectares and a net gain of National Park of 126.4 hectares (includes 63.62 hectares at the offset location which is to be rehabilitated and revegetated).

I am also satisfied that the proponent's proposed mitigation strategies for the protection of terrestrial flora and fauna are appropriate for a development of this type and scale.

As noted above, conditions are stated in this report that require the proponent to undertake a complete plant/flora survey, on the proposed clearing sites, in consultation with the Wildlife Branch of DEHP before finalising the development footprint (Appendix 1, Condition 29).

5.3.5. Potential impacts on marine/aquatic ecology

The Ella Bay development is likely to have minimal, if any, direct and indirect short-term and long-term impacts on marine ecology.

Marine turtles

While expert advice indicated that the Ella Bay Site is not critical for marine turtles, turtles have the potential to access the beach area. A number of the identified threats and possible actions are relevant to the development area from the construction and operation of the Ella Bay development and access road are addressed in Marine turtle species management sub-plan (Report 3.5 Volume 3 of the additional information document (SEIS Submission Response dated June 2012)). The major threats are:

- exotic weeds such as Singapore daisy can impede turtle nesting
- noise and light impact may disorientate hatchlings, and nesting females
- offshore habitat can be impacted by urban runoff and sedimentation from construction
- vehicles can crush nests and/or damage nesting habitat
- faunal predation of eggs by feral pigs and feral dogs
- high levels of uncontrolled human access may deter females from landing
- marine debris may tangle or choke turtles

- reduced water quality.

There are also expected to be benefits to marine turtles that may frequent the Ella Bay area because of the restriction of vehicle access on the beach, implementation of approved water quality management processes for the site and a program to remove turtle and turtle eggs predators such as wild pigs and dogs from the site.

The turtle *The Recovery Plan for Marine Turtles in Australia* (Environment Australia 2003) adopts a threat-based approach, where the premise is to reduce the likelihood that current threats will cause mortalities, or to modify activities to reduce the potential for future mortalities at all stages of a marine turtle's life. The proposed mitigation strategies for the Ella Bay development aims to comply with this intent to a level appropriate to the identified potential risk.

Other marine fauna

EIS investigations indicated that, overall, the project is not expected to cause any unacceptable impact on other marine fauna including dugongs, dolphins, crocodiles and fish adjacent to the site, if water quality is maintained and the proponent's proposed mitigation measures are implemented.

Freshwater fish

Potential impacts of the development on freshwater fish include potential contamination of on-site creeks, streams and wetland areas from inflow of treated water and sediment and dust from construction activities.

Water quality will be addressed through conditions and proponent commitments including wastewater/recycle water treatment, erosion and sediments controls, water sensitive urban design and water quality monitoring.

Marine flora

As noted above, marine plants have been recorded on the Ella Bay site during EIS surveys. However, no marine plant species scheduled as significant under the EPBC Act were identified.

The proponent proposes to construct about six low-impact paths to allow access to the beach from the resort areas. The construction and ongoing use of these paths has negligible risk of impact on marine plants.

The proponent's beach access and walking track proposals are discussed in Report 6.5d and Report 6.4e Volume 6 of the additional information document (SEIS Submission Response).

5.3.6. Mitigation measures—marine/aquatic ecology

Water quality

The proponent has made a number of commitments during the EIS process to negate or minimise potential impacts on marine flora and fauna on and surrounding the Ella Bay site and in the waters adjacent to the site. These include water quality measures including treatment of water to tertiary class A+ standard with nutrient levels within

levels approved by DEHP; use of erosion and sediment controls; employing water supply urban design principles; undertaking water quality monitoring; and employing best practice golf course management.

These strategies are addressed in detail in Section 5.2.6 of this report. Other strategies proposed by the proponent include:

Artificial lighting strategies

Developing and implementing an artificial lighting management plan which will include a range of methods to minimise impacts on marine species (in particular nesting turtles) such as:

- maximising use of yellow, orange and red outdoor lights within 150 metres of the beach (except where safety requires other coloured lights)
- reducing lux levels in specific identified 'sensitive' areas
- using focused down lighting
- shielding light sources
- using artificial or natural screens
- recessing sources
- lowering mountings
- using timers
- using motion sensors.

Public awareness/education

Introducing public awareness and education programs to educate workers, residents and visitors on the local marine environment to minimise potential impacts on turtles and other marine species including:

- developing an induction course for all staff and sub-contractors concerning appropriate behaviour around turtles
- inducting all resort guests through the Welcome Centre
- erecting and maintaining display boards and information signage along the beach
- compliance monitoring of tourism and recreational activities.

Flora surveys

The proponent has committed to undertake a detailed flora survey (including marine plants) on the clearing sites at the operational works stage. This will include the area proposed to be disturbed for the paths for beach access. The proponent has indicated that the paths will meander through the vegetated area from the development site to the beach and that, in line with DAFF's policy *FHMOP001—Management and protection of marine plants and other tidal habitat*, every attempt will be employed to avoid the disturbance of marine plants.

The proponent is required to obtain an operational works approval from DAFF for any marine plant disturbance that may be required as part of the Ella Bay development. I

have stated a condition in this report to ensure this requirement is met and that marine plants are protected (Appendix 1, Condition 32).

I also note that in the significant flora management sub-plan (Report 3.6 in Volume 3 of the additional information document (SEIS Submission Response dated June 2012)), the proponent has committed to have a suitably qualified botanist accompany surveyors marking the currently unformed sections of the access road and any tracks, roads or buildings on the Ella Bay site to check for the presence of listed species.

I have also stated a condition in this report requiring the proponent to develop and implement a beach and foreshore management plan to manage the coastal area adjacent to the development site (Appendix 1, Condition 24). I have also stated a condition in this report to address requirements relating to potential impacts on marine plants (Appendix 1, Condition 32).

Marine turtle strategies

The proponent's feral pig trapping program has resulted in over 100 pigs being culled since 2008 which has locally reduced the population and is thought to potentially benefit a number of fauna species such as marine turtles (and their eggs) and cassowary.

I note the proponent's marine turtle management sub-plan provides strategies and actions for the mitigation and management of the potential impacts of the development (including monitoring and reporting regime). Some of the proposed strategies include:

- implementation of the marine turtle management sub-plan
- targeted surveys of the area and regular monitoring of the foreshore during the turtle nesting season
- cordoning off nesting areas if they are detected
- implementation of a pest animal management plan that includes the eradication of feral pigs currently present on the site
- prohibiting all:
 - dogs, apart from guide and assistance dogs, and cats from the resort and residential areas
 - motor vehicle access to the beach, other than for emergency use
 - camping from the beach
- development will be set back 80 metres to 250 metres from the beach to avoid potential disruptions to the turtles breeding behaviour
- lighting from the development designed to ensure no light spill to the beach
- the information and interpretative centre covering issues on turtle management and protection.

The proponent has made commitments and I have stated conditions in this report to ensure all the above measures are implemented.

5.3.7. Coordinator-General's conclusions—fauna and flora

It is noted that the Ella Bay development could impact threatened species. The proponent has provided details of EMPs and a list of commitments which it will implement throughout the construction and operational stages of the development.

Implementing committed mitigation and conservation measures, as described in the EIS and SEIS and the proponent list of commitments, is expected to mitigate the impacts of the Ella Bay development on species that were identified during the field surveys noted in the EIS. As a result, it is expected that there may be minor short-term disturbance to, but no significant long-term impact on, listed threatened species and communities impacted by the Ella Bay development.

I am satisfied that the potential for the Ella Bay development to impact on flora and fauna in the development site and around the access road in general can be adequately managed through the mitigation measures and commitments contained in the EIS and subsequent documents, the construction and operational EMPs, and in conditions I have stated in this report.

5.4. Acid sulfate soils

5.4.1. Overview

Acid sulfate soil (ASS) is a characteristic feature of low lying coastal environments in Queensland. Undisturbed, these soils can be present in an anaerobic state within the marine muds and sands in the form of potential ASS (PASS). Actual ASS is the oxidised (disturbed) form, that may occur as the result of natural or anthropogenic disturbance from changes in groundwater levels and/or exposure to oxygen.

Acid sulfate soil in an undisturbed environment may have a neutral acidity or be slightly alkaline and no visual appearances indicating its acidic potential. However, when exposed to air either by direct excavation or by indirect changes to the surrounding water table, pyritic material inherent in the soil is oxidised leading to the formation of sulfuric acid. High concentrations of acid released into receiving waters can potentially cause significant unacceptable impacts on ecosystem health.

5.4.2. EIS findings

According to the JSPS the Ella Bay site does not fall within an area of potential acid sulfate soil. Field test results on soil samples collected from boreholes on the Ella Bay site undertaken by Golder Associates Pty Ltd in 2006 indicated a low potential of potential acid sulfate soil being present.

The proponent has committed to develop and implement an acid sulfate soil management plan to minimise potential acidification issues associated with development on the site. The management plan will be prepared in accordance with the *Queensland Acid Sulfate Soil Technical Manual: Soil Management Guidelines* and submitted for approval prior to bund construction. The acid sulfate soil management plan will be managed in accordance with sections 4.8 and 4.9 of *State Planning Policy*

2/02: *Planning and Managing Development Involving Acid Sulfate Soils*. The acid sulfate soil management plan will form part of the construction EMP.

A number of advisory agencies have strongly endorsed the development of an acid sulfate soil management plan.

The proponent has also committed to conduct acid sulfate soil testing at the operational works approval phase for each of the proposed development stages, in accordance with SPP 2/02.

5.4.3. Coordinator-General's conclusions

I acknowledge that ASS may be present on the Ella Bay site. It is noted that the proponent has committed to employ appropriate management techniques to negate, where possible, or reduce the impact of disturbing ASS. It is also noted that the proponent has committed to develop and implement an acid sulfate soil management plan in accordance with the relevant Queensland Government acid sulfate soil guidelines.

I state a condition in this report to ensure the appropriate management of ASS (Appendix 1, Condition 36).

5.5. Weed and pest management

5.5.1. Weed management

Since purchasing the site in May 2007, the proponent has developed and implemented a weed management program to actively manage the infestation of weeds on the site. Weed investigations and management strategies are discussed in the EIS and SEIS. A number of additional studies were undertaken by the proponent following the release of the SEIS. These studies were included as part of Volume 6 of the additional information document (SEIS Submission Response dated June 2012) and included *Revegetation and Weed Management Issues and Discussion Paper for the Satori Resorts Development at Ella Bay* (Weber 2009) (Volume 6.2c); *Vegetation management plan for the littoral rainforest and coastal vine thicket plant community located on the Ella Bay Integrated Resort site* (Weber 2009) (Volume 6.2e); *Pond Apple Assessment on Littoral Rainforest* (3D Environmental 2010) (Volume 6.2g). Weeds were also addressed in the report *Vegetation Survey Report of the proposed Ella Bay Integrated Resort Project* (3D Environmental 2011) (Volume 6.2a).

Due to the productive tropical climate at Ella Bay there are many introduced plant species which have become invasive. These species can be broken down into those that pose a threat to forested or wetland areas (environmental weeds) and those which pose a threat to open areas such as paddocks and unestablished revegetation areas (disturbance weeds). Several weed species found within the Ella Bay site are declared weeds under the *Land Protection (Pest and Stock Route Management) Act 2002* Qld.

The EIS indicated that the most serious environmental weeds at the Ella Bay site, based on distribution and impact, are:

- pond apple (*Annona glabra*)

- Singapore daisy (*Sphagneticola trilobata*)
- hymenachne (*Hymenachne amplexicaulis*).

Pond apple and hymenachne are currently listed in the top 20 Weeds of National Significance List.

The EIS recorded that the most serious disturbance weeds on the site are:

- Sickle pod (*Senna obtusifolia* and other members of the *Senna* genus)
- Snake weed (*Stachytarpheta* species)
- Rat's tail grasses (*Sporobolus* species)—largely restricted to track and trails
- Tall grasses (in particular guinea grass *Panicum maximum*).

Other weeds of concern found on the Ella Bay site during EIS investigations include:

- introduced ponded pasture grasses
- giant bramble (*Rubus alceifolius*)
- guava (*Psidium guajava*)
- lantana (*Lantana Camera*)
- allamanda (*Allamanda cathartica*)—limited distributions on site
- pink periwinkle (*Catharanthus roseus*)—limited distributions on site
- *Mimosa* (sensitive plants) which occur throughout the site at low densities
- a number of vines from the pea (*Fabaceae*) and passionfruit (*Passifloraceae*) families.

The proponent has prepared a weed management sub-plan (to cover all phases of the project) which forms part of the EMP. The sub-plan includes weed management and eradication strategies and impact mitigation strategies.

The effective management of weeds may lead to a net positive impact and may help prevent the current risk of weed infestation in the Ella Bay National Park and WTQWHA.

I state a condition in this report to ensure that weeds are removed from the development site and adjacent land and appropriate management procedures are put in place to minimise potential future weed infestation (Appendix 1, Condition 19).

5.5.2. Pest management

The EIS records that two feral fauna species were recorded during sampling undertaken by BAAM in Spring 2006. These were the Feral Pig (*Sus scrofa*) and House Mouse (*Mus musculus*).

Feral pigs are listed as a Key Threatening Process under the *Land Protection (Pest and Stock Route Management) Act 2002*. Feral pigs have the potential to cause significant harm to cassowary populations. They are known to attack and kill cassowaries as well as compete for food, destroy habitat, promote invasive weed species and to destroy entire cassowary clutches.

Since purchasing the site in May 2007, the proponent has developed and implemented a feral pig trapping and baiting program on the site. Over 100 feral pigs have been

culled to date. A *Feral Pig Trapping and Baiting Report* prepared by the proponent is included in the additional information document provided by the proponent (Volume 6.3d)

The proponent has committed to prepare a pest management plan in consultation with Biosecurity Queensland (DAFF), Queensland Health and DEHP as part of the EMP for the development at the operational works stage to control the number of feral species present on and surrounding the site, as well as potential future pest species.

The proponent proposes to consult with DEHP and DNPRSR to coordinate management strategies, responses and practices within Ella Bay National Park. Educating residents and visitors will play an integral role in the development of a successful pest species management plan.

I state a condition in this report to ensure the appropriate management of pest species for the development site and adjacent land (Appendix 1, Condition 33).

5.6. Visual amenity

The Ella Bay site is characterised by its unique geographical position completely surrounded by World Heritage listed rainforest, the Seymour Range, the Great Barrier Reef Marine Park and the Ella Bay National Park.

The net visual impact of the Ella Bay development and the Ella Bay Road upgrade and bypass road is expected to be temporary, during and immediately after construction until landscape screening vegetation reaches greater than ten metres in height. The EIS documents include detailed images of expected views of the development and road requirements from various viewing points including the ocean and from the air. The visual assessment and mitigation study included in Report 6.5b Volume 6 of the additional information document (SEIS Submission Response dated June 2012) includes updated images of the development incorporating proposed architectural treatments and site colour palettes.

The visual amenity from the Seymour Range will be maintained as the dense vegetation of the range restricts outward views. Also the limited access to these locations prevents people from reaching much of the area. The Ella Bay site cannot be viewed from Innisfail, Flying Fish Point, Ella Bay Road or other populated areas in the vicinity and will therefore have no visual impact on these sites.

The visual amenity of the site, as viewed from the GBRWHA, will initially be reduced because of works required as the development is constructed. However, existing vegetation, planned revegetation and rehabilitation will screen the majority of the development views leaving only temporary visibility of the upper parts of some buildings and roofs while the landscape screening vegetation grows. The visual impacts, as viewed from the ocean, are expected to diminish over time as vegetation growth should weaken the colour and textural contrasts of the development.

The Ella Bay development and Ella Bay Road will also be visible from the air. Some of this impact will be reduced over time with vegetation planting and rehabilitation and natural regrowth. The proponent also proposes to manage the visual interaction between the built form and the natural environment by using colours and hues common

to the area. External finishes of building and roofs are proposed to be non-reflective and of muted tones, selected to match and blend with the existing and proposed vegetation.

Views from locations within the development footprint area will be permanently and significantly changed. Where there is currently cleared degraded land, it will be replaced with tourism facilities, houses, roads, pathways and essential infrastructure etc. These changes are significant; however, there is currently limited access to the site, so the current views are seen only by a small number of people. People visiting, or living in, the completed development should be expecting a built environment similar to other tourism/residential developments.

The visual impact of the access road is discussed in detail in Volume 4 Appendix 1 of the additional information document (SEIS Submission Response dated June 2012). Visual impacts associated with Ella Bay Road will include:

- change from a unsealed road to bitumen road
- presence of fauna mitigation measures such as the approach and bridge sections of the fauna underpass, fauna bridges and cassowary signage and other protection devices
- vegetation clearing.

Only minimal clearing (2.8 hectares—less for narrower road option) is proposed for the access road. If required, the proposed green mesh cassowary fence could weave through existing road reserve vegetation and limited visibility is expected. However, in places the fence could be adjacent to the road where there are entrances, escape gates, small culverts and a bridge.

The Ella Bay Road upgrade has been designed to utilise the existing road clearing with additional clearing requirements minimised or modified to retain as many of the mature trees and road canopy connectivity as possible

An extensive revegetation and weed control strategy will mitigate the visual impacts post road construction. The revegetation strategy will include vegetating the embankments and gabion rockwalls with native plants to further reduce visual impacts from the sea and coastline.

The sealing of the existing road with bitumen and the removal of weeds from verges is expected to enhance the scenic value along the road alignment by decreasing the amount of dust present in the area and the removal of unattractive weeds.

The visual impact of the Ella Bay Road bypass section of the access road will be mitigated through revegetation and the construction of a 'cut and cover' tunnel. The 'cut and cover' tunnel involves tunnel construction followed by revegetation of the area above the tunnel. There will be loss of visual amenity until such time as the revegetation has developed. The portal of the tunnel is to be aligned so the tunnel faces north/south and minimises the visibility from the WHAs and minimises noise to Flying Fish Point.

It is considered that the social benefits to be gained by greater access to the site, such as providing new and regulated access to the WTQWHA and greater views of the

GBRWHA (a public viewing section, that is, lookout, is proposed near Heath Point), outweigh any negative visual impacts of the development and access road.

The proponent's commitments relating to the protection of scenic values and visual amenity include:

- ensure that no building will exceed the height as set out in the Ella Bay development local area plan (refer Report 6.5a Volume 6 of the additional information document and also discussed in 5.1.3 of this report) and will be screened by native vegetation. External finishes will be non-reflective and of dark tones, selected to match and blend with the existing and proposed vegetation. Development will be limited on elevated sections of Ella Bay.
- implement the revegetation staging plan as presented in Figure 5.7 of this report prior to the commencement of each development stage. Landscaped areas will be planted with species that are native and occur locally around Ella Bay
- implement 'black sky' lighting (that is, no up-lighting) for the development and access road
- shield external lighting in environmentally sensitive areas within the development to limit extraneous light where necessary or face away from coastal and habitat areas
- prepare and implement the Ella Bay Road construction management sub-Plan prior to the commencement of construction works. The plan will include measures to screen embankments and cuttings with native vegetation, conserve mature trees where possible and a detailed monitoring and reporting regime for both the construction and operational phase.

I am satisfied that the potential for the project to impact on the surrounding area, including views from the GBRWHA and WTQWHA, can be adequately managed through the mitigation measures and commitments and strict controls over the built form in the development site and the access road. These measures and commitments are described in the EIS documents, the EMPs and in conditions contained in this report. However, I have stated a condition in this report to ensure the visual impact of the development is minimised to the greatest extent possible (Appendix 1, Condition 20).

5.7. Sustainability

5.7.1. Sustainable buildings

The SEIS (Ecologically Sustainable Development Report, Volume 4, Appendix A.2.9) discusses how the Ella Bay development will achieve the key objectives of ecological sustainable development (ESD). These are discussed briefly below.

The EIS and SEIS emphasise the proponent's willingness to embrace the basic principles of ecologically sustainable development for all aspects of the Ella Bay development. The matters of building sustainability are discussed above. The proponent's other commitments include numerous sustainability measures to meet the following objectives:

- greater community wellbeing and identity

- education of and involvement in environmental protection and management
- promote cultural heritage
- local economic development and employment growth
- sustainable use and management of land
- sustainable use and management of water resource (totally self-sufficient through rainwater capture and recycling of water)
- protecting biological diversity
- more efficient use of energy and greater use of renewable energy resources (all power generated on-site)
- more effective land use planning, environmental protection and pollution control
- reducing consumption, recycling and minimising waste and properly managing hazardous waste
- 'green' transport options on-site
- reduced greenhouse gas emissions and improving air quality.

The proponent has adopted measures that would promote the implementation of a high degree of sustainable development outcomes. A condition is stated in this report to ensure that sustainable development measures are incorporated into the detailed design of the Ella Bay development (Appendix 1, Condition 21).

6. Environmental management plan

6.1. Overview

A final draft EMP for the project has been prepared by the proponent and is contained in Volume 3 of SEIS Submission Response document. Early drafts of the EMP were provided in Volume 5 of the EIS.

The draft EMP sets out the project commitments to avoid where possible or minimise potential environmental impacts as identified in the EIS, SEIS and the SEIS Submission Response document during both the construction and operation phases of the project. The EMP identifies environmental aspects to be managed and how the environmental values may be protected and enhanced.

The final EMP will become the key reference document that converts the undertakings and recommendations of the environmental studies into actions and commitments to be followed by the designers, construction operators and subcontractors of the proposed project. The plans specify:

- proposed environmental management strategies, actions and procedures to be implemented to mitigate adverse and enhance beneficial environmental and social impacts
- monitoring, reporting and auditing requirements
- the entity responsible for implementing proposed actions
- proposed timing
- corrective actions if monitoring indicated that performance requirements have not been met.

The content of the EMP will be further refined and expanded following finalisation of the CG Report, during the detailed design phase of the project and through ongoing consultation with the relevant regulatory and advisory agencies.

The EMP will include control strategies and measures for the following:

- integrated water management
- acid sulfate soil management
- erosion and sediment control
- air quality/dust
- noise, light and vibration
- cyclone, fire and emergency management
- Ella Bay road construction and management
- site preparation
- clearing and earth works
- drainage
- road network and transport
- power, light and communication

- waste management and minimisation
- sewerage and recycle management
- pest and wallaby management
- mosquito management.

The EMP also incorporates sub-plans including:

- southern cassowary management
- stream-dwelling rainforest frog species management
- spectacled flying-fox management
- marine turtle species management
- beach stone-curlew management
- significant flora management
- rehabilitation and revegetation management
- conservation area and wetland management
- weed management
- cultural heritage management.

I have stated a condition in this report requiring the proponent to prepare and implement a beach and foreshore management plan, to provide greater protection for the Ella Bay foreshore area, which will complement other coastal-related sub-plans noted above (Appendix 1, Condition 24).

The EMP and sub-plans will also serve as the benchmark for measuring the effectiveness of environmental protection and management. This can be achieved by specifying the monitoring, reporting and auditing requirements, with nominated responsibilities and timing, to ensure the necessary mitigation measures are met. The EMPs also provide, as appropriate, for unforeseen events by outlining corrective actions that may be implemented in these situations.

6.2. Coordinator-General's conclusions

The EMPs will serve to implement the commitments made by the proponent and ensure the effective management of the environmental impacts of the project.

A condition is stated in this report to avoid, if possible, or minimise the environmental impacts of the Ella Bay development through an effective EMP program (Appendix 1, Condition 22).

7. Matters of national environmental significance

7.1. Introduction

This section of the report addresses the requirements of the Queensland Government's assessment as specified by Schedule 1 of the bilateral agreement between the Commonwealth and the State of Queensland relating to environmental assessment and Part 13 of the *State Development and Public Works Organisation Regulation 2010*. It should be noted that the Department of Sustainability, Environment, Water, Population and Communities (SEWPaC) comments relate to the evaluation of potential impacts and adequacy of information with respect to 'matters of national environmental significance' (MNES) during preparation of this report and do not represent the department's assessment of the impacts of the actions.

This section provides an evaluation of the potential impacts of the project on MNES determined by the Australian Government to be controlling provisions under the *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth) (EPBC Act) and should be read in conjunction with the proponent's *Report on Matters of National Environmental Significance* which forms Volume 2 of the additional information document (SEIS Submission Response dated June 2012) and sections 2 to 6 of this report.

7.2. Controlling provisions

On 2 June 2005, the project was referred to the then Commonwealth Minister for Environment and Heritage (now the Commonwealth Minister for Sustainability, Environment, Water, Population and Communities—hereafter referred to as the Commonwealth Environment Minister) (EPBC 2005/2159) for a determination as to whether the project would constitute a 'controlled action' with respect to potential impacts on MNES under sections 75 and 87 of the EPBC Act.

The EPBC Act establishes an Australian Government process for assessing environmental impacts and approving proposed actions that are likely to have a significant impact on MNES or on Commonwealth land.

On 4 July 2005, the delegate of the Commonwealth Environment Minister determined the project to be a 'controlled action' pursuant to section 75 of the EPBC Act. The relevant controlling provisions for the project were determined as:

- sections 12 and 15A (World Heritage)
- sections 18 and 18A (Listed threatened species and ecological communities).

On 24 February 2009, the Commonwealth Environment Minister received a request from a third-party environmental group for reconsideration, under section 78A of the EPBC Act, of the particular provisions applicable to the controlled action decision. The third-party requested that two additional controlling provisions be considered for the

project, namely listed migratory species (Sections 20 and 20A) and Commonwealth marine environment (Sections 23 and 24A).

By decision of 9 June 2009 under Section 78C of the EPBC Act, the delegate for the Commonwealth Environment Minister confirmed the original decision that the proposed action is a controlled action subject to the controlling provisions 'listed threatened species and ecological communities' and 'World Heritage areas'.

Under the terms of the bilateral agreement, the Ella Bay project EIS was required to address both State and Australian Government matters. The controlled actions may be considered for approval under section 133 of the EPBC Act once the Commonwealth Environment Minister has received this Evaluation Report from the Coordinator-General.

7.3. Assessment process

Potential impacts on MNES have been assessed throughout the EIS process for the project. MNES matters were addressed in both the EIS and SEIS documentation.

During the latter stages of the EIS process, additional work was undertaken to bring together previous work and discussion of issues raised in the EIS and SEIS, and better understand, analyse and synthesise the potential impacts of the whole project on MNES. This work has been documented in the proponent's *Report on Matters of National Environmental Significance* not above.

The additional information document (Volume 5) provided by the proponent also included an Offset Package Proposal which was assessed in relation to the proposed biodiversity offset requirements for residual impacts on MNES that could not be avoided or mitigated.

The evaluation of potential impacts on MNES presented in this section of this Evaluation Report, which is based on information contained in the EIS, SEIS and the additional information document. SEWPaC has been consulted on the evaluation of potential impacts and adequacy of information with respect to MNES during preparation of this report. SEWPaC has advised that the report provides the required information for the Commonwealth Environment Minister to make an EPBC Act decision.

SEWPaC has reviewed the offsets package and has indicated that the package is generally compliant with relevant Commonwealth policies.

7.4. Description of the proposed action

Satori Resorts Ella Bay Pty Ltd (Satori) proposes to construct a \$1.4 billion integrated tourism and residential community at Ella Bay, approximately ten kilometres north east of Innisfail. Satori is a member of the Ella Bay Developments Group of Companies and is headed by Company Director, Rod Lamb.

The site is situated within the Cassowary Coast Regional Council (CCRC) area. The proposal includes the redevelopment of a 450 hectare cattle station (Lot 320 on Crown

plan N157629, County Nares, Parish Glady) into a master planned community over a fifteen year period. Ella Bay Developments purchased the site in early 2008 during the EIS process.

Ella Bay Developments also owns freehold title over an adjoining property Lot 337 NR53 (that is, to the south) which has been granted Council approval for the Little Cove Resort consisting of 70 residential lots and 30 villas. The Little Cove Resort does not relate to any approval for the Ella Bay development.

The Ella Bay site is surrounded on three sides (north, west and part south) by the Ella Bay National Park. Most of the surrounding area is located in the Wet Tropics of Queensland World Heritage Area (WTQWHA). The site is separated from the Great Barrier Reef World Heritage Area (GBRWHA) to the east by a gazetted esplanade.

7.4.1. Integrated tourism and residential community

The proposed development will incorporate:

- three resort precincts comprising 860 units and villas
- four residential precincts comprising 540 residences
- a village community precinct comprising mixed retail, professional services, offices and restaurants
- a research and education precinct incorporating a welcome centre, a collaborative research institute and cassowary research station
- recreation/open space area comprising recreational amenities, community services and an 18-hole golf course
- residential community facilities including swimming pool, barbecue facilities, playgrounds, tennis courts and club house for each residential precinct. The clubhouse will be designed with shutters for category 5 cyclones.

7.4.2. Access road

The project requires the construction of an access road to the site which involves approximately 2.82 hectares of vegetation clearing and considerable earthworks. The majority of the proposed route follows the course of the existing road through the Ella Bay National Park, though some widening is required.

The proponent's proposed option for the access road includes the upgrade of the existing unsealed road access to the site which will incorporate fauna impact mitigation measures based on environmentally sensitive road engineering and design. Ella Bay Road will be a 4790 metre long road constructed from Bay Road (also known as Esplanade) to the south west of Flying Fish Point to the Ella Bay development in the north. The road is expected to convey a maximum design daily two way traffic of approximately 4000 vehicles per day with an annual average daily traffic of approximately 3000 vehicles per day. The maximum design hourly two way traffic is 350 vehicles per hour.

The upgrade and construction of Ella Bay Road will consist of two stages:

- Stage 1 will comprise a four kilometre upgrade of the existing Ella Bay Road from Ruby Street in Flying Fish Point to the entry of the Ella Bay development. Note: Stage 1 includes an upgrade of 90 metres of Ella Bay Road which will not form part of the final alignment.
- Stage 2 will comprise a new 880 metre road that bypasses Flying Fish Point to the west. Stage 2 will include construction of a roundabout and approaches on Bay Road (Esplanade) to direct Ella Bay traffic north behind Flying Fish Point through a new tunnel, and connection to the existing Ella Bay Road alignment to the north of Ruby Street.

7.5. Places affected by the proposed action

The proposed integrated tourist and residential development at Ella Bay will take place within freehold land Lot 320 on NR157629 which has a registered area of 449.2 hectares. The property includes two unconstructed road easements which will contribute an additional 20 hectares on road closure. Other lots likely to be affected by the proposed access road components of the development include:

- Stage 1—Ella Bay Road upgrade
 - WTQWHA
 - Lot 1024 NPW 151 Ella Bay National Park
 - CCRC road reserve
 - Esplanade—gazetted unformed road
 - Lot 337 NR53 easement A (adjoining freehold property existing road easement)
- Stage 2—Flying Fish Point bypass
 - CCRC road reserve Alice Street gazetted unformed road
 - Lot 8 USL35566 State land
 - Lot 18 USL35566 State land
 - Lot 1024 NPW 151 Ella Bay National Park.

7.6. World Heritage properties

World Heritage

The Wet Tropics of Queensland and the Great Barrier Reef were internationally recognised by the World Heritage Committee for their outstanding universal value. They remain two of only a small number of World Heritage properties worldwide that have been adopted for all four natural criteria, which follow, and meet the conditions of integrity and authenticity:

- Criteria VII—contain superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance
- Criteria X—contain the most important and significant natural habitats for in-situ conservation of biological diversity, including those containing threatened species of outstanding universal value from the point of view of science or conservation

- Criteria IX—be outstanding examples representing significant on-going ecological and biological processes in the evolution and development of terrestrial, fresh water, coastal and marine ecosystems and communities of plants and animals
- Criteria VIII—be outstanding examples representing major stages of earth’s history, including the record of life, significant on-going geological processes in the development of landforms, or significant geomorphic or physiographic features.

The outstanding universal values (OUV) for the WTQWHA and the GBRWHA are listed in Appendix 4 and Appendix 5 respectively of this report.

In Australia, an action that has, will have, or is likely to have, significant impact on the OUV of a World Heritage property requires approval under the EPBC Act. The *Matters of National Environmental Significance: Significant Impact Guidelines* (DEWHA 2009) consider an action is likely to have a significant impact on the OUV of a declared World Heritage property if there is a real chance or possibility that it will cause one or more of the values to be:

- lost
- degraded or damaged, or
- notably altered, modified, obscured or diminished.

The EIS documentation indicated that the proposed Ella Bay development will be designed, constructed and managed to avoid (where possible) potential adverse impacts on tropical rainforest, swampland (WTQWHA) and coastal and aquatic (GBRWHA) ecosystems or on the geological and geo-morphological characteristics of the region that underly the ecological diversity of the Wet Tropics of Queensland and the Great Barrier Reef. Where impacts cannot be avoided, the proponent has committed to an environmental management regime and has proposed a number of measures to minimise and mitigate potential impacts. An offsets proposal has also been put forward by the proponent to address residual impacts.

Primary matters for WTQWHA consideration include maintenance of OUV and potential impacts of the access road and the Ella Bay development on the *Casuarius casuaris johnsonii* (southern cassowary—also referred to as cassowary throughout this report), *Litora rheocola* (common mist frog) and to a lesser extent, other threatened faunal species potentially having habitat in the WHA.

Primary matters for GBRWHA consideration with respect to the Ella Bay development and the access road include maintenance of OUV, visual impacts when viewed by ships at sea and potential impacts on biological processes from water quality (during construction and operation).

As some of the criteria for OUV for the WTQWHA and GBRWHA cover similar matters (for example, impacts on flora and fauna, scenic amenity etc), specific information on each matter will not be repeated in full for each criteria. Also greater detail on listed threatened flora and fauna is addressed in Section 7.7 of this report.

National heritage

In May 2007 the WTQWHA and GBRWHA were listed on the National Heritage List. Both World Heritage Areas (WHA) were listed for the following five national heritage criteria which correspond to its World Heritage criteria:

- Criteria (a)—the place's importance in the course, or pattern, of Australia's natural or cultural history
- Criteria (b)—the place's possession of uncommon, rare or endangered aspects of Australia's natural or cultural history
- Criteria (c)—the place's potential to yield information that will contribute to an understanding of Australia's natural or cultural history
- Criteria (d)—the place's importance in demonstrating the principal characteristics of (i) a class of Australia's natural or cultural places; or (ii) a class of Australia's natural or cultural environments
- Criteria (e)—the place's importance in exhibiting particular aesthetic characteristics valued by a community or cultural group.

Existing site and road impacts on OUV

The proponent's *Report on Matters of National Environmental Significance* indicated that there are number of impacts on MNES associated with the historical and existing land use of the property and access road that contribute to degradation of the OUV of the surrounding areas. In summary, the report states:

- the property was initially cleared for agriculture by at least 1902
- the property has been continuously used for agricultural purposes, principally in recent years to graze cattle
- agricultural activities have created grasslands dominated by introduced aggressive grasses and invasive weeds which have started to disperse into the adjoining National Park
- the property is generally degraded with significant areas of exotic weed infestations within fenced paddocks of introduced pasture grasses
- cattle have degraded vegetation at the edge of the property and site creeks through grazing and trampling and also aided in the spread of weeds
- the edge effect from the previous agricultural activities within the existing vegetation of the development site and on the dunal swale area from camping is extensive and edge effects in the vegetation bordering the development are characterised by *Annona glabra* (pond apple) and other weed infestations, logging roads, clearing over boundaries and historical fence remnants
- the northern section of the western boundary of the property has been over-cleared into the WTQWHA by some 50 to 80 metres

- on the property and adjacent are mono-cultural stands of the weed, pond apple and *Hymenachne* comprising approx 14.9 hectares. Pond apple and *Hymenachne* are one of the most threatening environmental weeds to the Wet Tropics and are both designated a Weed of National Significance (WONS) and a Class 2 declared plant under the Queensland *Land Protection (Pest and Stock Route Management) Act 2002*. The pond apple is an attractive food source for local fauna, particularly the cassowary, and is readily dispersed into adjacent areas of the Wet Tropics and is in danger of spreading into Ella Bay Swamp Wetland. The majority of the pond apple is located in the dunal swale at the east of the property within the gazetted esplanade
- the property and surrounding area supports feral pigs in large numbers (over 100 trapped since October 2008). The Wet Tropics Management Authority (WTMA) *State of Conservation Report 1998* indicated that feral pigs are the major pest animal in the Wet Tropics. Feral pigs have degraded the natural vegetation and water quality, caused erosion and encouraged the establishment and spread of weeds by wallowing and rooting around the edges of watercourses and swamps. Feral pigs can also destroy the habitat of small native animals, spread disease and parasites, compete for the food with cassowary, and predate upon cassowary eggs
- *Batrachochytrium Dendrobatidis* (Chytrid fungus) has caused damage to the frog population and has been surveyed and identified as occurring on the site and at multiple sites within 20 kilometres of Ella Bay. However, on the coastal area the fungus appears to be active only in the cooler months and is quickly killed by increase in temperature without appearing to impact on the frog population
- the site provides limited access (due to barbed wire fences) for the cassowary to pass through the open paddocks to and from the adjacent protected areas and a food source in the form of pond apple as described above
- currently, there are no mechanisms in place to manage any of the edge effects described above. The only existing requirement of the landowner of Ella Bay is the control of pond apple and *Hymenachne* on the property which has not been brought under control on the Ella Bay property and is unlikely to be using previous property management practices. More importantly, there is no statutory obligation on the landowner to manage the interface between the property and the adjacent Wet Tropics
- access to the property is obtained from Ella Bay Road, an unsealed single lane road, managed by the CCRC. Ella Bay Road was probably formed in the early 1900's
- Ella Bay Road cuts into the steep rocky coastline to the south, linking the property with Flying Fish Point. The road runs beside or passes through areas of the Ella Bay National Park for 1.56 kilometres (length of WHA section)
- current road use and maintenance is causing edge effects and dust pollution which is degrading the visual amenity and integrity of the WTQWHA in the area, and during wet periods adding to the erosion and sedimentation of short sections of creeks running through the Wet Tropics and depositing silt into the GBRWHA
- the road maintenance regime for the unsealed road especially following intense rain or cyclone clean-up is adding to incremental creep of edge effect as the road corridor disturbance widens.

These existing impacts are addressed as part of the mitigation strategies proposed for the Ella Bay development and the access road which are discussed throughout this report.

7.6.1. Wets Tropics of Queensland World Heritage Area (WTQWHA)

Background

The Ella Bay site is 450 hectare former cattle property, owned by the proponent, surrounded on three sides, north, west and south (partly) by the Ella Bay National Park which forms part of the WTQWHA. Part of the existing road to the site traverses the WTQWHA and requires widening as part of the project to ensure safe and efficient traffic access to the site.

The WTQWHA lies between Townsville and Cooktown on the north-east coast of Queensland and covers an area of 894,420 hectares. The WTQWHA heritage listing was approved in December 1988.

The Ella Bay site was not included within the WTQWHA during the listing process although it is surrounded by WHA and nearly 18,000 hectares of private (freehold) land which was included in the listing.

Legislation

The WTQWHA is managed under the *Wet Tropics World Heritage Protection and Management Act 1993* (Qld) and the *Wet Tropics of Queensland World Heritage Area Conservation Act 1994* (Cwlth). These Acts implement Australia's international duty for the protection, conservation, presentation, rehabilitation and transmission to future generations of the WHA.

The *Wet Tropics World Heritage Protection and Management Act 1993* is the Queensland legislation which sets out the role of the Wet Tropics Management Authority (WTMA) in managing the WTQWHA. The Act also provides the legal basis for the Wet Tropics Management Plan 1998.

The Wet Tropics World Heritage Area Management Scheme is an intergovernmental agreement signed by the Prime Minister of Australia and the Premier of Queensland in 1990. It sets out broad structural and funding arrangements for the management of the Area. The agreement is scheduled in the Queensland Act and given effect by section 3 of the Commonwealth Act.

WTMA permit

The Wet Tropics Management Plan regulates land use activities in the WHA through a zoning and permit system. The Ella Bay development will require a permit under the Wet Tropics Management Plan to undertake required roadworks (including any fauna protection structures) in the WTQWHA.

Following receipt and assessment of an application for roadworks within the WTQWHA, WTMA may issue a permit under the plan to allow the proponent to widen and realign that segment of the access road within the WTQWHA. The permit can be

issued only if the relevant works would not have an adverse impact on the integrity of the WHA or there is no prudent and feasible alternative. WTMA must decide the application in a way that minimises the likely impact of the proposed activity on the area's OUV. WTMA must have regard to matters that include:

- the likely impact of the activity on:
 - wildlife prescribed under the *Nature Conservation Act 1992* and Regulation as extinct in the wild, endangered, vulnerable or near threatened
 - the habitats of wildlife
 - other threatened plant and animals communities
 - ecological processes
- the potential cumulative impact on the area's integrity of the proposed activity and another activity carried out, or that may be carried out, lawfully in the area
- the likely impact of a proposed activity on the area's scenic amenity.

The proponent has not submitted an application to undertake roadworks in the WTQWHA to WTMA. Upon receipt of the application, WTMA will undertake a full assessment of the potential impacts of the development on the OUV of the WTQWHA.

Potential impacts and mitigation measures

Although addressed in the sections below, flora and fauna impacts are also addressed in more detail in Section 7.7 of this report.

Criteria VII— contain superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance

The OUV for this criterion are noted in Appendix 4 of this report. The values focus on the natural beauty of the WTQWHA, namely the tropical rainforest, beaches, rugged mountain peaks and gorges, and waterfalls.

The potential impacts of the Ella Bay development and the access road in relation to visual amenity are addressed in detail in the additional information document (SEIS Submission Response dated June 2012) in the following sections:

- Section 3.4.2 Volume 2—MNES
- Report 6.5b Volume 6—Visual assessment and mitigation study
- Appendix 1 Volume 4—Visual impact of the access road.

The Ella Bay site is characterised by its unique geographical position completely surrounded by World Heritage listed rainforest, the Seymour Range, the Great Barrier Reef Marine Park and the Ella Bay National Park.

The net visual impact of the Ella Bay development and the Ella Bay Road upgrade and bypass road is expected to be temporary, during and immediately after construction until landscape screening vegetation reaches greater than ten metres in height. The EIS documents include potential impacts and detailed images of expected views of the development and road requirements from various viewing points including the ocean and from the air. The visual assessment and mitigation study included in Volume 6

(Report 6.5b) of the additional information document (SEIS Submission Response dated June 2012) includes updated images of the development incorporating proposed architectural treatments and site colour palettes.

The visual amenity from the Seymour Range (that is, within the WTQWHA) will be maintained as the dense vegetation of the range restricts outward views. Also the limited access to these locations prevents people from reaching much of the area. The Ella Bay site cannot be viewed from Innisfail, Flying Fish Point, Ella Bay Road or other populated areas in the vicinity and will therefore have no visual impact on these sites.

The Ella Bay development and Ella Bay Road will also be visible from the air. Some of this impact will be reduced over time with vegetation planting and rehabilitation and natural regrowth. The proponent also proposes to manage the visual interaction between the built form and the natural environment by using colours and hues that are common to the area. External finishes of building and roofs are proposed to be non-reflective and of muted tones, selected to match and blend with the existing and proposed vegetation.

Views from locations within the development footprint area will be permanently and significantly changed. Where there is currently an environment in its cleared and degraded state, it will be replaced with tourism facilities, houses, roads, pathways and essential infrastructure etc. These changes are significant and unavoidable; however, there is currently limited access to the site, so the current views are seen only by a small number of people. People visiting, or living in, the completed development will be expecting a built environment similar to other tourism/residential developments.

The visual impact of the access road is discussed in detail in Appendix 1 Volume 4 of the additional information document (SEIS Submission Response dated June 2012). Visual impacts associated with Ella Bay Road will include:

- change from an unsealed road to a bitumen road
- possible presence of fauna mitigation measures such as the approach and bridge sections of the fauna underpass, fauna bridges and the cassowary directional fencing
- vegetation clearing.

Only minimal clearing (2.8 hectares—less with SEIS narrower road option) is proposed for the access road. Where the proposed green mesh cassowary fence is required it would weave through existing road reserve vegetation and is expected to be mostly non-visible. However, in places the fence could be adjacent to the road where there are entrances, escape gates, small culverts and a bridge.

The Ella Bay Road upgrade has been designed to utilise the existing road clearing with additional clearing requirements minimised or modified to retain as many of the mature trees and road canopy connectivity as possible.

An extensive revegetation and weed control strategy will mitigate the visual impacts post road construction. The revegetation strategy will include vegetating the embankments and gabion rockwalls with native plants to further reduce visual impacts from the sea and coastline.

The sealing of the existing road with bitumen and the removal of weeds from verges is expected to enhance the scenic value along the road alignment by decreasing the amount of dust present in the area and the removal of unattractive weeds.

The visual impact of the Ella Bay Road bypass section of the access road will be mitigated through revegetation and the construction of a 'cut and cover' tunnel. The 'cut and cover' tunnel involves tunnel construction followed by revegetation of the area above the tunnel. There will be loss of visual amenity until such time as the revegetation has developed. The portal of the tunnel is to be aligned so the tunnel faces north/south and minimises the visibility from the WTQWHA and minimises noise to Flying Fish Point.

It is considered that the social benefits to be gained by greater access to the site, such as providing new and regulated access to the WTQWHA and greater views of the GBRWHA (a public lookout is proposed near Heath Point), outweigh any negative visual impacts of the development and access road.

The proponent's commitments relating to the protection of the scenic values of the WHA and visual amenity include:

- ensure that no building will exceed the height as set out in the Ella Bay development local area plan (refer Report 6.5a Volume 6 of the additional information document and also discussed in Section 5.1.3 of this report) and will be screened by native vegetation. External finishes will be non-reflective and of dark tones, selected to match and blend with the existing and proposed vegetation. Development will be limited on elevated sections of Ella Bay
- implement the revegetation staging plan as presented in Figure 5.6 of this report prior to the commencement of each development stage. Landscaped areas will be planted with species that are native and occur locally around Ella Bay
- implement a 'black sky' lighting policy (that is, no up-lighting) for the development and access road
- shield external lighting in environmentally sensitive areas within the development to limit extraneous light where necessary or face away from coastal and habitat areas
- prepare and implement the Ella Bay Road construction management sub-Plan prior to the commencement of construction works. The plan will include measures to screen embankments and cuttings with native vegetation, conserve mature trees where possible and a detailed monitoring and reporting regime for both the construction and operational phase.

I have stated a condition in this report to ensure the visual impact of the development is minimised to the greatest extent possible (Appendix 1, Condition 20).

Criteria X—contain the most important and significant natural habitats for in-situ conservation of biological diversity, including those containing threatened species of outstanding universal value from the point of view of science or conservation

The OUV of this criterion focus on the presence of rare and endangered species within WTQWHA (refer Appendix 4 of this report).

The Ella Bay development has the potential to have direct and indirect short-term and long-term impacts on threatened flora and fauna species and communities. The EIS indicated that the potential short-term impacts of the project may include:

- injury and/or death of flora and fauna during vegetation clearing required for the development
- potential disturbance to flora and fauna from activities required for the construction of roads, buildings and other infrastructure including dust, noise and vibration, lighting and root damage to plants
- potential traffic related wildlife injury or deaths on the access road and roads within the project area
- potential introduction and/or spread of weeds and pests into cleared and disturbed areas
- hydrological and water quality impacts on creeks, wetlands, surface water run-off, groundwater and the marine waters.

The EIS indicated that the potential long-term impacts of the project may include:

- loss of remnant and regrowth vegetation and habitat and a result of vegetation clearing and edge-related effects of development
- potential spread of weeds and pests into cleared and disturbed areas
- fragmentation of the landscape affecting flora connectivity and fauna movement
- hydrological and water quality impacts on creeks, wetlands, surface water run-off, groundwater and the marine waters
- potential traffic-related wildlife injury or deaths on roads within or around the project area
- noise and lighting impacts on fauna.

Commitments and mitigation measures proposed by the proponent, and specific conditions in this report, are expected to result in the avoidance or minimisation of potential impacts.

Diversity of flora and communities

The WTQWHA supports a very high level of diversity of fauna, with over 2,800 plant species from 221 families, of which more than 700 species are endemic to the area.

Terrestrial flora

Vegetation and flora species are addressed in the EIS (section 4.7.1.1 Volume 4 and Report A6.1 Volume 8), SEIS (section 1.2 Volume 1) and the additional information document (SEIS Submission Response dated June 2012) (Report 6.2 Volume 6). Flora surveys on the Ella Bay site were undertaken in 2006, 2007, 2008, and 2009.

An online search of the Protected Matter Search Tool (PMST) and the Species Profile and Threats (SPRAT) Database indicated that 15 plant species, or habitats for these plants, are likely to occur within the locality of the subject site. A full listing of EPBC Act and NC Act listed species on online databases is included in Table 5.4 of this report.

EIS flora investigations indicate that no significant EPBC Act species were identified during surveys. Habitat suitable for *Carronia pedicellata* (endangered), *Arenga*

australasica (vulnerable), *Canarium acutifolium* var. *acutifolium* (vulnerable), *Hupzeria phlegmarioides* (vulnerable) and *Aponogeton proliferus* (endangered) is present within the study area and potential for their occurrence is moderate to high. While the targeted vegetation surveys failed to locate any individuals of these species, their presence cannot be discounted.

As only minor clearing of approximately 3.75 hectares is required for the development and access road, and vegetated areas within the site will be protected by conservation covenant, no unacceptable impact is expected to listed species. The total revegetation and rehabilitation area on site will be greater than 110 hectares and will be an opportunity to subtly change the foraging habits of cassowaries with the focus of encouraging them away from the dunal swale and resort areas.

In the significant flora management sub-plan in Volume 3 of the additional information document (SEIS Submission Response dated June 2012), I note that the proponent has committed to several vegetation mitigation strategies that will provide appropriate protection for these species, if located during clearing works. For example, a suitably qualified botanist will accompany surveyors marking the currently unformed sections of the access road and any tracks, roads or buildings on the Ella Bay site to check for the presence of listed species. Also, listed species relative to the region will be incorporated into the revegetation planting schedule provided they can be grown from local seed.

Marine flora

Vegetation surveys indicate that species that are considered to be marine plants protected under the *Fisheries Act 1994* (for example, *Hibiscus tiliacius* and mangroves) are present within the wetlands on and behind the frontal dunes.

Mangrove plants are interspersed with other terrestrial flora (dominated by Coastal She-oak (*Casuarina equisetifolia*)) in the gazetted esplanade which separates the Ella Bay development site from the GBRWHA. The EIS indicated that there will be only minimal impact on this area. The proponent proposes to construct about six low-impact paths to allow access to the beach from the resort areas. The proponent's beach access and walking track proposals are addressed in Report 6.5d and Report 6.4e Volume 6 of the additional information document (SEIS Submission Response). The proponent has committed to avoid marine plants, where possible, when constructing the beach access paths.

I have stated a condition in this report requiring the proponent to develop and implement a beach and foreshore management plan to manage the coastal area adjacent to the development site (Appendix 1, Condition 24). I have also stated a condition in this report to address requirements relating to potential impacts on marine plants (Appendix 1, Condition 32).

I note that the proponent has committed to several vegetation mitigation strategies that will provide appropriate protection for marine flora, if located during clearing works. For example, a suitably qualified botanist will accompany surveyors marking the currently unformed sections of the access road and any tracks, roads or buildings on the Ella Bay site to check for the presence of listed species.

Terrestrial communities

Littoral Rainforest and Coastal Vine Thickets of Eastern Australia (littoral rainforest) was listed as a threatened ecological community in October 2008. As the Ella Bay development was determined to be a controlled action prior to listing (that is, in July 2005), the Australian Government is not required to assess the impacts of the Ella Bay development on the littoral rainforest community. However, as the proponent has undertaken a detailed assessment of the potential impacts of the littoral rainforest within the site and has made a number of commitments in relation to protecting the area, it will be addressed in this report for completeness of process.

The 2008 survey identified 18 Queensland regional ecosystems (REs) with one of these being listed under the VMA as endangered, 13 as of concern and four as least concern. These REs are listed in Table 5.5.

Littoral rainforest was also identified in areas marginal to the development site and adjacent to the proposed access corridor. Littoral rainforest is represented by RE 7.2.1a-l and 7.2.5a on Ella Bay property and along Ella Bay Road. RE 7.2.1 is described as mesophyll vine forest on beach ridges and sand plains of beach origin, occurring mainly in small patches in the lee of coastal beach ridges in very high rainfall areas. RE 7.2.5 is described as mesophyll to notophyll vine forest of *Syzygium forte* subsp. *forte* on sands of beach origin.

Within the Ella Bay site the littoral rainforest communities RE 7.2.1 and 7.2.1i occur on the northern boundary adjacent to the golf course to the north of the Northern Residential Precinct refer to Figure 4:11 (Report 6.2a *Vegetation Survey Report* Volume 6 of the additional information document (SEIS Submission Response dated June 2012). Refer red-striped areas in Figure 5.6 of this report. Unlike most of the other vegetation on the site the canopy features of this community are relatively intact. The site has some previous agriculture based edge effect, logging tracks, and minor clearing. The area has small pockets of *Annona glabra* (pond apple).

RE 7.2.5 occurs on the foredune in front of the Village Precinct predominately on the Esplanade with only a thin strip of less than 50 metres wide on the Ella Bay property. Refer solid red area in Figure 5.6 of this report. The rehabilitation of this area will require extensive weed management and revegetation. This community will be at high risk of human interference. The property boundary will be fenced by the precinct fence in this area and access to the beach will be by two pathways. Each of the pathways will be signposted, restricting access to the pathways only.

The proponent proposes to have a nature path within this area of vegetation to highlight the ecological rehabilitation through removal of the pond apple, the revegetation of the area and the ecology of the dunal swale. The nature walk will be non-invasive and no clearing or significant pruning required.

The proponent has configured the development and access road footprint to avoid threatened communities from its boundaries. As such, all development has been excluded from littoral rainforest.

Vegetation investigations indicate that approximately 3.75 hectares of vegetation would need to be disturbed for the development, that is, approximately 0.95 hectares within the development site and approximately 2.80 hectares for the access road. Tables 5.7

and 5.8 list the REs required to be cleared for the development and the access road. No REs listed as 'endangered' need to be removed. The amount of vegetation to be removed from the WTQWHA is approximately 0.66 hectares for the access road. The amount of vegetation to be cleared for the access road would be less with the narrower road option.

The total revegetation and rehabilitation area on site will be greater than 110 hectares.

Diversity of fauna

The WTQWHA supports a very high level of diversity of fauna including approximately 317 mammal species, 137 bird species, 54 frog species, 131 reptile species, 78 freshwater fish species and 240 butterfly species.

A total of 142 terrestrial vertebrate species were identified over both 2006 and 2008 (86 and 120 respectively) surveys including thirteen frogs, fifteen reptiles, 87 birds and 27 mammals. Thirty-three butterfly/moth species were also identified in the project area over both surveys.

Thirteen species identified during the surveys are listed threatened under Australian Government and/or State legislation including the endangered *Casuarium casuarium johnsonni* (southern cassowary) and *Litoria rheocola* (common mist frog). Table 7.1 of this report lists the EPBC Act threatened species identified. The full listing is included in Table 5.1 of this report.

The 2008 Fauna Survey Report indicated that fourteen terrestrial endangered, vulnerable and near threatened (EVNT) species not identified during surveys are likely to occur in the area based on suitable habitat or previous local records. The full list is provided in Section 5.3.1 of this report.

Southern cassowary

The species of fauna with the most potential to be impacted by the Ella Bay development is the southern cassowary. The cassowary is a frugivore (fruit eater) and an essential element in the sustainability of the Wet Tropics rainforests. It is estimated that only between 1200 and 1500 cassowaries exist in the wild in the Wet Tropics.

A cassowary survey, assessment and population viability analysis (PVA) for the Ella Bay development and access road area was undertaken in 2006 and 2007 by cassowary expert Professor Les Moore and included in the EIS and SEIS. The PVA, included in the SEIS, indicated that the cassowaries identified along the Ella Bay access road and around the Ella Bay property are part of the Graham–Seymour Range population which is estimated to have around 51-73 independent birds. In the PVA Professor Moore also indicated that the Graham–Seymour Range cassowary population, along with other coastal cassowary subpopulations south of Cairns, is undergoing a population decline and extinction of the sub-population appears inevitable and likely within sixty years.

Further surveys were undertaken in February and November 2009 and April and November 2010 (Peter Buosi). Surveys were undertaken for all seasons and after cyclones. All three surveys are included in Reports 6.1b-e and Report 6.1L Volume 6 of the additional information document (SEIS Submission Response dated June 2012).

The surveys indicate that the number of adult cassowaries recorded in 2006 to 2010 in the immediate vicinity of Ella Bay development and the access road has increased from six adults to ten adults.

The EIS has identified potential threats to the cassowary relevant to the construction and operation of the Ella Bay development including:

- habitat loss from clearing and isolation
- habitat degradation (through invasion of weeds such as pond apple and decreased water quality due to contamination or loss of access to supply)
- loss of connectivity
- increased traffic
- increased human activity (hand feeding)
- interaction with domestic animals (dog attack)
- feral pests (feral pigs—attack on birds and predation of eggs).

Other potential threats to the cassowary include:

- natural catastrophic events (for example, cyclone)
- disease (aspergillosis, avian tuberculosis and parasites).

These are addressed in more detail in Section 7.7.4 of this report.

Common mist frog

The 2006 and 2008 EIS fauna surveys identified the endangered frog species the common mist frog in upstream habitat of the Ella Bay development site.

The EIS has identified potential threats and possible actions relevant to the construction and operation of the Ella Bay development and access road upgrade including:

- loss of habitat near the access road (alteration of streamside vegetation)
- increased risk of road kill near Ella Bay Road creek crossings due to increased traffic
- degradation of water quality through sediment, erosion or contamination
- inappropriate weed control measures in riparian areas
- increased chance of further spread of pathogens such as Chytrid Fungus.

The EIS concludes that there will be no increase in threats to the long-term existence of the common mist frog resulting from the proposed development.

Mitigation/offset strategies—flora and fauna

The proponent has presented a suite of strategies to mitigate and/or offset potential impacts of the development on flora and fauna including:

- habitat preservation
- connectivity preservation
- environmental offsets
- wildlife management plans

- water quality management
- road management strategies for wildlife protection
- public awareness/education .

In summary, the objectives of the proponent's strategies are to:

- provide appropriate offsets for potential impacts on MNES
- comply with the requirements of the Queensland *Vegetation Management Act 1999* and associated codes and policies
- be consistent with *Recovery Plan for the Southern Cassowary*
- provide tangible conservation benefits locally and within the wider Innisfail/Graham–Seymour Range area with an emphasis on threatened species conservation, particularly the cassowary.

Details of the proponent's strategies are included in the additional information document (SEIS Submission Response dated June 2012) including:

- southern cassowary management sub-plan (Report 3.2 Volume 3)
- stream-dwelling rainforest frog species management sub-plan (Report 3.3. Volume 3)
- significant flora management sub-plan (Report 3.6 Volume 3)
- weed management sub-plan (Report 3.8 Volume 3)
- Conservation zones at Ella Bay (Report 6.5f Volume 6)
- Offsets package proposal (Volume 5).

The proponent's mitigation strategies are addressed in greater detail in Section 7.7.6 of this report.

Criteria IX— be outstanding examples representing significant on-going ecological and biological processes in the evolution and development of terrestrial, fresh water, coastal and marine ecosystems and communities of plants and animals

The OUV for this criterion focus on geological process and biological evolution of, and man's interaction with, the Wet Tropics ecosystem. Further details are noted in Appendix 4 of this report.

Diversity of fauna, flora and communities

The WTQWHA supports a very high level of diversity of fauna and flora as noted above.

The EPBC Act endangered species/communities identified in the Ella Bay site and access road route include:

- southern cassowary
- common mist frog
- littoral rainforest.

These are addressed above in Criterion X and in more detail in Section 7.7 of this report.

Habitat suitable for several flora and fauna species that were not identified during EIS surveys have the potential to occur in the area.

Potential impacts of the Ella Bay development and access road on geological and biological processes of the Wet Tropic ecosystems include:

- vegetation clearing, isolation and fragmentation of habitat
- inhibition or prevention of wildlife movement
- loss of biodiversity through facilitation of weed, pest and disease invasion into adjacent and peripheral vegetation communities
- hydrological and water quality impacts on creeks, wetlands, surface water run-off, groundwater and the marine waters.

While the WTQWHA is recognised as one of the most significant ecosystems, the area of Ella Bay Road and Ella Bay site has been degraded by previous anthropogenic impact and cyclonic weather events including:

- clearing for agriculture with the northern section of the western boundary of the property—over-cleared into the WTQWHA by some 50 to 80 metres
- continuous agricultural use (cattle grazing) causing edge effects including the creation of grasslands dominated by introduced aggressive grasses and invasive weeds which have started to disperse into the adjoining National Park
- introduction and spread of weeds and feral pests including feral pigs
- clearing for development of logging roads, roads and fencing
- current road use and maintenance causing edge effects and dust pollution which is degrading the visual amenity and integrity of the WTQWHA in the area, and erosion and sedimentation burden on short sections of creeks running through the Wet Tropics and depositing into the GBRWHA

These matters are addressed in more detail in Section 7.6 of this report.

The Ella Bay site was not included within the WTQWHA during the listing process although it is surrounded by WHA and nearly 18 000 hectares of private (freehold) land was included in the listing.

The EIS indicated that no important wildlife movement corridors for arboreal, terrestrial and aquatic ecosystems were identified. Local movement corridors and essential habitat for the cassowary and common mist frog are present principally along the riparian areas. These areas (approximately 87.3 hectares) will be revegetated to a width of around 100 metres and included in conservation covenants to provide greater environmental protection (refer Section 7.7.6 of this report). I have stated conditions in this report to reflect this requirement Appendix 1, conditions 2–31). The proponent has prepared a suite of management plans to protect threatened species including southern cassowary management sub-plan and stream-dwelling rainforest frog species management sub-plan. These are addressed in Section 7.7.6 of this report.

Within Ella Bay site approximately 2.02 hectares of essential/general habitat will be lost to clearing or isolation including clearing of 0.95 hectares of essential/general habitat. Along Ella Bay Road approximately 3.87 hectares of essential/general habitat will be lost to clearing or isolation including clearing of 2.80 hectares of essential/general

habitat (0.66 hectares to be removed from the WTQWHA). I note that there is a potential risk that an additional 17.5 hectares of cassowary habitat could be isolated should the proposed cassowary underpass along the access road not operate successfully.

The proponent has configured the development and access road footprint to avoid littoral rainforest communities. I have stated a condition in this report to reflect this requirement (Appendix 1, condition 2).

The proponent has commenced a weed (pond apple, Singapore daisy) and feral pig eradication program to remove these pests from the site thereby providing greater protection from potential spread to the WTQWHA. The proponent has also committed to prepare and implement a weed management sub-plan to control exotic species and a feral pest management sub-plan to control feral animals on the site.

The proponent has also committed to a series of water quality strategies to ensure the quality of water leaving the site is within levels required by DEHP including:

- wastewater/recycle water treatment to tertiary class A+ standard with nutrient levels within levels approved by DEHP
- erosion and sediment controls
- water sensitive urban design
- water quality monitoring
- stormwater treatment
- Reef Water Quality Protection Plan objectives
- golf course management.

These are addressed in detail in Section 7.7.6 of this report

Flora and fauna exhibiting allopatric speciation

EIS surveys did not locate any flora or fauna listed as exhibiting allopatric speciation including *Haplostichanthus*, *Pseuduvaria*, *Elaeocarpus*, *Ceratopetalum*, *Polyosma*, *Endiandra*, *Uromyrtus*, *Pilidiostigma*, *Buckinghamia*, *Orites*, *Stenocarpus*, *Sarcotoechia*, *Bubbia*, *Planchonella* and *Symplocos*. Therefore, the Ella Bay development is unlikely to directly impact on this OUV.

Criteria VIII—be outstanding examples representing major stages of earth’s history, including the record of life, significant on-going geological processes in the development of landforms, or significant geomorphic or physiographic features

The values focus on the significant ongoing geological processes in the development of landforms, or significant geomorphic or physiographic features of the Wet Tropics. The OUV for these criteria are noted in Appendix 4 of this report.

Potential impacts of the Ella Bay development and access road on fauna and flora are addressed the previous criteria.

The WTQWHA includes many significant geomorphic features including tropical rainforest ecosystems and wetlands which flow into the GBRWHA. The downstream and consequential impact of urbanisation resulting from the Ella Bay development has

the potential to affect the declared nationally significant wetland, Ella Bay Swamp Wetland (wetland), which lies to the north of the Ella Bay property through proposed urbanisation.

The wetland lies approximately 500 metres to the north of the Ella Bay site. Downstream impacts from sediment, fertilisers or chemicals, changes in surface and groundwater hydrology and the introduction of weeds have the potential to impact on the wetlands. The potential impacts on the wetland and WTQWHA from the Ella Bay development and increased human activity are:

- changes in hydrological flow from:
 - modification of existing drainage patterns
 - increased impervious surface
 - rainwater harvesting and harder surfaces potentially change the timing and quantity of runoff
 - the groundwater abstraction could potentially impact on the upper aquifer and dry the wetlands
- increase in pollutants from:
 - sediments from construction and operation
 - increased nutrients from sewer waste
 - golf course and development use of herbicides, pesticides and nutrients
 - ASS generated during excavation and fill.

Development within the Ella Bay site does not occur near the wetland. The proponent has committed to a number of mitigation measures in relation to water quality (refer below).

The proponent aims to enhance the ecological values of the wetland by providing environmental buffers and undertaking a weed management program. The proponent has committed to donating land (which includes the southern tip of the wetland) to the Ella Bay National Park which is to the north of the development. As well, the proponent proposes to revegetate a strip of land of about 50 metres in width adjacent to the donated land to provide a buffer of around 400 metres between development and the wetland. This would provide a greater level of protection for the wetlands. These activities form part of the proponent's proposed environmental offset package for the development (refer Appendix 6 of this report).

The proponent also committed to implement its weed management plan which should help to reduce the potential spread of noxious weeds (including pond apple) to the wetland. Weed management for the development is addressed in Section 5.5.1 of this report.

Water quality

The proponent has committed to a series of water quality strategies to ensure the quality of water leaving the site and potentially making its way to the wetland and the GBRWHA is within nutrient levels required by DEHP including:

- wastewater/recycle water treatment to tertiary class A+ standard with nutrient levels within levels approved by DEHP
- erosion and sediment controls
- water sensitive urban design
- water quality monitoring
- stormwater treatment
- Reef Water Quality Protection Plan objectives
- best practice golf course management.

These are addressed in detail in section 7.7.6 of this report

The proponent has advised that chemical use (herbicides etc) will be restricted to chemicals recommended in the *Water Quality Guideline for the Great Barrier Reef Marine Park* (2008).

Groundwater

The residual impact of proposed ground water abstraction for the Ella Bay development is expected to be negligible (based on technical studies under for the EIS) provided the groundwater abstraction is monitored to confirm that any net drawdown on the upper aquifer is less than an average of 0.1 metres greater than tidal forcing amplitude at the northern vegetation boundary or at the dunal swale. I have stated a condition in this report to require the proponent to undertake groundwater monitoring as part of the water quality monitoring program (Appendix 1, Condition 25).

Acid sulfate soils

The EIS indicated that there is a low probability of acid sulfate soil (ASS) and potential ASS (PASS) based on the preliminary soil sampling. To protect water quality and ecosystems from acidification issues the proponent has committed to develop and implement an ASS management plan. The management plan will:

- be prepared in accordance with the *Queensland Acid Sulfate Soil Technical Manual: Soil Management Guidelines* and submitted for approval prior to bund construction
- be managed in accordance with sections 4.8 and 4.9 of *State Planning Policy 2/02: Planning and Managing Development Involving Acid Sulfate Soils*
- form part of the construction EMP.

The proponent has also committed to conduct ASS testing at the operational works approval phase for each of the proposed development stages, in accordance with SPP 2/02.

I have stated a condition in this report to ensure the appropriate management of PASS (Appendix 1, Condition 36).

Revegetation and rehabilitation

Extensive revegetation and rehabilitation is proposed around the site in particular along the boundary to the WTQWHA, site streams and riparian zones which carry water to the GBRWHA. The present riparian zones have been degraded by previous use and cyclones Larry and Yasi. The revegetation will provide a significant protective buffer to

the stability of the riparian zone, enable stream shading and improve the ecology of the aquatic habitat, prior to discharge to the GBRWHA.

A proposed 100 metre buffer to the WTQWHA is expected to mitigate against urban creep from the development. The buffer will be revegetated and should significantly reduce the existing agriculture induced edge effects into the rainforest.

Roadworks with WTQWHA

A direct action associated with the Ella Bay development within the WTQWHA is the road widening of Ella Bay Road. The road widening will permanently change the geography of the road area. The roadworks are required for the safe and efficient movement of vehicles to the site. The areas undergoing widening will be revegetated to cover any scarring that may be caused. Over time there should be no obvious sign of changes to the landscape. The proponent is required to obtain from WTMA a permit for road works in the WTQWHA under the *Wet Tropics Management Plan 1998*. In issuing the permit, WTMA may require cassowary fencing to be constructed in certain locations along the access road.

During construction there is also a potential for additional sediment and rubbish to be generated. Civil construction including roadworks is to be timed to avoid the wet season and an emergency regime will be implemented before significant weather events (including cyclones).

The following environmental management sub-plans will specifically address roadwork issues:

- Ella Bay Road construction management sub-plan
- erosion and sediment control sub-plan
- clearing and earthworks management sub-plan
- site preparation management sub-plan
- cyclone, fire and emergency management sub-plan.

The downstream impacts of surface water along Ella Bay Road are expected to improve with regards to quality, sediment and as a result of the proponent's proposed mitigation measures. There is no intention to change the stream hydrology.

Coordinator-General's conclusions—WTQWHA

An assessment of the potential impacts on the OUV of the WTQWHA during the construction and operation of the Ella Bay development has been undertaken in the proponent's *Report on Matters of National Environmental Significance* in Volume 1 of the additional information document (SEIS Submission Response). The most significant impact identified was the potential impact on endangered species, in particular the southern cassowary and the common mist frog. However, the proponent has proposed a number of mitigation strategies including habitat protection, increased habitat connectivity through revegetation and rehabilitation and road management to reduce the potential impacts. The proponent has also presented an offsets strategy which includes offset land in strategic corridors in the WTQWHA and various cassowary research programs (refer Appendix 6 of this report).

The quality of water which may make its way to the listed wetlands in the WTQWHA is an important consideration for native fauna (for example, freshwater fish, frogs, cassowary accessing the wetland for water). The requirements for mitigation measures for the construction and operation phases, and conditions relating to water quality that I have stated in this report, satisfactorily address this matter.

Beneficial and mitigating actions of the proposal include:

- new opportunities for visitors to access parts of the WTQWHA previously inaccessible by use of tracks in the National Park proposed by the proponent
- an opportunity to enhance recreational prospects for the Innisfail community
- the Welcome Centre to be located at the main resort and the community information activities proposed by the proponent may provide visitors with a greater understanding of the WTQWHA (and its values), the Ella Bay National Park, Ella Bay Swamp wetland, protected fauna and flora and the environment in general
- the upgrade of Ella Bay Road will help to stabilise the current road which is susceptible to landslips/landslides following heavy rain. This will benefit the streams of the WTQWHA in close proximity to the access road as less silt/mud will find its way into the stream and ultimately into the GBRWHA.

Overall, I conclude that the proposed Ella Bay development has minor potential to impact on the OUV of the WTQWHA. Impacts, substantially mitigated by requirements that I have stated in this report and the benefits from the offsets and commitments of the proponent, are considered to be acceptable given that the primary purpose of the project is to encourage sustainable tourism uses while protecting key natural values of the area. Therefore, in relation the WTQWHA, the proposed development and operations of Ella Bay development are not expected to:

- cause significant loss of any OUV
- cause any OUV to be degraded or damaged on a long-term basis
- cause any of the OUV to be notably altered, modified, obscured or diminished for any significant period of time.

7.6.2. Great Barrier Reef World Heritage Area (GBRWHA)

Background

The Great Barrier Reef is the largest WHA on Earth (348 000 square kilometres). Over 99 per cent of the WHA is covered by the Great Barrier Reef Marine Park (GBRMP), however the WHA also includes many islands, cays and intertidal areas protected by State (Queensland) legislation that are not part of the Commonwealth Marine Park.

The Great Barrier Reef Marine Park Authority is the Australian Government agency responsible for managing the Great Barrier Reef Marine Park. The Queensland Department of National Parks, Recreation, Sport and Racing (DNPRSR) is directly responsible for managing Queensland's Great Barrier Reef Coast Marine Park (the adjoining State Marine Park).

The Ella Bay development is located adjacent to the GBRWHA with the Great Barrier Reef located over 30 kilometres offshore. The Ella Bay development is not directly

contiguous with the GBRWHA as it is separated by a gazetted esplanade of approximately 100 metres width. The Coral Sea is directly to the east of the site and is located within the General Use Zone of the GBRMP.

The EIS documentation has noted the following points that highlight the relationship between the proposed development and the GBRWHA:

- no development works will be undertaken in the GBRWHA or on the intertidal wetlands
- the development will not remove, disturb or displace any known reef or coral area. As such no interruption of the heterogeneity and connectivity of the reef assemblages will occur
- the proponent does not intend to disturb or remove any marine plants (including mangroves) on or near the site. However, if after any further pre-construction investigations, it is determined that disturbance or removal of marine plants is necessary, the proponent will seek the relevant approval from the Queensland DAFF
- there will be no disturbance to areas designated under the EPBC Act as ecologically significant, rare or scarce in relation to the GBRWHA
- on-site marine facilities are not proposed for the development and the proponent does not anticipate any significant increase in marine activities and associated impacts on the GBRWHA as a direct result of the Ella Bay development
- sewerage and waste water from the development will be treated to tertiary A+ level (with nutrients levels within the levels approved by DEHP) before being irrigated throughout the property and water quality monitoring will be undertaken.

Potential impacts and mitigation measures

Although addressed in the sections below flora and fauna impacts are addressed in more detail in Section 7.7 of this report.

Criteria VII— contain superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance

Context

The OUV for this criterion are noted in Appendix 5 of this report. The values focus on the natural beauty of the GBRWHA, namely the reef and island system, coral and sand cays, mangrove systems, variety of landscapes and seascapes, variety of marine flora and fauna in the coral reefs, breeding colonies for seabirds, large aggregations of butterflies, and habitat for migrating whales, dolphins, dugong and turtles.

The Ella Bay is terrestrial in nature with no direct footprint on the adjacent coastal and marine environment. The most notable impact within this criterion would be on visual amenity, discussed below. The other OUV are also briefly addressed. However, greater detail is provided in other sections of this report.

Visual amenity

The potential impacts of the Ella Bay development and the access road in relation to this criterion are addressed in detail in the additional information document (SEIS Submission Response) in the following sections:

- Section 3.4.2 Volume 2—MNES
- Report 6.5b Volume 6—Visual assessment and mitigation study
- Appendix 1 Volume 4—visual impact of the access road.

The net visual impact of the Ella Bay development and the Ella Bay Road upgrade and bypass road is expected to be temporary, during and immediately after construction until landscape screening vegetation reaches greater than ten metres in height. The EIS documents include potential impacts and detailed images of expected views of the development and road requirements from various viewing points from the ocean and from the air. The visual assessment and mitigation study included in Report 6.5b Volume 6 of the additional information document (SEIS Submission Response dated June 2012) includes updated images of the development incorporating proposed architectural treatments and site colour palettes.

The visual amenity of the site, as viewed from the GBRWHA, will initially be reduced because of works required as the development is constructed. However, planned revegetation and rehabilitation will screen the majority of the development views leaving only temporary visibility of the upper parts of some buildings and roofs while the landscape screening vegetation grows. The visual impacts, as viewed from the ocean, are expected to diminish over time as vegetation growth should weaken the colour and textural contrasts of the development.

The proponent also proposes to manage the visual interaction between the built form and the natural environment by using colours and hues that are common to the area. External finishes of buildings and roofs are proposed to be non-reflective and of muted tones, selected to match and blend with the existing and proposed vegetation.

The visual impact of the access road is discussed in detail in Appendix 1 Volume 4 of the additional information document (SEIS Submission Response dated June 2012). Visual impacts associated with Ella Bay Road are expected to include:

- change from an unsealed road to bitumen road
- possible presence of fauna mitigation measures such as the approach and bridge sections of the fauna underpass, fauna bridges and the cassowary directional fencing
- vegetation clearing.

Only minimal clearing (2.80 hectares—less for the narrower road option now proposed) is proposed for the access road. The Ella Bay Road upgrade has been designed to use the existing road clearing with additional clearing requirements minimised or modified to retain as many of the mature trees and road canopy connectivity as possible. An extensive revegetation and weed control strategy will mitigate the visual impacts post road construction. The revegetation strategy will include vegetating the embankments and gabion rockwalls with native plants to further reduce visual concerns from the sea and coastline.

The visual impact of the Ella Bay Road bypass section of the access road will be mitigated through revegetation and the construction of a 'cut and cover' tunnel. The 'cut and cover' tunnel involved tunnel construction followed by revegetation of the area above the tunnel. There will be loss of visual amenity until such time as the revegetation has developed. The portal of the tunnel is to be aligned so the tunnel faces north/south and minimises the view from the GBRWHA and the noise to Flying Fish Point.

It is considered that the social benefits to be gained by greater access to the site, such as providing new and regulated access to the WTQWHA and greater views of the GBRWHA (a public lookout is proposed near Heath Point), balance any negative visual impacts of the development and access road.

The proponent's commitments relating to the protection of the scenic values of the WHA and visual amenity in general include:

- adherence to building height restrictions as set out in the Ella Bay development local area plan (refer Report 6.5a Volume 6 of the additional information document and also discussed in Section 5.1.3 of this report) and the use of native vegetation or screening
- use of external finishes that are non-reflective and of dark tones, selected to match and blend with the existing and proposed vegetation. Development will be limited on elevated sections of Ella Bay
- implementation of a revegetation staging plan as presented Figure 5.7 of this report prior to the commencement of each development stage using native plant species and species that occur locally
- implementation of a 'black sky' lighting policy (that is, no up-lighting) for the development area and access road
- shielding external lighting in environmentally sensitive areas in the development area to limit extraneous light where necessary or facing lighting away from coastal and habitat areas
- preparation and implementation of the Ella Bay Road construction management sub-plan prior to the commencement of construction works which includes measures to screen embankments and cuttings with native vegetation, conservation of mature trees where possible and a detailed monitoring and reporting regime for both the construction and operational stages of the development.

I state a condition in this report to ensure the visual impact of the development is minimised to the greatest extent possible (Appendix 1, Condition 20).

Other values

Although the Ella Bay site is not within the GBRWHA the following OUV are addressed for completeness of indirect impacts and proposed mitigation strategies.

Coral cays, reefs and related marine flora and fauna—

The Great Barrier Reef is located over 30 kilometres offshore from Ella Bay and there are no recorded smaller coral cays or seagrass beds near Ella Bay.

Water quality is a significant issue for the GBRWHA. Water quality mitigation measures for the development which are discussed in the assessment of Criteria X below and in greater detail in Section 7.7.6 of this report are sufficient to ensure no adverse effects on the surrounding marine waters. Therefore, it is unlikely that the Ella Bay development would negatively impact on the GBRWHA and its marine flora and fauna. Impacts on other threatened marine fauna and flora are addressed in Section 7.7 of this report.

Mangrove systems

Mangrove plants are interspersed with other terrestrial flora (dominated by Coastal She-oak (*Casuarina equisetifolia*)) in the gazetted Esplanade which separates the Ella Bay development site from the GBRWHA. The EIS indicated that there will be only minimal impact in this area. The proponent proposes to construct about six low-impact paths to allow access to the beach from the resort areas. The proponent's beach access and walking track proposals are addressed in Reports 6.5d and 6.4e Volume 6 of the additional information document (SEIS Submission Response). The proponent has committed to avoid marine plants, where possible, when constructing the beach access paths.

I have stated a condition in this report requiring the proponent to develop and implement a beach and foreshore management plan to manage the coastal area adjacent to the development site (Appendix 1, Condition 24). I have also stated a condition in this report to address requirements relating to potential impacts on marine plants (Appendix 1, Condition 32).

I note that the proponent has committed to several vegetation mitigation strategies that will provide appropriate protection for marine flora, if located during clearing works. For example, a suitably qualified botanist will accompany surveyors marking the currently unformed sections of the access road and any tracks, roads or buildings on the Ella Bay site to check for the presence of listed species.

Breeding colonies of seabirds

The Ella Bay area is not a known breeding colony for seabirds. However, the surveys conducted in 2006 and 2008 for the EIS recorded a bird activity on the shoreline, beach and wetland areas including the Whitebellied Sea-Eagle, kingfisher species and the beach stone-curlew (vulnerable—NC Act). The beach and shoreline habitat is also suitable foraging habitat for wading birds generally, including conservation significant migratory species, such as sandpipers and plovers.

The increase in the level of threat posed to shorebirds from construction, habitat loss, domestic animals, human interference, ongoing noise and lighting is expected to be minimal. However, the proponent proposes a number of strategies to minimise impacts including:

- developing and implementing a beach stone-curlew management sub-plan (a component of the overall EMP for the development) to protect the shorebirds that visit the Ella Bay shoreline
- developing and implementing a pest management sub-plan to provide greater protection for bird species

- prohibiting domestic cat and dog ownership, apart from guide and assistance dogs (included in the Ella Bay development body corporate laws).

I note the proponent has been actively managing a pest and feral animal eradication program within the Ella Bay development site with particular emphasis on the eradication of feral pigs. Feral animals can significantly reduce breeding success of shorebirds by predation. The proponent has indicated that over 100 feral pigs have been eradicated from the site since taking over ownership of the property.

I have also stated a condition in this report requiring the proponent to develop and implement a beach and foreshore management plan to manage the coastal area adjacent to the development site (Appendix 1, Condition 24).

The potential impacts of the Ella Bay development on bird species generally are addressed throughout Section 5.2.10 of this report.

Butterflies

The fauna surveys undertaken for the EIS did not involve detailed and systematic survey methods for butterflies. However, Appendix 2 Report A6.2 Volume 8 of the EIS lists 33 species of butterfly that were incidentally recorded during the surveys. The listed Apollo Jewell Butterfly (*Hypochrysops Apollo Apollo*) (vulnerable—NC Act) which has been recorded in wetland vegetation to the north of Ella Bay was not identified during the 2006 or 2008 surveys. I consider it unlikely that large aggregations of butterflies are present at Ella Bay.

Migrating whales

I consider that migrating whales are not expected to be impacted by the Ella Bay development, as their migration activity occurs well offshore from the mainland. There are relevant laws that govern activities relating to viewing migrating whales that would apply to any commercial tourism operation associated with the Ella Bay development.

Dolphins, dugong, turtles and other marine species

EIS investigations indicated that, overall, the project is not expected to cause any unacceptable impact on marine life adjacent to the site and on habitat for dugongs and other key marine species.

Reports of turtle nesting around the Ella Bay area have been recorded in the past. However, the steepness of the beaches and the presence of the vigorous groundcover weed Singapore daisy (*Sphagneticola trilobata*) at the top end of the beach make it unlikely that Ella Bay would be a prolific turtle nesting area. The proponent has committed to undertake a weed management program to remove weeds from the site which may improve the area for nesting in the future.

I note the proponent has developed a marine turtle management sub-plan as part of the EMP for the development (section 3.5, Volume 3 of the additional information document (SEIS Submission Response)) which highlights potential impacts from the development during construction and operation and how the impacts will be mitigated and managed (including monitoring and reporting regime).

The proponent's current activities and proposed future strategies to eradicate feral pests from the site will also assist to protect any turtles (and their eggs) that may nest near the Ella Bay site.

As noted above water quality is a significant issue for the GBRWHA. Water quality mitigation measures for the development (discussed in Section 7.7.6 of this report) are considered sufficient to ensure that there are no unacceptable impacts on the surrounding marine waters and fauna. Therefore, it is unlikely that the Ella Bay development would negatively impact on the GBRWHA and its marine flora and fauna.

Criteria X—contain the most important and significant natural habitats for in-situ conservation of biological diversity, including those containing threatened species of outstanding universal value from the point of view of science or conservation

The OUV of this criterion focus on the presence of rare and endangered species within GBRWHA (refer Appendix 5 of this report).

The quality of water potentially making its way to the GBRWHA from the Ella Bay development is considered the most significant threat to the OUV for this criterion. The impact of water quality on the WHA will be discussed just below, followed by a brief discussion of the specific values.

Discharge of sediments, nutrients, other chemicals and litter into surrounding waters

I note the proponent has committed to meet the objectives of the *Reef Water Quality Protection Plan 2009 (RWQPP)*, a joint Australian and Queensland Government initiative. The RWQPP identifies actions, mechanisms and partnerships to build on existing Government policies and industry and community initiatives to assist in halting and reversing the decline in the quality of water entering the Great Barrier Reef. The plans objectives are to: reduce the load of pollutants from diffuse sources in the water entering the Great Barrier Reef; and rehabilitate and conserve areas of Great Barrier Reef catchment that have a role in removing water borne pollutants.

The Ella Bay development proponent proposes to treat its sewerage and waste water on site using two membrane bioreactor technology (MBT) treatment plants strategically located within the development area. The proponent's wastewater/recycled water treatment and stormwater management proposal is discussed in sections 5.2.6 and 7.7.6 of this report. In brief, the proponent has committed to treat wastewater/recycled water to tertiary class A+ standard with nutrient levels within limits approved by DEHP.

The sewage treatment plants will require approval from DEHP as an environmentally relevant activity (ERA 63—*sewage treatment*) and as such will require a development approval for a material change of use (MCU). Detailed design of, and operation and management procedures for, the water recycling plants and sewerage system must be included as part of the ERA. GBRMPA has advised that MBR plants are considered 'best practice' for package plants, and there are examples where they are operating successfully such as at Picnic Bay on Magnetic Island, and Horseshoe Bay, Cleveland Bay and Mount St John in Townsville. I have stated a condition in this report relating to the requirements for an ERA for sewerage treatment (Appendix 2).

The DEHP and GBRMPA queried the ability of the Ella Bay site to cope with the volume and nutrient levels of the water that would be irrigated from the treatment plants, as the Innisfail area is well known for its high rainfall and cyclone events, thereby making the area almost continually saturated. At the request of DEHP, the proponent's technical consultants re-ran the MEDLI testing and provided these to DEHP and GBRMPA for review. DEHP and GBRMPA have agreed that there does not appear to be a significant risk of environmental harm, to the existing quality of the groundwater and the surface water (which has the potential to reach the GBRWHA), associated with the reuse of treated effluent from the wastewater treatment plant, provided that strict controls are maintained, all conditions met and monitoring undertaken. At the request of GBRMPA, the ERA condition in Appendix 2 of this report includes a requirement for an EMP to be developed and implemented by the proponent to address the situation where the treatment plant's wet weather storage capacity has been exceeded.

The proponent has also committed to ensure that the stormwater discharge from the development will be managed to meet designated water quality objectives through a number of measures including:

- erosion and sediment control plans (ESCP)—for the development site and the access road
- water sensitive urban design (WSUD)
- golf course EMP
- no development within the approved erosion prone area for the site
- no septic tanks
- not discharging treated sewage to the ocean or creeks.

The proponent has also committed to use environmental erosion and sediment control best practice measures along the road alignment during the road construction to minimise the amount of suspended, dissolved solids and construction pollutants entering the watercourses. This includes the preparation of ESCPs for all phases of construction and land disturbing activities for each discrete catchment area.

This commitment is stated in a condition attached to this report (Appendix 1, Condition 26).

I further note the proponent has also committed to develop and implement a water quality monitoring plan (WQMP) to establish local water quality objectives and to monitor the effectiveness of proposed measures in maintaining of water quality. This is to be undertaken during the period in which development approvals are being gained and before construction. The WQMP will:

- be designed in accordance with relevant guidelines including:
 - *Queensland Water Quality Guidelines*
 - *Urban Stormwater Quality Planning Guidelines 2010*
 - *State Planning Policy (4/10) for Healthy Waters*
 - *ANZECC/ARMCANZ Guidelines*
 - *Water Quality Guidelines for the Great Barrier Reef Marine Park (GBRMPA 2010)*

- measure nutrients, chlorophyll-a, herbicides, pesticides, copper, lead, total suspended solids, and possibly other analytes as determined during design of the monitoring program.

This commitment is stated in a condition attached to this report (Appendix 1, Condition 27). I have also stated other conditions in this report which relate to wastewater and water quality requirements (Appendix 1, conditions 25–27).

Nesting turtles

As previously noted, marine turtles have been known to nest at sites near Ella Bay in the past. However, the steepness of the beaches and the presence of the weed Singapore daisy in the dunal system make it unlikely that Ella Bay would be a prolific turtle nesting area.

The proponent has committed to undertake a weed management program to remove weeds from the site which may improve the area for nesting in the future. I note the proponent has developed a marine turtle management sub-plan as part of the EMP for the development (section 3.5, Volume 3 of the additional information document (SEIS Submission Response) to manage potential human interaction, public education and awareness, lighting and protected areas.

The proponent's current activities and proposed strategies to reduce the incidence of feral animals on the site will also assist to reduce the predation of marine turtles and their eggs.

Dolphins, dugong and other marine species

EIS investigations indicated that, overall, the project is not expected to have an unacceptable impact on marine life adjacent to the site and on habitat for dugongs and other key marine species.

The proponent's water quality mitigation measures (discussed in sections 5.2.6 and 7.7.6 of this report) are sufficient to ensure no adverse effects in the surrounding waters and marine fauna.

Breeding colonies of seabirds

As noted previously, the Ella Bay area is not a known breeding colony for seabirds and the proposed development is not expected to have an unacceptable impact on breeding areas for seabirds.

Along with the proponent's proposed shorebird strategies noted above, I have stated a condition in this report requiring the proponent to develop and implement a beach and foreshore management plan to manage the coastal area adjacent to the development site (Appendix 1, Condition 24).

Seagrass

As noted above, the EIS does not report any seagrass beds near Ella Bay. I consider that seagrass, if it is found to be located near the Ella Bay site, is unlikely to be impacted by the development. The proponent's water quality mitigation measures (discussed in sections 5.2.6 and 7.7.6 of this report) are sufficient to ensure no adverse effects in the surrounding waters and marine flora.

Mangroves

As noted previously, mangrove plants are interspersed with other terrestrial flora (dominated by Coastal She-oak) in the gazetted Esplanade which separates the Ella Bay development site from the GBRWHA. The EIS indicated that there will be only minimal impact in this area. The mangroves are not expected to be impacted by the proposed low-impact paths to be constructed to allow access to the beach from the resort areas. These are discussed in Reports 6.5d and 6.4e Volume 6 of the additional information document (SEIS Submission Response). The proponent has committed to avoid marine plants, where possible, when constructing the beach access paths.

I have stated a condition in this report requiring the proponent to develop and implement a beach and foreshore management plan to manage the coastal area adjacent to the development site (Appendix 1, Condition 24). I have also stated a condition in this report to address requirements relating to potential impacts on marine plants (Appendix 1, Condition 32).

Coral reefs, continental islands, coral cays and sand cays

As noted above, the Great Barrier Reef is located over 30 kilometres offshore from Ella Bay and there are no recorded smaller coral cays or sand cays near Ella Bay. There are also no continental islands in the vicinity of Ella Bay. Therefore, I consider that the Ella Bay development will not negatively impact on these OUV.

Criteria IX— be outstanding examples representing significant on-going ecological and biological processes in the evolution and development of terrestrial, fresh water, coastal and marine ecosystems and communities of plants and animals

The OUV for this criterion focus on geological process and biological evolution of the GBR and its impact on the GBR ecosystem. Further details are noted in Appendix 5 of this report.

Diversity of terrestrial fauna and flora

As noted above, the Ella Bay development would not impact EPBC listed terrestrial flora and fauna species. Threatened ecological communities of the GBRWHA or the overall floristic diversity of the WHA will also not be impacted.

Marine fauna and seabirds

Given the proponent's commitment to a high standard of management of water quality from the development, the project is not expected to have an unacceptable impact on marine life adjacent to the site and on habitat for dugongs and other key marine species.

The potential impact of the development on nesting turtles is considered to be minimal as discussed above. The proponent's marine turtle management sub-plan and feral pig eradication program will assist to reduce the predation of marine turtles and their eggs.

As noted previously, the Ella Bay area is not a known breeding colony for seabirds and the proposed development is not expected to have an unacceptable impact on breeding areas for seabirds. The proponent's proposed shorebird strategies and the requirement for the proponent to develop and implement a beach and foreshore

management plan will provide adequately protection for seabirds frequenting the Ella Bay beach area.

Other values

The Ella Bay site is not within the GBRWHA and therefore does not directly contribute to:

- the size and morphological diversity of the GBRWHA
- ongoing processes of accretion, erosion and deposition in the GBRWHA
- dispersion and evolution of hard corals and associated flora and fauna of the GBRWHA
- morphological and genetic changes in mangrove and seagrass within the GBRWHA
- integrity of the inter-connections between reef and island networks of many taxa
- processes of dispersal, colonisation and establishment of plant communities within the GBRWHA.
- indigenous temperate species derived from tropical species
- isolation of certain populations (for example, two subspecies of the butterfly *Tirumala hamata*), as these have not been recorded at Ella Bay
- remnant vegetation types (hoop pines) and relic species (sponges), as these have not been recorded at Ella Bay.

The bird species Silvereye (*Zosterops lateralis*), which may be related to the *Zosterops spp*, has been identified during the fauna surveys undertaken for the EIS. As only 0.95 hectares of vegetation is required to be removed from the Ella Bay development site and large revegetation and rehabilitation program (over 110 hectares) is proposed, there is expected to be only minimal impact on this species if any.

Criteria VIII—be outstanding examples representing major stages of earth’s history, including the record of life, significant on-going geological processes in the development of landforms, or significant geomorphic or physiographic features

The OUV for these criteria are noted in Appendix 5 of this report. The values focus on evolutionary processes and maturity of the Great Barrier Reef.

The Ella Bay site does not directly contribute to:

- reef morphologies of the GBR
- record of sea level changes and history of the reef’s evolution
- record of climate history, environmental conditions and processes
- formations such as serpentine rocks within the GBRWHA.

A dunal system exists in the gazetted Esplanade which separates the Ella Bay development site from the GBRWHA. The EIS indicated that there will be only minimal impact on this dunal system as a result of the development. The proponent proposes to construct about six low-impact paths to allow access to the beach from the resort areas. The proponent’s beach access and walking track proposals are addressed in Reports 6.5d and 6.4e Volume 6 of the additional information document (SEIS Submission Response).

I have included a condition in this report requiring the proponent to develop and implement a beach and foreshore management plan to manage the coastal area including the dunal system adjacent to the development site (Appendix 1, Condition 24).

Coordinator-General's conclusions—GBRWHA

The previous discussion and analysis has highlighted that there are no direct actions/impacts associated with the Ella Bay development within the GBRWHA.

An assessment of the impacts on the OUV of the GBRWHA as a result of the construction and operation of the Ella Bay development has been undertaken in the proponent's *Report on Matters of National Environmental Significance* in Volume 1 of the additional information document (SEIS Submission Response). The most significant impact concluded was the temporary visual disturbance of the views from the GBRWHA to the mainland caused by the tourism and residential urbanisation and associated roadworks. However, the proponent has proposed a number of mitigation strategies relating to built form and revegetation to reduce the potential impacts.

The quality of water which may make its way to the GBRWHA also poses a potential threat to the pristine marine environment of the GBRWHA and marine fauna (for example, dugongs, dolphins and marine turtles) and flora in particular. However, the conditions for mitigation measures I have stated in this report relating to water quality satisfactorily address this matter.

Beneficial and mitigating actions of the proposal include:

- new opportunities for visitors to view the GBRWHA from a proposed viewing station on the upgrade Ella Bay Road at Heath Point
- an opportunity to enhance recreational prospects for the Innisfail community
- the Welcome Centre to be located at the main resort and the community information activities proposed by the proponent may provide visitors with a greater understanding of the GBRWHA (and its values), the Great Barrier Reef Marine Park, Ella Bay, protected marine fauna and flora and the environment in general
- the upgrade of Ella Bay Road will help to stabilise the current road which is susceptible to landslips/landslides following heavy rain. This will benefit the GBRWHA as less silt/mud will find its way to the ocean.

Overall, I conclude that the proposed Ella Bay development has minor potential to impact on the OUV of the GBRWHA mainly due to the temporary visual intrusion of the development and risks to water quality. These impacts are substantially mitigated by conditions I have stated in this report and balanced by the benefits of the proposal. They are therefore considered to be acceptable given that the primary purpose of the project is to encourage sustainable tourism uses while protecting key natural values of the area. Therefore, in relation to the GBRWHA, the proposed development and operations of Ella Bay development are not expected to:

- cause any significant loss of any OUV
- cause any GBRWHA OUV to be degraded or damaged on a long-term basis

- cause any of the OUV to be notably altered, modified, obscured or diminished for any significant period of time.

7.7. Listed threatened species and ecological communities

7.7.1. Context

The EPBC Act lists all of Australia's protected species and communities.

7.7.2. Threatened fauna

EPBC Act Protected Matters Report

The EPBC Act protected matters report run for the Ella Bay area (refer Appendix 2 Report 6.3a Volume 6 of the additional information document (SEIS Submission Response dated June 2012)) lists 21 threatened fauna species that are likely to occur in the area including:

- three birds
- three frogs
- seven mammals
- six reptiles
- two sharks.

Fauna surveys for the Ella Bay development were undertaken in 2006, 2008 and 2009. The 2006 studies were reported in the EIS whereas the subsequent surveys and reports are contained in Volume 6 of the additional information document (SEIS Submission response dated June 2012). The 2008 Fauna Survey Report was developed to supplement existing 2006 survey data and provide additional data on fauna found in the access road alignment area that was not included in the 2006 survey. This report was also subject to minor updates in 2011 to include results of more recent ecological studies.

Field surveys were conducted in accordance with the requirements of the EIS terms of reference and conducted to obtain ecological information relevant to the project and to ground-truth results from the desktop assessments.

EIS survey findings

A total of 142 terrestrial vertebrate species were identified over both 2006 and 2008 (86 and 120 respectively) surveys including 13 species of frog, 15 species of reptile, 87 species of bird and 27 species of mammal. Thirty-three butterfly/moth species were incidentally recorded at the project area over both surveys.

Of the 142 species identified during the surveys 13 species are listed threatened under Australian Government and/or state legislation. Table 7.1 of this report lists the EPBC Act threatened species identified. The full listing is included in Table 5.1 of this report.

Table 7.1 EPBC threatened fauna species identified during 2006 and 2008 surveys

Species Common Name	EPBC Status	2006 Survey	2008 Survey
Amphibians			
<i>Litoria rheocola</i> common mist frog	Endangered	Y	Y
Birds			
<i>Casuarius casuarius johnsonii</i> southern cassowary	Endangered	Y	Y
Mammals			
<i>Pteropus conspicillatus</i> Spectacled flying-fox	Vulnerable	Y	Y

In addition to the terrestrial surveys, aquatic vertebrate surveys identified the presence of nine freshwater fish species at the Ella Bay site. None of the fish species identified are conservationally significant under Australian Government and state government legislation. However, one of the species identified, the Cairns Rainbow fish is listed as vulnerable under the IUCN Red List.

A total of 33 butterfly/moth species were also incidentally recorded in the project area over both surveys.

Five introduced species were identified over both surveys including the *Bufo marinus* (cane toad), *Hemidactylus frenatus* (house gecko), *Acridotheres tristis* (common myna), *Oryctolagus cuniculus* (rabbit) and *Sus scrofa* (pig).

Rabbit and pig are recognised as Class 2 pests, under the Queensland *Land Protection (Pest and Stock Route Management) Act 2002* which are defined as being established in Queensland and has, or could have a substantial adverse economic, environmental or social impact.

Southern cassowary

The significance of the southern cassowary to the Wet Tropics region, the potential impacts of the construction and operation of the Ella Bay development on the Graham–Seymour Range cassowary sub-population and the proponent’s proposed mitigation measures have been thoroughly documented and analysed during the EIS process and in the expert reports attached to the EIS documents, most of which have been included in the additional information document (SEIS Submission Response date June 2012) including:

- Section 4.2 Volume 1 (MNES)
- Report 3.2 Volume 3 (southern cassowary management sub-plan)
- Section 5 Volume 4 (Road Design and Design Criteria)
- Section 8 Volume 4 (Fauna Sensitive Road Design)
- Section 12 Volume 4 (Road Operation Management and Monitoring)
- Volume 5 (Offset Package Proposal)

- Reports 6.1a to 6.1m Volume 6 (Cassowary Reports—including survey results and fence and escape gate trial results)
- Report 6.2f Volume 6 (Cassowary Specific Revegetation).

Context

The cassowary is a frugivore and an essential element in the sustainability of the Wet Tropics rainforests. It is estimated that only between 1200 and 1500 cassowaries exist in the wild in the Wet Tropics.

The primary habitat of the southern cassowary is rainforest and associated vegetation mosaics, although they also use mangroves, melaleuca and various eucalypt woodlands, swamps and swamp forests. Their habitat is required to have a high diversity of fruiting trees and a ready supply of water.

A number of small sub-populations have formed due to substantial obstacles in the east-west and north-south corridors from extensive agricultural and urban clearing, and existence of the Bruce Highway and other road corridors. The sub-populations face declining numbers due to declining habitat and growing threats.

A cassowary survey, assessment and population viability analysis (PVA) for the Ella Bay development and access road area was undertaken in 2006 and 2007 by cassowary expert Professor Les Moore and included in the EIS and SEIS. The PVA, included in the SEIS, indicated that the cassowaries identified along the Ella Bay access road and around the Ella Bay property are part of the Graham–Seymour Range population which is estimated to have around 51–73 independent birds. In the PVA Professor Moore also indicated that the Graham–Seymour Range cassowary population, along with other coastal cassowary subpopulations south of Cairns, is undergoing a population decline and extinction of the sub-population appears inevitable and likely within sixty years.

In the PVA, Moore suggests that this decline is caused by inadequate patch size, isolation from the main habitat blocks to the west, cyclone-induced mortality, and high levels of historical and contemporary anthropogenic impact including urban and agricultural encroachment into their habitat and the edge effects associated with these. All of these impacts are cumulative and therefore continuing to contribute to the decline. Moore contends that the development of the Ella Bay property with the proposed revegetation, mitigation and research commitments proposed by the proponent the local cassowary population has the potential to reverse the PVA outcome.

Surveys

A cassowary survey, assessment and PVA for the Ella Bay development and access road area was undertaken in 2006 and 2007 (Moore) and included in the EIS and SEIS. Further surveys were undertaken in February and November 2009 and April and November 2010 (Peter Buosi). Surveys were undertaken for all seasons and after cyclones. All surveys are included in Reports 6.1b-e and Report 6.1L Volume 6 of the additional information document (SEIS Submission Response dated June 2012).

In summary, a comparison of the surveys indicated that the:

- number of adult cassowaries recorded in 2006 to 2010 in the immediate vicinity of Ella Bay development and the access road has increased from six adults to ten adults
- number of females reported total of two (possibly three) is lower than expected from the sex bias ratio of 1.5:1 however, there is ambiguity in sex determination through monitoring photographs and the extent of the surveyed area
- number of sub-adults recorded has increased since 2006 from zero to five, probably representing movement of the sub-adults around Ella Bay
- age class structure and recruitment appears to be sustainable
- total number of cassowaries, of females and of subadults for recruitment has shown an increase in reported numbers.

The *Recovery Plan for the Southern Cassowary* has been developed to protect cassowaries, habitats and corridors from threats through better planning, monitoring and community involvement.

Stream-dwelling frogs

The 2006 and 2008 EIS fauna surveys identified the endangered frog species the *Litoria rheocola* (common mist frog) in upstream habitat of the Ella Bay development site. It was also recorded in the 2009 *Batrachochytrium dendrobatidis* (Chytrid fungus) survey which was commissioned by the proponent on the request of SEWPaC. The common mist frogs reported in this survey was confirmed as infected by Chytrid fungus.

Habitat suitable for the *Nyctimystes dayi* (Australian Lacelid) is also present within the Ella Bay development site and along the access road, although the species was not observed during surveys.

Suitable habitat for the stream-dwelling frogs is confined to the southern section of the major north-south creekline on the southern boundary and the south-western corner of the property where riffle zones are present. The habitat is primarily located upstream and away from the proposed development area, and with appropriate controls, as set out in the stream-dwelling rainforest frog species management sub-plan, will not be affected by construction or operation activities.

The common mist frog and the Australian Lacelid were acknowledged in the *Stream-dwelling Rainforest Frogs of the Wet Tropics Biogeographic Region of the North-east Queensland Recovery Plan 2000-2004* (EPA).

Spectacled flying-fox

The EIS fauna report indicated that the spectacled flying-fox is the only Australian mainland flying-fox species that is specialised to rainforest and:

- they feed on more than 35 species of rainforest trees and are rarely observed far from this habitat
- large groups of hundreds to tens of thousands may roost at a single location, called a camp

- camps are usually located in rainforest and gallery forest trees, but they have also been recorded roosting in mangroves, paperbark, eucalypt forest and tall acacia trees
- they can move a great distance from camps in search of fruit and they disperse seeds up to 20 kilometres from the source tree
- they are considered to be a major dispersal agent of rainforest seeds across the landscape and between rainforest patches.

During the EIS field surveys several individual spectacled flying-foxes were observed feeding in a large fruiting *Szygium* near the entrance to Little Cove (adjacent to the southern boundary of Ella Bay) and one individual was seen within the Ella Bay site. Individuals were also observed feeding in trees at Flying Fish Point (approximately five kilometres south of Ella Bay). A large permanent camp of spectacled flying-foxes was observed in a melaleuca wetland in Innisfail, approximately seven kilometres south of Ella Bay. No camps were recorded from the study area.

There is no specific recovery plan for the spectacled flying-fox, although the species is included in the Environment Australia (1999) publication *The Action Plan for Australian Bats*.

Threatened species not recorded in surveys

The 2008 Fauna Survey Report indicated that thirteen terrestrial endangered, vulnerable and near threatened (EVNT) species not identified during surveys but likely to occur in the area based on suitable habitat or previous local records. The full list is provided in Table 5.1 of this report. The EPBC Act related species include:

- *Nyctimystes dayi* (Australian laceid—endangered)
- *Rostatula australis* (Australian painted snipe—vulnerable)
- *Dasyurus hallucatus* (northern quoll—endangered)
- *Rhinolophus philippinensis macros* (greater large-eared horseshoe bat—endangered)
- *Hipposideros semoni* (Semon's leaf-nosed bat—endangered).

Although not a controlling provision for the Ella Bay, as potential impacts on marine turtles were specifically raised by interested parties some detail follows and marine turtles are addressed below. Thirty-three migratory species were identified in the EPBC Act protected matters report as known to, likely to or may occur in the project area. Of the 33 species only one individual *Crocodylus porosus* (estuarine crocodile) was identified in surveys 20 metres offshore from Ella Bay beach, at the southern part of the Ella Bay site.

Large-eared horseshoe bat and Semon's leaf-nosed bat

Both species of bat are listed as endangered under the EPBC Act and NC Act. Although both species were not identified during the 2006 and 2008 fauna surveys and had no database record for the region, they were identified as likely to occur in the project area due to suitable habitat conditions.

Northern quoll

The northern quoll is listed as endangered under the EPBC Act and near threatened under the NC Act. No quolls were identified during the 2006 and 2008 surveys and they do not have any database record for the region. However, they are identified as likely to occur in the project area due to suitable habitat conditions.

Marine turtles

The EPBC Act protected matters report run for Ella Bay area lists the following marine turtles:

- *Caretta caretta* (Loggerhead Turtle)
- *Chelonia mydas* (Green Turtle)
- *Crocodylus porosus* (estuarine crocodile, saltwater crocodile)
- *Dermochelys coriacea* (leathery turtle, leatherback turtle, luth)
- *Eretmochelys imbricate* (hawksbill turtle)
- *Lepidochelys olivacea* (Pacific ridley, olive ridley)
- *Natator depressus* (flatback turtle).

None of the marine turtles noted above were reported during the EIS surveys. However, turtle nesting near the Ella Bay beach was recorded by Constable in 2008/2009.

The failure to locate marine turtles during the EIS surveys is not unexpected as the beach in the vicinity of the Ella Bay site has limited suitability for turtle nesting by being steeply sloped with dense foreshore vegetation and a limited number of low dunes suitable for nesting. The low dunes are subject to overtopping in extreme weather from wave run-up inundating nests. Dune vegetation includes several exotic weeds (for example, *Sphagneticola trilobata* (Singapore daisy)), which can impede turtle nesting. The foreshore adjoining the site, and to the north is dynamic. Erosion scarps are indicative of widespread loss of the upper beach and fore dunes; elsewhere, sand has recently been deposited around the base of fore dune trees (Thorogood 2009).

Hatching success is also limited due to a higher susceptibility to predation by animals (such as feral pigs and dogs) found on the mainland including feral pigs and dogs.

DEHP have advised that the presence of turtles in Ella Bay area is likely, but agree with Thorogood that the beach in the vicinity of the proposed development should not be identified as a turtle rookery with significant concentrations of turtle nesting activity.

The *Recovery Plan for Marine Turtles in Australia* has been developed to reduce detrimental impacts on Australian populations of marine turtles and hence promote their recovery in the wild.

Other marine fauna species

The 2008 Fauna Survey Report indicated that no marine EVNT fauna species were identified during surveys. However, marine mammals, marine reptiles and sharks are likely to frequent the Reef Lagoon area adjacent to the Ella Bay site.

7.7.3. Threatened flora

EPBC Act Protected Matters Report

An online search of the EPBC protected matters report indicated that fifteen plant species, or habitats for these plants, are likely to occur within the locality of the subject site. Table 7.2 of this report lists the EPBC Act threatened species on these lists. A full listing of EPBC Act and NC Act listed species on online databases is included in Table 5.4 of this report.

Table 7.2 EPBC Act listed plant species likely to occur in the Ella Bay area (online searches)

Species common name	EPBC listing status	Likelihood of occurrence
<i>Aponogen bullosus</i>	Endangered	Unlikely
<i>Aponogen proliferus</i>	Endangered	Possible
<i>Arenga australasica</i> Australian Arenga Palm	Vulnerable	Likely
<i>Canarium acutifolium var. acutifolium</i>	Vulnerable	Likely
<i>Carronia pedicellata</i>	Endangered	Likely
<i>Dendrobium mirbelianum</i> Dendrobium Orchid	Endangered	Likely
<i>Dendrobium superbiens</i> Dendrobium Orchid	Vulnerable	Likely
<i>Eleocharis retrofleca</i>	Vulnerable	Unlikely
<i>Fimbristylis adjuncta</i>	Endangered	Possible
<i>Hodgkinsonia frutescens</i> Atherton Turkey Bush	Vulnerable	Likely
<i>Hupzeria phlegmatioides</i> Layered Tassel-fern	Vulnerable	Likely
<i>Hupzeria prolifera</i> Square Tassel-fern	Vulnerable	Likely
<i>Phaius tancarvilleae</i>	Endangered	Possible
<i>Polyscias bellendkerensis</i>	Vulnerable	Likely
<i>Taeniophyllum muelleri</i> Minute Orchid, Ribbon-root Orchid	Vulnerable	Likely

EIS survey findings

Vegetation and flora species are addressed in the EIS (section 4.7.1.1 Volume 4 and Report A6.1 Volume 8), SEIS (section 1.2 Volume 1) and the additional information document (SEIS Submission Response dated June 2012) (Reports 6.2a-g Volume 6).

Flora surveys on the Ella Bay site were undertaken in 2006 and 2007, 2008, and 2009. The 2006 studies were reported in the EIS whereas the subsequent surveys and reports are contained in Report 6.2 Volume 6 of the additional information document

(SEIS Submission Response dated June 2012). A baseline survey was also undertaken in October 2008 to establish pre-development monitoring. The 2007 vegetation survey also included a detailed survey of the road alignment.

Threatened terrestrial flora

The 2008 flora investigation states that no species scheduled as significant under the EPBC Act were identified during the survey, although several species are identified as likely to occur within the project area. Habitat suitable for *Carronia pedicellata* (endangered), *Arenga australasica* (vulnerable), *Canarium acutifolium* var. *acutifolium* (vulnerable), *Hupzeria phlegmarioides* (vulnerable) and *Aponogeton proliferus* (endangered) is present within the study area and potential for their occurrence is moderate to high. While vegetation surveys in 2006 and 2008 failed to locate any individuals of these species, despite targeted searching, their presence cannot be discounted.

Descriptions of the endangered species are reported in Volume 8 Appendices A6.1 and A6.7 of the EIS and Volume 6.2a and Volume 3 report 3.6 of the additional information document (SEIS Submission Response dated June 2012). None of the listed species present on site are the subject of any current species recovery plan.

Threatened ecological communities

Littoral Rainforest and Coastal Vine Thickets of Eastern Australia (littoral rainforest) was listed as a threatened ecological community in October 2008. As the Ella Bay development was determined to be a controlled action prior to listing (that is, in July 2005), the Australian Government is not required to assess the impacts of the Ella Bay development on the littoral rainforest community. However, as the proponent has undertaken a detailed assessment of the potential impacts of the littoral rainforest within the site and has made a number of commitments in relation to protecting the area, it will be addressed in this report for completeness of process.

EPBC Act Protected Matters Report identifies one threatened ecological community likely to occur within the area. Littoral rainforest was identified in areas marginal to the development site and adjacent to the proposed access corridor. Littoral rainforest is represented by Queensland regional ecosystems (RE) RE 7.2.1a-I and 7.2.5a on Ella Bay property and along Ella Bay Road.

RE 7.2.1 is described as mesophyll vine forest on beach ridges and sand plains of beach origin, occurring mainly in small patches in the lee of coastal beach ridges in very high rainfall areas. RE 7.2.5 is described as mesophyll to notophyll vine forest of *Syzygium forte* subsp. *forte* on sands of beach origin.

Within the Ella Bay site the littoral rainforest communities RE 7.2.1 and 7.2.1i occur on the northern boundary adjacent to the golf course to the north of the Northern Residential Precinct refer to Figure 4:11 (Volume 6.2a *Vegetation Survey Report*). Refer the red-striped areas in Figure 5.6 of this report. Unlike most of the other vegetation on the site the canopy features of this community are relatively intact. The site has some previous agriculture based edge effect, logging tracks, and minor clearing. The area has small pockets of the noxious weed *Annona glabra* (pond apple).

RE 7.2.5 occurs on the foredune in front of the Village Precinct predominately on the Esplanade with only a thin strip of less than 50 metres wide on the Ella Bay property. Refer solid red area in Figure 5.6 of this report. The rehabilitation of this area will require extensive weed management and revegetation. This community will be at high risk of human interference. The property boundary will be fenced by the precinct fence in this area and access to the beach will be by two pathways. Each of the pathways will be signposted restricting access to the pathways only. Signposts will be placed on both the Precinct and beach side.

The proponent proposes to have a nature path within this area of vegetation to highlight the ecological rehabilitation through removal of the pond apple, the revegetation of the area and the ecology of the dunal swale. The nature walk will be non-invasive and no clearing or significant pruning required.

Both of the littoral rainforest sites on site will be conserved by the conservation zones (refer Section 7.7.6 (Habitat protection strategies) of this report). Management of the Littoral Rainforest area and weed management on-site are addressed in the EMP (Volume 3.6 significant flora management sub-plan, Volume 6.2 e vegetation management plan for the littoral rainforest and Volume 3.8 weed management sub-plan on the additional information document (SEIS Submission Response dated June 2012). Detailed weed mapping surveys of the site (including the littoral rainforest areas) are included in Volume 6.2d of the additional information document (SEIS Submission Response dated June 2012). Details of the importance of the littoral rainforest will be included at the Welcome Centre induction and “in-room” literature.

Threatened marine flora

The 2008 flora investigation states that no marine species scheduled as significant under the EPBC Act were identified during the survey. However, species that are considered to be marine plants protected under the Queensland *Fisheries Act 1994* were identified within the wetlands on and behind the frontal dunes. *Hibiscus tiliacius* and mangroves are interspersed with other terrestrial flora (dominated by Coastal She-oak (*Casuarina equisetifolia*)) in this area. However, a detailed flora survey, particularly of the proposed disturbance paths for beach access, has not been undertaken.

The Conceptual Surface Water and Groundwater Hydrology Models (Volume 4 Appendix A.2.1 of the EIS) indicated that the site is a freshwater system, with only occasional “outbreaks” of the interdunal wetland to Ella Bay during extended wet periods. Therefore, the vegetation on site reflects a predominantly freshwater environment.

7.7.4. Potential impacts—threatened fauna

General impacts

Potential impacts on fauna as a result of the proposed works at the project site include:

- disturbance, removal of habitat through vegetation clearing and construction works
- fragmentation and isolation of habitat
- impacts on fauna movement

- physical impacts associated with construction including root damage to standing vegetation, erosion and sedimentation
- introduction or spread of exotic pest species
- hydrological and water quality impacts on creeks, wetlands, surface water run-off, groundwater and the marine waters
- edge-related effects associated with clearing within or adjacent to intact habitat
- traffic impacts associated with increased traffic including animal fatalities or injuries
- introduction of domestic pets
- human presence related activities including beach trampling, noise and lighting.

Vegetation clearing associated with construction works for the road upgrade and resort development would impact on fauna habitat through the removal of shelter, foraging and breeding areas as well as reduced connectivity between corridors.

Threatened terrestrial fauna

Southern cassowary

The EIS has identified potential threats to the southern cassowary relevant to the construction and operation of the Ella Bay development including:

- habitat loss from clearing and isolation
- habitat degradation (through invasion of weeds such as pond apple and decreased water quality due to contamination or loss of access to supply)
- loss of connectivity
- increased traffic
- increased human activity (hand feeding)
- interaction with domestic animals (dog attack)
- feral pests (feral pigs—attack on birds and predation of eggs).

Other potential threats to cassowary include:

- natural catastrophic events (for example, cyclone)
- disease (aspergillosis, avian tuberculosis and parasites).

Habitat loss

Construction of the Ella Bay development will lead to a loss of 5.87 hectares of cassowary habitat. This includes clearing and isolation of habitat of 2.02 hectares within the Ella Bay property and 3.87 hectares along the access road. Table 5.6 of this report refers. As noted above, there is a potential risk that an additional 17.5 hectares of cassowary habitat could be isolated should the proposed cassowary underpass along the access road not operate successfully.

The total revegetation and rehabilitation area on site will be greater than 110 hectares and will be an opportunity to subtly change the foraging habits of the cassowaries with the focus of encouraging cassowaries away from the dunal swale and resort areas.

Habitat degradation

Activities relating to the Ella Bay development that have the potential to degrade cassowary habitat include:

- trespass creating edge effect of construction workers and equipment; residents and visitors
- noise and dust disturbance may cause the birds to withdraw from adjacent forest
- weeds, exotic plants and pathogens may be introduced into adjoining cassowary habitat
- nutrient runoff and water quality contamination may degrade adjoining cassowary habitat and water supply
- encroachment, dumping and littering by residents and guests
- disturbance from increased human activity, noise levels and night lighting along streets and in residences.

The major threats to potential habitat degradation along Ella Bay Road are:

- disturbance from increased traffic noise and light
- pollutants from road runoff
- the introduction of weeds along the road due to road construction.

Loss of connectivity

Construction activities at the Ella Bay property and along Ella Bay Road have the potential to impact cassowary habitat connectivity or create barriers to traditional movement corridors. The proponent has proposed a series of fauna underpasses and culverts along with cassowary with fencing on the access road to funnel cassowary to safe habitat. If the mitigation strategies (including the fauna underpasses) are not successful (that is, they are not used by cassowary), an additional 17.5 hectares of cassowary habitat could potentially be isolated. While the fencing research and trial work undertaken by the proponent is yet to be successfully tested in a 'real environment', what is being proposed is likely to be 'best practice'.

Increased traffic

There will be increased traffic flows within the Ella Bay site and along the Ella Bay access road during the construction and operation of the development. This may mean cassowaries accessing the road corridor; being isolated in the road corridor and increased risk of road death to cassowaries occupying adjacent or nearby habitat.

Greater traffic numbers will also increase the noise and light into the rainforest.

Increased human activity

The increased level of human activity at the Ella Bay site and along the access road during the construction and operation of the development increases the risk of negative human interactions with the southern cassowary. Inadequate litter disposal can attract cassowaries to the site and there is the risk of habituation due to feeding.

Interaction with domestic animals

The daily operation of the resort will experience the presence of domestic animals, either from inadvertent accompaniment, stray or dumped animals and feral predators. To manage potential interaction:

- no cats or dogs, apart from guide and assistance dogs, will be permitted within the development
- any domestic cats and dogs found within Ella Bay development will be removed by body corporate staff
- wild or feral dogs and cats will be actively controlled with the feral pig control program.

Feral pests

Feral pigs are classed as a pest in the WTQWHA and are primarily responsible for habitat degradation. Pigs are also thought to contribute to egg predation on the cassowaries and turtles. The proponent has instigated a feral pig trapping and baiting program and over 100 pigs have been culled to date.

The additional information document (SEIS Submission Response dated June 2012) (Report 6.1m Volume 6) suggests that the major threat to cassowaries at the Ella Bay site is not from pigs but from the indiscriminate killing by hunting pig dogs. The Wet Tropics is a popular area for pig dog hunting and the locals have developed a culture of pigging and organise special events to capture pigs.

Pig hunting will not be allowed on the development and the proponent will develop and implement a pest management sub-plan to remove pigs and other feral animals from the site.

Cyclone

Cyclone events are one of the major impacts on the survival of the southern cassowary. Cassowaries have proven to be extremely vulnerable to disruption to the fruit cycle following a significant cyclone.

Disease

The possibility of avian diseases in cassowaries is serious given worldwide evidence that wildlife diseases pose a growing threat in conservation biology. It may become a management issue particularly for local populations under stress. Known diseases include internal parasites (particularly ascarids), *aspergillosis*, *Aspergillus fumigatus*, and avian tuberculosis (TB), *Mycobacterium avium*.

Recovery plan

The *Recovery Plan for the Southern Cassowary* identifies the major factors contributing to the decline of the cassowary as habitat loss, fragmentation and modification, traffic accidents, visitor impacts, dogs, competition and nest predation by pigs, catastrophic events and disease.

The specific objectives of the recovery plan are to:

- protect essential cassowary habitat and landscape corridors
- institute a more coordinated and stronger planning response to development issues in cassowary habitat
- implement strategies to protect cassowary populations by minimising the adverse impacts of roads, dogs, pigs and cyclone events
- develop an effective cassowary rescue, rehabilitation and release programme
- cassowary populations are monitored to assess population size, trends and status
- improve understanding of cassowary ecology and threats to its survival
- engage the community in cassowary conservation and education.

The proponent, in consultation with cassowary experts Professor Les Moore, Peter Buosi and Terrain (consultants), has developed a southern cassowary management sub-plan (refer Report 3.2 Volume 3 of the additional information document (SEIS Submission Response dated June 2012)). The sub-plan has been prepared in accordance with the recovery plan, which takes an integrated, holistic approach to mitigate key risk areas identified for cassowary. The aims of the sub-plan are to:

- protect and enhance cassowary habitat within the Ella Bay site
- protect the cassowary from feral pests and domestic animals
- minimise the impact of increased traffic on the cassowary population
- protect the cassowary in the event of a cyclone
- minimise the impacts of human disturbance and interaction.

The proponent contends that the Ella Bay development (including mitigation strategies and offsets) will:

- be a catalyst in saving the cassowary from possible extinction
- make Ella Bay a safe environment for the cassowary and for people at all times
- help slow the rate of decline of the cassowary and ultimately reverse it.

The proponent has also produced a Fauna Sensitive Road Design Report (Section 8 Volume 4 of the additional information document (SEIS Submission Response dated June 2012)) which provides detail of the specific mitigation measures to protect fauna potentially impacted by the access road and the internal roads.

A summary of mitigation measures are included in sections 7.7.6 of this report.

Stream-dwelling frogs

The EIS has identified potential threats and possible actions relevant to the construction and operation of the Ella Bay development and access road upgrade including:

- loss of habitat near the access road (alteration of streamside vegetation)
- increased risk of road kill near Ella Bay Road creek crossings due to increased traffic
- degradation of water quality through sediment, erosion or contamination

- inappropriate weed control measures in riparian areas
- increased chance of further spread of pathogens such as Chytrid Fungus (refer below).

The EIS concludes that there will be no increase in threats to the long-term persistence of the common mist frog and the Australian lacelid populations resulting from the proposed development. On site, the conservation covenants proposed for the development (refer Section 7.7.6 of this report (Habitat protection strategies) will encompass the riparian areas which will be revegetated and rehabilitated. The establishment of constructed wetlands and swales for stormwater management (refer Section 7.7.6 of this report (Mitigation Measures—marine ecology) will have the potential to increase the available habitat and resilience of these species. I concur with the EIS's conclusion that the proposed activities at the Ella Bay development site or the access road upgrade construction and operation will not interfere with the recovery process.

Management practices to mitigate the impact of the Ella Bay development on stream-dwelling frogs is addressed in the stream-dwelling rainforest frog species management sub-plan (Report 3.3 Volume 3 of the additional information document (SEIS Submission Response dated June 2012)). A frog monitoring program has been included in the sub-plan which will determine the ongoing status of the species on-site. Frog fencing is also proposed on the access road 25 metres either side of three of the bridges and four of the culverts.

Chytrid Fungus

Chytrid Fungus has been linked with dramatic frog population declines and extinctions, particularly in high-altitude rainforest areas, and is listed as a key threatening process under the EPBC Act. It appears to have been introduced into south-eastern Queensland in the 1970s. It rapidly dispersed up the east coast, and must have done so by natural means, since it reached many remote sites in the Wet Tropics more or less simultaneously. It caused declines and disappearances of populations of eight species in the Wet Tropics at all sites above 400 metres elevation. However, intensive monitoring has never shown declines or disappearances at sites below 400 metres, despite being endemic at all such sites in the Wet Tropics that have been adequately sampled.

A survey by James Cook University for Ella Bay EIS process confirmed the presence of Chytrid Fungus on the Ella Bay site. It also occurs at multiple sites within 20 kilometres of the Ella Bay site. As a precautionary measure the proponent has committed to the adherence to an amphibian hygiene protocol for the manual handling of frogs to ensure that activities associated with the Ella Bay development do not contribute to the spread of the pathogen. The stream-dwelling rainforest frog species management sub-plan includes procedures on handling and hygiene protocol of frogs.

Spectacled flying-fox

The SPRAT indicated that the main threats to the spectacled flying-fox throughout Australia are habitat clearing (including fragmentation and modification) to facilitate agriculture and silviculture. While this has slowed, it still poses a threat. In addition,

large numbers have been lost through crop protection activities such as shooting, electrocution and roost harassment around orchards; pathogens including diseases and tick infestation; and collision with human infrastructure such as fences and powerlines.

Ixodes holocyclus (paralysis tick) kills hundreds of spectacled flying-foxes on the Atherton Tablelands each year. It is only at high altitude, above 700 metres, where ticks become a problem.

The Australian bat *Lyssavirus*, a new virus (related to rabies virus) was discovered in Australian bats in 1996. It has been detected from four species of fruit bat including the spectacled flying-fox.

While the Ella Bay site is not critical for spectacled flying-foxes, a number of the potential impacts relevant to the development area from the construction and operation of the Ella Bay Integrated Resort and access road have been addressed in spectacled flying-fox management sub-plan (Report 3.4 Volume 3 of the additional information document (SEIS Submission Response dated June 2012)). The potential impacts include:

- loss of habitat including food resources
- increased human activity
- construction dust and noise
- disturbance of camps (if identified on-site)
- spread of pathogens (for example, *Lyssavirus*)
- spread of weeds
- increased lighting
- mortality due to fencing or power lines.

The proponent has prepared the spectacled flying-fox management sub-plan to assist in the implementation of appropriate environmental management measures to protect any spectacled flying-foxes during planning, construction and operation of the Ella Bay development. Significant consideration was given to ensure that their habitat is not detrimentally altered as a result of this process.

I note the sub-plan includes strategies for the retention and enhancement of all spectacled flying-fox habitat within the Ella Bay site, the preservation and persistence of the surrounding populations, ensuring that individuals of this bat species are not harmed during the clearing and construction process; and to ensure the long-term future of spectacled flying-fox within the local area by protecting their habitat from any detrimental processes as a result of the construction and operation of the Ella Bay development.

Threatened marine fauna

Marine turtles

While expert advice indicated that the Ella Bay Site is not critical for marine turtles, turtles have the potential to access the beach area. A number of the identified threats and possible actions are relevant to the development area from the construction and

operation of the Ella Bay development and access road are addressed in marine turtle species management sub-plan (Report 3.5 Volume 3 of the additional information document (SEIS Submission Response dated June 2012)). The major threats are:

- exotic weeds such as Singapore daisy can impede turtle nesting
- noise and light impact may disorientate hatchlings, and nesting females
- offshore habitat can be impacted by urban runoff and sedimentation from construction
- vehicles can crush nests and/or damage nesting habitat
- faunal predation of eggs by feral pigs and feral dogs
- high levels of uncontrolled human access may deter females from landing
- marine debris may tangle or choke turtles
- reduced water quality.

The *Recovery Plan for Marine Turtles in Australia* adopts a threat-based approach, where the premise is to reduce the likelihood that current threats will cause mortalities, or to modify activities to reduce the potential for future mortalities at all stages of a marine turtle's life. The proposed mitigation strategies for the Ella Bay development aims to comply with this intent to a level appropriate to the identified potential risk.

Other marine fauna species

EIS investigations indicated that, overall, the project is not expected to have an unacceptable impact on marine life adjacent to the Ella Bay site if water quality is maintained and the proponent's other mitigation measures are implemented.

7.7.5. Potential impacts—threatened flora and communities

General impacts

The EIS vegetation report states that potential direct impacts on flora from developing the site are:

- disturbance to vegetation within and/or adjacent to remnant vegetation supporting significant species
- habitat fragmentation
- physical impacts from construction such as root damage, erosion and sedimentation
- the introduction and/or spread of exotic species.

Potential cumulative impacts listed by the report include:

- introduction and/or spread of weeds and exotic species
- impacts on wetland vegetation to the north through hydrological and water quality effects
- edge-related effects where clearing occurs within and adjacent to remnant vegetation
- increased human and vehicle presence, potentially trampling or damage to vegetation from vehicles.

Threatened terrestrial flora

Throughout the EIS process the proponent has been willing to consult with agencies to review and revise the master plan and the development and access road footprint to ensure the least possible impact on the local environment.

As noted above, targeted surveys in the development between 2006 and 2008 located four plant species considered significant under the NC Act. As there is only minor clearing required for the development (that is, approximately 3.75 hectares) and vegetated areas will be protected by conservation covenant, no unacceptable impacts are expected on these species. Of the vegetation required to be removed approximately 0.95 hectares is within the development site and approximately 2.80 for the access road.

No REs listed as endangered need to be removed for the Ella Bay development. Table 5.7 and Table 5.8 in this report list the REs to be cleared for the development and the access road. The amount of vegetation to be cleared for the access road may be less if a narrower road option, as recommended, is approved by CCRC. The specific amount of vegetation to be removed will be finalised prior to seeking vegetation clearing approval from DNRM.

The proponent's proposed mitigation measures for the protection of listed plant species are addressed Section 7.7.6 of this report.

To mitigate the loss of the REs the proponent is required to secure an environmental offset that addresses the requirements of the Queensland Government. This matter is discussed under Section 7.7.6 of this report (Offsets strategy).

Threatened communities

The development and access road footprint have been reconfigured to avoid threatened communities from its boundaries, increase the width of fauna corridors and increase buffers to tidal lands, wetlands and waterways. I have stated a condition in this report to reflect this requirement (Appendix 1, Condition 2).

As noted above no threatened community (that is, littoral rainforest) is impacted by proposed vegetation clearing and all development has been excluded from littoral rainforest. However, this area will require rehabilitation through an extensive weed management program to remove the noxious weed pond apple and revegetation of the sections cleared of weeds.

The littoral rainforest communities are also at general risk from human interference, particularly the communities on the foredune in front of the Village Precinct predominately on the Esplanade particularly during the construction on proposed nature and access paths and from residents and visitors interfering with plants, water quality, erosion and potential unintentional spread of weeds. The nature path within this area of vegetation is designed to highlight the ecological rehabilitation through removal of the pond apple, the revegetation of the area and the ecology of the dunal swale. The nature path will be non-invasive and no clearing or significant pruning required. The path is expected to weave through areas to be cleared of pond apple. Each of the pathways will be signposted restricting access to the pathways only. Signposts will be placed on both the Precinct and beach side.

Volume 2 of the additional information document indicated that of the 3.75 hectares of vegetation required to be removed for the Ella Bay development approximately 2.83 hectares (that is, approximately 2.13 hectares on the access road and 0.70 hectares at the site) is considered essential cassowary habitat. Also approximately 2.14 hectares of essential/general cassowary habitat is expected to be isolated for the development (1.07 hectares at the site and 1.07 hectares near the access road). With the potential for an additional 17.5 hectares of habitat to be isolated should the cassowary underpass prove ineffective.

Threatened marine flora

As noted above marine plants have been recorded on the Ella Bay site during EIS surveys. However, no marine plant species scheduled as significant under the EPBC Act were identified.

The proponent proposes to construct about six low-impact paths to allow access to the beach from the resort areas. The construction of these paths has the potential to impact on marine plants by damage by workers constructing the paths, residents and visitors interfering with plants, erosion, water quality, spread of weeds and/or removal of plants. However, the EIS indicated that there will be only minimal impact in the area where marine plants are known to exist.

The proponent's beach access and walking track proposals are addressed in Report 6.5d and Report 6.4e Volume 6 of the additional information document (SEIS Submission Response).

The proponent's proposed mitigation measures for the protection of marine plants are addressed Section 7.7.6 of this report.

7.7.6. Mitigation measures—threatened species and ecological communities

The revised master plan for the Ella Bay development, included in the additional information document (SEIS Submission Response dated June 2012), incorporates a number of design elements that are intended to negate or minimise potential impacts of the project including:

- avoid clearing of endangered REs and no clearing of littoral rainforest communities
- no development in vegetated habitat known to support significant fauna species
- incorporating vegetated corridors within the development site to allow flora and fauna dispersal across the site
- maintenance of riparian corridors adjacent to ephemeral creeks
- incorporation of formal road crossing infrastructure at key fauna corridor locations
- revegetating and rehabilitating vegetation across the development to increase landscape permeability for flora and fauna
- no disturbance to tidal habitats.

Mitigation measures—terrestrial ecology

In Volumes 3, 4, 5 and 6 of the additional Information document (SEIS Submission Response dated June 2012), the proponent has proposed a suite of management strategies to mitigate and /or offset potential construction and operational impacts on terrestrial, fauna, flora and communities. These are included in the subsections immediately below.

For more specific management activities relating the species discussed above refer to the following sections of the additional information document (SEIS Submission Response dated June 2012):

- southern cassowary
 - Report 3.2 Volume 3—southern cassowary management sub-plan
 - Reports 6.1g-k, 6.1m and 6.2f Volume 6—cassowary fencing, gating and underpasses
 - Section 4.2 Volume 2—MNES
- stream-dwelling frogs
 - Report 3.3 Volume 3—stream-dwelling rainforest frog species management sub-plan
 - Section 4.3 Volume 2—MNES
- spectacled flying-fox
 - Report 3.4 Volume 4—spectacled flying-fox management sub-plan
 - Section 4.4 Volume 2—MNES
- marine turtles
 - Report 3.5 Volume 3—marine turtle species management sub-plan
 - Section 4.5 Volume 2—MNES.

The proponent's commitments for the project, which are not included as conditions in this report, are included as Appendix 3 to this report.

Habitat protection strategies

As part of the EIS process, the proponent has committed to a number of strategies to protect important regional habitat. The strategies are included in various reports in the additional information document (SEIS Submission Response dated June 2012) including:

- significant flora management sub-plan (Report 3.6 Volume 3)
- vegetation management plan for the littoral rainforest (Report 6.2e Volume 6)
- weed management sub-plan (Report 3.8 Volume 3)
- Conservation zones at Ella Bay (Report 6.5f Volume 6)
- Offsets package proposal (Volume 5)
- southern cassowary management sub-plan (Report 3.2 Volume 3)
- stream-dwelling rainforest frog environmental management (Report 3.3. Volume 3)

The proponent's strategies include:

- securing regrowth (near remnant) vegetation within and outside the Ella Bay site which is representative of the REs to be cleared for, and essential habitat to be impacted by, the project. The offset properties have been purchased by the proponent
- purchasing strategic land parcels that have been identified as key linkages or habitats for cassowary (Note: the offset properties are already purchased)
- revegetation and rehabilitation of existing cleared areas of land within the Ella Bay site, with a view to reinstating pre-clearing vegetation types (including appropriate fruiting vegetation for the cassowary in the western and central areas) (refer Figure 5.7 in this report)
- seeking protection status for the revegetated and rehabilitated corridors and areas on the site (refer below)
- undertaking various research projects relating to cassowary and cassowary habitat
- undertaking a weed removal and management program for the Ella Bay site, the offset land and the access road corridor
- developing and implementing a beach and foreshore management plan (including a community education/awareness program) to manage the sensitive areas particularly for turtles and shorebirds
- developing and implementing road management plans for construction and operation (including wildlife fencing and escape gating, fauna underpass and culverts, traffic calming devices and appropriate speed limits)
- prohibiting all dogs, apart from guide and assistance dogs, and cats from the resort and residential areas
- installing precinct fencing to limit human/cassowary interface and provide greater protection for wildlife (in particular southern cassowary) and access to suitable habitat and water supply
- actively managing pest (fauna and flora) and feral animal eradication program within the Ella Bay development site with particular emphasis on the eradication of feral pigs
- education programs for residents, visitors and staff highlighting the importance of the Ella Bay terrestrial and marine environment (including littoral rainforest and cassowary).

Conservation zones

As part of the offset proposal (refer below) the proponent has purchased properties totalling 63.62 hectares located within a strategic regional habitat connectivity corridor; identified within the *Recovery Plan for the Southern Cassowary* as an area of key ecological function, broad movement corridors and appropriate rehabilitating habitat. The corridor is also identified as a priority landscape linkage and wetland and riparian corridor in the Wet Tropics Conservation Strategy (WTMA 2004) and was supported by the Property-scale Options for Regional Corridor Protection in the Bramston/Eubenagee Area Report prepared by Terrain NRM (2008) as part of the

proponent's offsets package. The land is contiguous with Eubenangee Swamp National Park on the south and western boundary and WTQWHA on the northern boundary). I note the proponent has committed to donate this land to National Park and to revegetate and manage the land for five years.

As noted in Section 5.1.3 of this report the proponent has proposed that the majority of the vegetated habitat within the Ella Bay property will be protected and managed by conservation management zones as noted in Table 5.9 of this report.

The conservation zones are represented in Figure 5.3 of this report.

The proponent has established the zones according to the integrity, remoteness from disturbance, intended physical, social setting and management purpose of different parts of the area. The zone nomenclature follows the methodology used by the *Wet Tropics Management Authority Management Plan* (WTMA 2009).

Zone A

Zone A comprises 62.8 hectares of high integrity land which will be transferred and incorporated into Ella Bay National Park.

The primary purpose of Zone A is protection of endangered vegetation, essential cassowary habitat, and Ella Bay Swamp through transfer to National Park.

The 40.18 hectares (A.1 on Figure 5.3) in the northern area will:

- include the southernmost extent of the Nationally Significant Wetland; Ella Bay Swamp
- support and assist the *Recovery Plan for the Southern Cassowary* by conserving essential cassowary habitat
- protect EPBC critically endangered, VMA endangered and of-concern vegetation communities.

The 22.62 hectares (A.2) in the south western area will:

- widen the existing narrow World Heritage area linkage
- add a section of land to the Ella Bay National Park to provide a near contiguous linkage to the geographically isolated southern section of Ella Bay National Park
- support and assist the *Recovery Plan for the Southern Cassowary* by conserving essential cassowary habitat and protecting an important regional cassowary habitat corridor.

Zone B

Zone B comprises 67.8 hectares adjacent to and borders Zone A. Zone B will be registered as a conservation covenant under the *Land Title Act 1994*.

The primary purpose of Zone B is protection of endangered vegetation, essential cassowary habitat and as a buffer to Zone A land transferred to National Park.

The 55.8 hectares (B.1) in the northern area will:

- serve as a 300 metre (minimum) buffer to Zone A (A.1) in the North and to the Nationally Significant Wetland—Ella Bay Swamp

- support and assist the *Recovery Plan for the Southern Cassowary* by conserving essential cassowary habitat
- protect EPBC critically endangered, VMA endangered and of-concern vegetation communities.

The 12.0 hectares (B.2) in the south western area will:

- serve as a 100 metre buffer to Zone A (A.2) on the west
- support and assist the *Recovery Plan for the Southern Cassowary* by conserving essential cassowary habitat and protecting an important regional cassowary habitat corridor.

Zone C

Zone C consists of 87.3 hectares comprising 100 metre wide buffers and fauna corridors. Zone C will be registered as a conservation covenant under the *Land Title Act 1994*. Zone C is comprised of land on which, or adjacent to which, there is disturbance associated with community services infrastructure.

The primary purpose of Zone C is for rehabilitation and protection of vegetation, cassowary habitat and as a buffer to the National Park.

The Western boundary and Southern boundaries will:

- serve as a 100 metre (minimum) buffer to Ella Bay National Park
- be revegetated to support and assist the *Recovery Plan for the Southern Cassowary* by conserving essential cassowary habitat.

The East West and North South corridor will:

- serve as a 100 metre (minimum) riparian fauna corridor
- be revegetated and rehabilitated to support and assist the *Recovery Plan for the Southern Cassowary* by conserving essential cassowary habitat
- protect of-concern vegetation communities.

The coastal corridor will:

- serve as a coastal fauna corridor
- be revegetated and rehabilitated to support and assist the *Recovery Plan for the Southern Cassowary* by conserving essential cassowary habitat
- protect EPBC endangered and of-concern vegetation communities.

Zone D

Zone D consists of 58.9 hectares of setbacks and easements and will be protected by body corporate bylaws and under the *Regional Vegetation Management Code for Coastal Bioregions*. The area will be defined by surveyed boundary.

Zone D is comprised of land on which, or adjacent to which community services infrastructure will be located.

This area provides a:

- setback from the riparian border of identified watercourses on the site;
- 50-metre setback in the north-east between vegetation (Zone B.1) and the resort
- 20-metre easement through Zone C to connect the precincts across covenanted areas.

In relation to the proponent's proposed East West and North South corridor in Zone C (refer above) SEWPaC requires that this corridor width be increased to 200 metres, in keeping with the Significant Impact Guidelines for the Endangered Southern Cassowary (*Casuarius casuarius johnsonii*) Wet Tropics Population (Commonwealth of Australia 2010), or as near as possible, where such an increase in width will not impact on the location and extent of currently planned building structures. Condition 3 (Appendix 1) provides for SEWPaC involvement in the final determination of the conservation zones within the Ella Bay site.

The proposed conservation zones, fauna corridors along with the proposed fauna underpasses will maintain unimpeded cassowary movement access around the Ella Bay site (post development).

Revegetation/rehabilitation

Revegetation of 50 hectares will provide approximately 30 per cent more cassowary habitat within the Ella Bay site; of this revegetation 45 hectares will be high quality cassowary fruiting habitat and five hectares will be non-fruiting habitat which will become general habitat. Non-fruiting revegetation will be used to the east of the main north/south creek so that cassowaries will not be enticed to the resort areas.

Rehabilitation totalling 64 hectares will change weed infested non-remnant habitat of which approximately half is mapped currently as rehabilitating habitat, into essential or general habitat. The additional information document (SEIS Submission response) states that the future habitat designation after completion of the development and maturity of the vegetation is expected to be:

- essential habitat—238 hectares
- general habitat—39 hectares.

Availability of water supply

There is also expected to be an increase in the availability of permanent water for wildlife, in particular cassowary, from the constructed wetlands to manage stormwater. The constructed wetlands will contain both ephemeral water and permanent water to sustain the vegetation mix necessary for nutrient removal. By nature of purpose the constructed wetlands will be located adjacent to the creeks and often within the fauna corridor. The provision of additional extensive permanent water will reduce the requirement for cassowaries to access the dunal swale.

Water quality

The proponent has made a number of commitments during the EIS process to negate or minimise potential water quality impacts on fauna in and around Ella Bay particularly those species living in the creeks and streams (for example, frogs) and those fauna

using them as drinking sources (for example, cassowary). These commitments include the development and implementation of:

- wastewater/recycle water treatment to tertiary class A+ standard with nutrient levels within levels approved by DEHP
- erosion and sediment controls
- water sensitive urban design
- water quality monitoring
- stormwater treatment
- Reef Water Quality Protection Plan objectives
- best practice golf course management.

These strategies are addressed in more detail in the Mitigation measures—marine section below.

Connectivity preservation strategies

The construction of the Ella Bay development and access road has the potential to reduce habitat connectivity of the area. The proponent has committed to a number of measures to reduce the impact of fragmentation of fauna communities.

Habitat connectivity on the site will be managed through conservation zone management noted in Habitat management strategies sub-section above. Connectivity will be maintained within the on-site road network by use of fauna underpasses and culverts in key locations. The proponent will prepare and implement a road network and transport management sub-plan for the Ella Bay development. The plan will include on-site speed limits of 40 kilometres per hour, traffic calming and management for the fauna corridor road crossings.

On the access road the proponent proposes a number of fauna underpasses and a fauna over pass (Flying Fish Point bypass section) at known cassowary movement corridors. The road will also include a number of culverts to allow small macropods to travel under the road, thereby providing additional means of connectivity in the vicinity of the access road. Another proponent strategy is to partially fence and to construct one-way cassowary gates in strategic locations along the road to allow escape in the case of a cassowary straying onto the roadway. The road entrance to the fenced section of the road will have warning signs, traffic calming devices to alert drivers to the likely presence of cassowaries and other wildlife. The access road will also include strategically positioned frog fencing near bridges and culverts. The proponent's road strategies are addressed below.

As noted earlier in this report, I state a condition that will specify requirements for road design (including reduced speed limits and the requirement for formal fauna crossing points and fauna culverts) to ensure the appropriate protection of wildlife (Appendix 1, Appendix 1.Condition 11). The condition also requires the proponent to include in road designs the preferred fauna sensitive design standards included in the *Fauna Sensitive Road Design Manual—Volume 2: Preferred Practices* (DTMR 2010) and Council requirements.

Offsets strategy

Offsets are regulated by SEWPaC as per the EPBC Act *Environmental Offsets Policy* (October 2012). These documents provide principles for offsetting unavoidable impacts on MNES. The proponent is aware that it will need to meet the relevant offset requirements of the Commonwealth and has submitted a draft offsets strategy to SEWPaC for consideration.

The proponent's proposed compensatory offsets package is included in Volume 5 of the additional information document (SEIS Submission Response).

The proponent has developed the offsets package for residual impacts from the proposed development and road upgrade (including clearing, habitat isolation and edge effects) after all available impact mitigation strategies have been exhausted. The offset package has been based on the *Environmental Offsets Policy* (October 2012) for Commonwealth purposes; and the *Policy for Vegetation Management Offsets—version 3* (DERM 30 September 2011); the *Regional Vegetation Management Code for Coastal Bioregions—version 3* (DERM 6 November 2009) and the *Queensland Biodiversity Offsets Policy—version 1* (DERM 3 October 2011) for Queensland Government purposes.

A summary of the vegetation clearing, habitat isolation and edge effects impacts and the proponent's proposed offsets to address Commonwealth and state requirements are included in Appendix 6 of this report. In summary, the proponent's offset proposal involves:

- 62.78 hectares of land from the Ella Bay site to be handed over to the State for National Park
- 63.62 hectares of land purchased to be handed over to the State for National Park. This land (Lots 5RP747500, 6RP713994, and 7RP713994) is contiguous with Eubenangee Swamp National Park on the south and western boundary and WTQWHA on the northern boundary and is noted as suitable land for corridor purposes in the *Recovery Plan for the Southern Cassowary*, the Wet Tropics Conservation Strategy and research undertaken by Terrain NRM (2008) as part of the proponent's offsets package.
- implementation of a management strategy for the Eubenangee offset land including the management of revegetation and weed removal for a period of 5 years
- implementation of the conservation zones within the Ella Bay site (including handing over of 62.78 hectares to the State for National Park; 67.8 hectares registered as conservation covenant (to act as a buffer to the National Park); 87.3 hectares registered as conservation covenant (for fauna corridors); and the revegetation of each of these areas
- various research projects including:
 - cassowary tracking project
 - cassowary diet and DNA analysis research
 - cassowary fencing and escape gate research
 - impact of Ella Bay development of cassowaries, fauna and flora.

SEWPaC has advised that the first three cassowary research projects noted above are not considered offsets as they were research required to support the Ella Bay development proposal and the proponent's proposed mitigation measures. The fourth research project is viewed by SEWPaC as necessary work for the ongoing monitoring of the development's impacts and is therefore is not considered to be an indirect offset. As part of the offset proposal the proponent has purchased a property totalling 63.62 hectares located within a strategic regional habitat connectivity corridor; identified within the *Recovery Plan for the Southern Cassowary* as an area of key ecological function, broad movement corridors and appropriate for habitat rehabilitation. The corridor is also identified as a priority landscape linkage and wetland and riparian corridor in the Wet Tropics Conservation Strategy (WTMA 2004) and was supported by the Property-scale Options for Regional Corridor Protection in the Bramston/Eubenangee Area Report prepared by Terrain NRM (2008) as part of the proponent's offsets package.

Based on advice from DEHP and DNRM, I am satisfied that the proponents proposed offsets strategy presented in Volume 5 of the additional information document (SEIS Submission Response dated June 2012) meets relevant State requirements. I acknowledge that the Australian Government offset requirement may be over and above that required by the Queensland Government.

SEWPaC has indicated its general acceptance of the suitability of the direct offsets proposed by the proponent. However, some minor changes to the timing of securing offsets maybe a Commonwealth requirement.

I state a condition in this report requiring the proponent to secure offsets for the proposed clearing of remnant vegetation, prior to a preliminary approval for an MCU on the site (Appendix 1, Condition 35).

I also state a condition in this report that requires the proponent to, among other things, undertake a complete plant/flora survey, on the proposed clearing sites, (in consultation with the Wildlife Branch of DEHP) (Appendix 1, Condition 29).

EMPs/wildlife management plans

The proponent's proposed EMP strategy for the project, which includes a number of wildlife management plans, is included in Volume 3 of the additional information document (SEIS Submission Response dated June 2012). A number of draft EMP sub-plans are included in the document including:

- southern cassowary management
- stream-dwelling rainforest frog species management
- spectacled flying fox management
- marine turtle species management
- significant flora management
- weed management.

These sub-plans provide specific detail of protection and mitigation measures proposed by the proponent for each species.

The proponent has committed to prepare and submit the other sub-plans listed in Volume 3 with the development application to CCRC. These include sub-plans for:

- erosion and sediment control
- revegetation and rehabilitation management
- feral pest and wallaby management
- conservation and wetland management
- sewerage and recycle management
- World Heritage area values.

The draft documents include the proponent's committed mitigation measures for all components of the construction and operational stages of the development relative to the specific sub-plans categories. The draft EMPs are designed to ensure that identified environmental impacts relating to the project are avoided or minimised. EMPs are addressed more detail in Section 6 of this report.

Road management strategies for wildlife protection

Following review of the road designs key agencies (including SEWPaC, WTMA and CCRC) have agreed that the narrower less-impact road option (that is, Option D) discussed in the SEIS (section 1.4 Volume 1 and Appendix A2.6 Volume 4) is the preferred option. While the road design is yet to be finalised, the road will be designed and constructed in accordance with the FNQROC Development Manual and safety requirements and will be designed to minimise impact on wildlife, in particular the southern cassowary. WTMA, SEWPaC, DEHP and CCRC will be involved in determining the final design of the access road.

The proponent's road strategies are addressed in detail in sections 5.2.2 and 5.2.4 of this report. The proponent's wildlife fence and escape gate strategy is addressed in Section 5.2.10 of this report. Proposed strategies include:

- 60 kilometres per hour speed limit (except in locations where a speed of 40 kilometres per hour is required for safety reasons)
- Installing/constructing:
 - traffic calming devices such as chicanes and/or raised speed platforms, transverse line markings and cassowary/wildlife signage to reduce operational speed
 - three fauna underpasses
 - one fauna overpass (Stage 2)
 - four small fauna underpasses
 - cassowary fencing at significant sections of the road (except sections that are too steep for most wildlife) to direct cassowary to safe crossings
 - 25 'one-way' escape gates in case cassowary to get in the road corridor (19 on the Stage 1 section and 6 on the Stage 2 section)
 - frog fence 25 metres either side of the fauna underpasses and culverts
 - 19 pipe culverts will be replaced with box culverts to allow great movement of small fauna under the road

- water sensitive road design. This will include an approved rainwater drainage and filtering system along its entire length to ensure that the expected large quantity of rainwater and potential pollutants flowing from the road are appropriately filtered to an acceptable standard prior to making its way to the GBRWHA
- revegetation as each stage or partial stage of works is completed and will include endemic non-cassowary food plant species that suit the criteria for the roadside vegetation; blend with the surrounding vegetation and complement the natural surroundings; and seal the edge of the forest to reduce the potential of edge effects
- protection of mature trees where possible to provide canopy shading and protect essential habitat.

The proponent's strategies for the protection of cassowary (on site and on the access road) are addressed in the southern cassowary management sub-plan. I note the proponent has committed to undertake ongoing monitoring of impacts on cassowary as a direct result of the road management strategies proposed. I state a condition in this report requiring the proponent to include fauna sensitive design elements in the final road design for the Ella Bay site and access road in consultation with CCRC, WTMA and DEHP (Appendix 1, Condition 11). I also state a condition in this report to ensure that a monitoring program is implemented and results used to refine road management strategies if so determined (Appendix 1, Condition 30).

Precinct wildlife fencing

The proponent's precinct wildlife fencing strategy is addressed in the southern cassowary management sub-plan and summarised in section 5.2.10 of this report. The strategy includes the following measures to provide protection for wildlife, in particular the southern cassowary:

- boundaries of each precinct fully fenced allowing movement of fauna such as cassowary, frogs and reptiles throughout the flora corridors/conservation zones
- fence will be a 1200mm dark coloured aluminium pool fence with a 100mm gap underneath to allow movement of small animals
- fencing to be constructed on a staged basis as each precinct is constructed
- low speed (that is, 40 kilometres per hour) internal road system will be contained within the precinct fencing
- precincts to be linked by bridges or low speed gated crossings (20 kilometres per hour)
- bridges to be used to allow cassowaries to pass along the fauna corridors free of traffic interaction.

The proponent has also committed to develop and implement:

- guidelines on the appropriate methods for removing cassowaries from residential or resort areas
- a program of induction courses to educate residents, visitors and staff on appropriate behaviour around cassowaries including:
 - appropriate behaviour in cassowary habitat
 - specific responses and behaviour for golfers

- strictly ‘no feeding’ policy (regulated and enforced)
- a cassowary incident reporting system
- an internal fencing strategy to prevent access by cassowaries to the Ella Bay development and interaction with people
- a system of daily monitoring to ensure:
 - no cassowaries have gained access to the residential or resort areas
 - no unauthorised pathways have been established in restricted access areas.

Public awareness/education

Introducing public awareness and education programs to educate workers, residents and visitors on the Ella Bay environment to minimise potential impacts on terrestrial species including the southern cassowary:

- developing induction course for all staff and sub-contractors concerning appropriate behaviour around cassowary
- inducting all resort guests through the Welcome Centre
- establishing a research and education precinct incorporating a collaborative research institute, cassowary research station.

Mitigation measures—marine ecology

The proponent has made a number of commitments during the EIS process to negate or minimise potential impacts on marine flora and fauna on and surrounding the Ella Bay site and in waters adjacent to the site. These include:

Waste/recycled water

- Best practice membrane bioreactor technology sewerage treatment plants to be constructed
- Wastewater/recycle water treatment to tertiary class A+ standard with nutrient levels within levels approved by DEHP
- No direct discharge of waste/recycled water to the sea or creeks
- Re-using treated water from the development to irrigate areas such golf course.

Erosion and sediment controls

- Using erosion and sediment controls in accordance with *Soil Erosion and Sediment Control—Engineering Guidelines for Queensland Construction Sites* (Institution of Engineers Australia 1996) for all construction activities within ephemeral watercourse catchments that discharge to estuarine or marine waters.
- Maintaining, at a minimum, a 25 metre buffer on each side of all ephemeral watercourses within the proposed construction area.
- No construction activity in the approved erosion prone area for the site.
- Conducting construction activities for the access road as per construction methods and protection measures outlined Volume 4 of the additional information document (SEIS Submission Response dated June 2012). These works will also be subject to a site specific erosion and sediment control management sub-plan.

Water sensitive urban design

- Employing water sensitive urban design (WSUD) principles for all permanent control measures to mitigate litter, sediment, nutrient, hydrocarbon and chemical releases to adjacent estuarine and marine environments including the use of constructed wetland and swales and sediment treatment areas.
- Developing control measures in accordance with *Urban Stormwater Quality Planning Guidelines 2010* (DERM) and the *State Planning Policy (SPP 4/10) for Healthy Waters 2010* (2010) to protect water environmental values specified in the *Environmental Protection (Water) Policy 2009*.

Water quality monitoring

- Developing and implementing a water quality monitoring plan (WQMP) to establish local water quality objectives and to monitor the effectiveness of proposed measures in maintaining of water quality. This is to be undertaken during the period development approvals are being gained and before construction. The WQMP will:
 - be designed in accordance with relevant guidelines including:
 - *Queensland Water Quality Guidelines*
 - *Urban Stormwater Quality Planning Guidelines 2010*
 - *State Planning Policy (4/10) for Healthy Waters*
 - *ANZECC/ARMCANZ Guidelines*
 - *Water Quality Guidelines for the Great Barrier Reef Marine Park (GBRMPA 2010)*
 - measure nutrients, chlorophyll-a, herbicides, pesticides, copper, lead, total suspended solids, and possibly other analytes as determined during design of the monitoring program.

Stormwater treatment

- Developing and implementing a stormwater management system that treats stormwater in a series of purpose-built wetlands, detention basins and treatment systems, to ensure that untreated runoff from the project does not enter wetlands outside the project site.

Reef Water Quality Protection Plan

- Meeting the objectives of the *Reef Water Quality Protection Plan 2009* (RWQPP), a joint Australian and Queensland Government initiative, and intends to do this by employing best practice wastewater/recycled water treatment, erosion and sediment controls, WSUD and water quality monitoring (including groundwater) (refer above).

The RWQPP identifies actions, mechanisms and partnerships to build on existing Government policies and industry and community initiatives to assist in halting and reversing the decline in the quality of water entering the Great Barrier Reef. The plans objectives are: reduce the load of pollutants from diffuse sources in the water entering the Great Barrier Reef; and rehabilitate and conserve areas of Great Barrier Reef catchment that have a role in removing water borne pollutants.

Golf Course management

- Developing and implementing a golf course management sub-plan as part of the EMP for the project which will address:
 - using tertiary level class A+ wastewater for irrigation and supplementary fertilisers for the golf course.
 - operating watering, fertilising and pest control in accordance with best practice.

Artificial lighting strategies

- Developing and implementing an artificial lighting management plan which will include a range of methods to minimise impacts on marine species (in particular nesting turtles) such as:
 - maximising use of yellow, orange and red outdoor lights within 150 metres of the beach (except where safety requires other coloured lights)
 - reducing lux levels in specific identified 'sensitive' areas
 - using focused down lighting
 - shielding light sources
 - using artificial or natural screens
 - recessing sources
 - lowering mountings
 - using timers
 - using motion sensors.

Marine turtle strategies

The proponent's feral pig trapping program has resulted in over 100 pigs being culled since 2008 which has locally reduced the population and is thought to potentially benefit a number of fauna species such as marine turtles (and their eggs) and cassowary.

I note the proponent's marine turtle management sub-plan provides strategies and actions for the mitigation and management of the potential impacts of the development (including monitoring and reporting regime). Some of the proposed strategies include:

- implementation of the marine turtle management sub-plan
- targeted surveys of the area and regular monitoring of the foreshore during the turtle nesting season
- cordoning off nesting areas if they are detected
- implementation of a pest management sub-plan that includes the eradication of feral pigs currently present on the site
- prohibiting all:
 - dogs, apart from guide and assistance dogs, and cats from the resort and residential areas
 - motor vehicle access to the beach, other than for emergency use
 - camping near the beach

- development will be clear of the DEHP approved erosion prone areas for the site and will therefore avoid potential disruptions to the turtles breeding behaviour
- lighting from the development will be designed so that there will be no light spill to the beach
- the information and interpretative centre will cover issues on turtle management and protection.

The proponent has made commitments and I have stated conditions in this report to ensure all the above measures are implemented.

Public awareness/education

- Introducing public awareness and education programs to educate workers, residents and visitors on the local marine environment to minimise potential impacts on turtles and other marine species including:
 - developing induction course for all staff and sub-contractors concerning appropriate behaviour around turtles
 - inducting all resort guests through the Welcome Centre
 - erecting and maintaining display boards and information signage along the beach
 - compliance monitoring of tourism and recreational activities.

The proponent has made commitments and I have stated conditions in this report to ensure the above measures are implemented.

7.7.7. Coordinator-General’s conclusion—listed species and communities

An assessment of the impacts on threatened species and communities has been undertaken in the EIS, SEIS and the Report on the Matters of National Environmental Significance (MNES) prepared by the proponent. The species with the most potential to be impacted by the Ella Bay development is the southern cassowary through isolation of habitat, increased human presence and increased vehicular traffic. As noted above, other potentially impacted species/communities are:

- stream-dwelling rainforest frogs—increased human presence; impacts on habitat; exotic diseases
- marine turtles—increased human presence; lighting and noise; water quality
- other marine species—water quality
- littoral rainforest—spread of weeds; human encroachment.

Southern cassowary

I concur with the findings of the Report on Matters of National Environmental Significance prepared by the proponent that concludes that the proposed construction and operations of the Ella Bay development with the proposed mitigation will not have an unacceptable impact on the southern cassowary. The proposed offsets will provide additional linkage in perpetuity which will contribute to recovering movement corridors to the isolated Eubenangee population and to the west potentially increasing the population.

Other threatened species/communities

I also concur with the findings of the proponent's Report on Matters of National Environmental Significance that concludes that the proposed construction and operations of the Ella Bay development with the proposed mitigation will not have an unacceptable impact on listed stream-dwelling rainforest frogs, marine turtles, other marine fauna species such as dugong and dolphins, and the littoral rainforest community in the Ella Bay area.

7.8. Offsets

As noted in Section 7.7.6 above, an appropriate offsets package has been proposed and detailed information submitted by the proponent for the proposed vegetation clearing and cassowary habitat isolation. Conditions stated in this report include requirements for the proponent to identify and secure offsets for the proposed clearing of remnant vegetation and habitat isolation (Appendix 1, Condition 29) in accordance with state policy prior to construction works.

Decisions on the offsetting of potential impacts on MNES are the responsibility of the Australian Government Minister for Environment and I note that the Minister may impose other requirements/conditions on the project proponent separate to those stated in this report.

8. Conclusion

In undertaking my evaluation of the EIS, I have considered the following:

- the EIS and SEIS prepared for this project
- submissions on the EIS and SEIS
- the additional information document (SEIS Submission Report dated June 2012).

I am satisfied that the requirements of the SDPWO Act have been met and that sufficient information has been provided to enable the necessary evaluation of potential impacts, development of mitigation strategies and conditions of approval.

The environmental assessment commenced with the declaration of this project in September 2005 and has involved an extensive body of work by the proponent. More detailed work will occur in the detailed design phase of the project.

The various potential impacts, identified in the EIS documentation have been assessed. I consider those impacts to be acceptable and manageable.

The project will be a key driver in the economic recovery of the Cassowary Coast region. The development will provide a boost to tourism in the area and assist to diversify industry and employment in the region.

Accordingly, I approve that the project as described in this evaluation report proceed subject to the conditions in appendices 1 and 2. In addition, it is expected that the proponent's commitments will be fully implemented as presented in the EIS documentation and summarised in Appendix 3 of this report..

Section 7 of this report describes the extent to which the material supplied by the proponent addresses the actual or likely impacts on MNES of each controlled action for the project. SEWPaC has been consulted in the evaluation of potential impacts and adequacy of information with respect to MNES during preparation of this report. It has advised that the report provides the required information for the Commonwealth Environment Minister to make an EPBC Act decision. Therefore, it is considered that the requirements of the bilateral agreement relating to the project have been satisfied.

This report includes the following:

- stated conditions under section 39 of the SDWPO Act (refer to Appendix 1)
- conditions relating to environmentally relevant activities (refer to Appendix 2)
- proponent commitments (refer to Appendix 3).

The proponent will also be required to:

- obtain relevant environmental authorities from DEHP under the EP Act
- finalise and implement the project EMPs
- finalise the environmental offsets package.

If there are any inconsistencies between the project (as described in the EIS documentation) and the conditions in this report, the conditions shall prevail. The proponent and its agents, contractors, lessees, successors and assignees, as the case may be, must implement the conditions of this report.

Conclusion

Ella Bay Integrated Resort:

Coordinator-General's report on the environmental impact statement

Copies of this report will be issued to the following entities:

- the proponent (Satori Resorts Ella Bay Pty Ltd)
- Cassowary Coast Regional Council
- Commonwealth Minister for Sustainability, Environment, Water, Population and Communities
- Department of Environment and Heritage Protection
- Department of Agriculture, Fisheries and Forestry
- Department of Natural Resources and Mines
- Department of Community Safety.

A copy of this report will also be available on the Department of State Development, Infrastructure and Planning's website at **www.dsdip.qld.gov.au**

This report will generally lapse four years from the date it is published on the department's website or when an approval application is decided for the project unless a later time is decided by the Coordinator-General.

Appendix 1. Stated conditions

This appendix includes the Coordinator-General's stated conditions, under section 39 of the SDPWO Act.¹³

These conditions must be attached to a development approval issued under SPA and are taken to be concurrence agency conditions.

The conditions stated do not limit the assessment manager's power to assess the development application. Under section 39(3) of the SDPWO Act the assessment manager may impose conditions not inconsistent with the conditions stated in this report.

CASSOWARY COAST REGIONAL COUNCIL

Condition 1. Required infrastructure

The Chief Executive of CCRC is the entity with jurisdiction for this condition.

- (a) All physical infrastructure required for essential services to the Ella Bay development must be provided and maintained at no cost to state or local government.

Required infrastructure includes the following:

- (i) water supply system
 - (ii) sewerage and sewage treatment
 - (iii) power
 - (iv) telecommunications
 - (v) stormwater drainage systems (on site and on the access road)
 - (vi) recycled water treatment and supply
 - (vii) wastewater collection, treatment and disposal
 - (viii) solid waste collection and disposal
 - (ix) access road from the proposed Esplanade (Bay Road) roundabout to the Ella Bay development (including an approved 'cut and cover' tunnel in stage 2 of the road construction)
 - (x) all wildlife and safety fencing throughout the Ella Bay development
 - (xi) internal roads.
- (b) The level of service of infrastructure throughout all development stages must be equivalent to, or better than, infrastructure services currently provided within the CCRC local government area.
- (c) Prior to the commencement of construction, the proponent must enter into an infrastructure agreement with CCRC to determine the level of service for infrastructure items (v), (viii), (ix) and (x) listed in (a) above.

¹³ For a definition of 'stated conditions', refer to the Glossary on page 239 of this report.

Condition 2. Development and access road footprint

The Chief Executive of CCRC is the entity with jurisdiction for this condition.

- (a) The number of dwellings for permanent residential use (that is, other than short term accommodation) must not exceed 40 per cent of the total number of constructed dwelling units within the Ella Bay development and must not exceed 540 dwellings when development is fully constructed.
- (b) The total area used for urban purposes on the Ella Bay site must not exceed 193.1 hectares (that is, 132 hectares for the development area and 61.1 hectares for open space, golf course and parks).
- (c) All development (except approved pathways and fauna infrastructure) is to be restricted to currently cleared areas on the Ella Bay site except where a vegetation clearing permit is approved by DNRM.
- (d) Development must be excluded from the littoral vineforest communities to the north of the development site and adjacent to the Village Precinct to protect the environmental value of these areas as described by RE 7.2.1 and 7.2.5 on maps provided in *Vegetation Survey Report of the proposed Ella Bay Integrated Resort Project*, Report 6.2, Volume 6 of SEIS Submission Response dated June 2012.
- (e) Unless otherwise stated in these conditions, the development is to be in accordance with the JSPS codes and policies applicable to the CCRC (or subsequently approved planning scheme and policies).

Note: 'short-term accommodation' is defined as:

premises used to provide short term accommodation for the general public which may be self contained. The use may include a manager's residence and office and the provision of recreation facilities for the exclusive use of residents; and/or

premises used, or intended to be used principally, for accommodating persons away from their normal place of residence.

Note: 'urban purposes' are defined by the Sustainable Planning Regulation 2009.

Advice—Master Plan

The proponent must finalise the Ella Bay development local area plan and Ella Bay Development Code to the requirements of CCRC.

The proponent must provide to CCRC, when submitting the development application, a revised master plan for the Ella Bay development which is generally in accordance with:

- (a) the master plan described in the EIS, revised in the SEIS and SEIS Submission Response dated June 2012, and further amended by any requirements of the conditions of development in this report and by CCRC in issuing a subsequent development approval consistent with this report
- (a) the precinct plan included in the additional information document (SEIS Submission Response dated June 2012) (Refer Figure 2.2 in this report).

Condition 3. Impacts on fauna communities

The Chief Executive of CCRC is the entity with jurisdiction for this condition.

- (a) The Ella Bay development must include property design elements that will avoid where possible or mitigate impacts upon fauna communities.
- (b) The property design will incorporate the following:
 - (i) conservation zones which permit fauna and flora dispersal across the Ella Bay site, including:
 - (A) national park (62.8 hectares)
 - (B) nature conservation area (67.8 hectares)
 - (C) fauna corridor (87.3 hectares)
 - (D) setback and easement (58.9 hectares)
 - (ii) site roads with fauna sensitive design
 - (iii) fauna crossings at ephemeral watercourse crossings
 - (iv) a minimum of 50 metre buffers between development, other than nature walkways, and waterways
 - (v) construction and maintenance of firebreaks within the site.
- (c) The conservation zones are to be agreed with DNRM, SEWPaC and CCRC, and will be generally in accordance with Figure 3.18 in Volume 1 (refer to Figure 5.3 in this report) and Section 4 in Report 6.5a in Volume 6 of the SEIS Submission Response, dated June 2012.
- (d) The site roads are to be designed in accordance with the *Fauna Sensitive Road Design Manual – Volume 2: Preferred Practices* (DTMR June 2010) and the requirements of WTMA and CCRC.

Advice—Land surrender

As part of an environmental offset package the proponent should surrender to the State, for inclusion in the Ella Bay National Park, that part of Lot 320 NR157629 described as Zone A and depicted in Figure 5.3 of this report.

Condition 4. Sequencing of development

The Chief Executive of CCRC is the entity with jurisdiction for this condition

- (a) Sequencing of the development must be generally in accordance with the development schedule included in Volume 1, section 2.3 of the additional information document (SEIS Submission Response dated June 2012).

Condition 5. Tourist and leisure facilities

The Chief Executive of CCRC is the entity with jurisdiction for this condition.

- (a) The proponent must develop, at no cost to state and local government, all tourist and leisure facilities in accordance with the EIS documentation and any requirements of these conditions of development including the following:
 - (i) three (3) resort precincts comprising 860 units and villas
 - (ii) 18 hole golf course
 - (iii) country club
 - (iv) visitors centre
 - (v) education and research centre

- (vi) retail and commercial facilities
 - (vii) restaurants and cafes
 - (viii) residential precinct community facilities, that is, swimming pool, barbecue facilities, playgrounds, tennis courts and club house for each residential precinct
 - (ix) public parks and open space (including environmental buffers)
 - (x) public parking areas
 - (xi) walking/cycle paths within the site
 - (xii) designated walking/cycle paths adjacent to the access road (linking the development site to Flying Fish Point)
 - (xiii) access the national park walking tracks (if approved for construction).
- (b) The residential precinct community facilities noted above must be constructed prior to the completion of each residential stage of the development.

Condition 6. Performance guarantee bond

The Chief Executive of CCRC is the entity with jurisdiction for this condition

- (a) The proponent must provide to CCRC, prior to commencement of construction, a performance guarantee bond for the development (including access road and any associated wildlife fencing).
- (b) The bond noted in (a) above is surety for the restoration of the site and access road to a safe and saleable condition, including provision for long-term environmental impact mitigation measures required under state and Australian Government approvals, should the project not be completed in accordance with the EIS documentation and commitments made by proponent.

Advice—Performance guarantee bond

The amount of, and arrangements relating to, the performance guarantee bond for the development, noted in Condition 6 in Appendix 1 of this report, should be negotiated with CCRC in consultation with SEWPaC and the Office of the Coordinator-General.

Condition 7. Isolation plan

The Chief Executive of CCRC is the entity with jurisdiction for this condition.

- (a) The proponent must prepare and implement an isolation plan for all stages of the project to address any situation where access to the site might be cut off due to a natural event such as damage caused by landslide and cyclone. The isolation plan must be prepared in consultation with CCRC and other emergency services agencies and approved by CCRC prior to commencing any construction works.

Condition 8. Construction of bypass road

The Chief Executive of CCRC is the entity with jurisdiction for this condition.

- (a) Construction of the bypass road (that is, stage 2 of road construction) should commence once vehicular traffic through Flying Fish Point reaches 1000 vehicle movements per day (as determined by Condition 9 below) or prior to the commencement of stage 2 of the development schedule, whichever is sooner.

- (b) The bypass road is to be completed and fully operational within two years of commencement of construction of the road.

Condition 9. Vehicle movement monitoring

The Chief Executive of CCRC is the entity with jurisdiction for this condition.

- (a) The proponent must undertake vehicle movement monitoring to determine when vehicular traffic through Flying Fish Point reaches 1000 vehicle movements per day. The monitoring must be undertaken in accordance with council requirements, that is, the preferred location of monitoring, type of monitoring system, agreed methodology, monitoring commencement and end date and reporting regime.

Condition 10. Traffic management plan

The Chief Executive of CCRC is the entity with jurisdiction for this condition.

- (a) The proponent must provide the final traffic management plan for the construction and operational stages of the Ella Bay development as part of the development application to CCRC showing, amongst other things, how the impacts of construction traffic impacts will be managed and communicated to the residents of Flying Fish Point and the Coconuts.

Condition 11. Ella Bay access road

The Chief Executive of CCRC is the entity with jurisdiction for this condition.

- (a) The Ella Bay access road and associated infrastructure is to be provided by the proponent at no cost to local or state government and should be constructed generally in accordance with the alignment designated in section 1.4 Volume 1 and Appendix A2.6 Volume 4 of the SEIS (that is, the current Ella Bay Road alignment (from approximately 90 metres north of Ruby Street) with Option D for the bypass road), but may be subject to modification and refinement at the operational works development application stage.
- (b) An access road, walking and cycle path design and construction report is to be provided to CCRC for approval and must be in accordance with:
 - (i) the latest version of the FNQROC Development Manual and relevant safety requirements unless otherwise approved by CCRC
 - (ii) fauna sensitive design standards included in the *Fauna Sensitive Road Design Manual—Volume 2: Preferred Practices* (DTMR June 2010)
 - (iii) CCRC, WTMA and SEWPaC requirements to minimise the impact on wildlife, in particular the southern cassowary.
- (c) In the event that agreement cannot be reached between the relevant agencies and the proponent regarding the design and alignment of the access road and/or the requirements for provision and maintenance of fauna sensitive design elements, the matter(s) may be referred to the Coordinator-General for mediation, direction or necessary action.
- (d) The proponent must provide to CCRC a road engineering report supporting the long term stability of Ella Bay Road adjacent to the coastline and its ability to

withstand collapse in a natural disaster event (for example, landslide, heavy rainfall, cyclone, or extreme tidal event).

Condition 12. Traffic and transport

The Chief Executive of CCRC is the entity with jurisdiction for this condition.

- (a) The proponent must provide to CCRC, as part of the development application, a transport infrastructure impact study undertaken by an appropriately experienced registered professional engineer (Qld) (RPEQ).
- (b) The study noted in (a) above must:
 - (i) detail the traffic impacts of the development on the local road network from the development site to the Bruce Highway
 - (ii) identify any transport infrastructure (that is, roads, cycle lanes, bridges, pathways, public transport network infrastructure, etc) that may be impacted by the development
 - (iii) identify any mitigation measures required to address identified impacts of the development on the existing road network/transport infrastructure.
- (c) The proponent is required to contribute towards the cost of mitigating any impacts identified in (b) above.
- (d) The proponent may be required to enter into an infrastructure agreement with CCRC to contribute to any mitigation requirements identified in (b) above. The agreement should set out the contribution method and the amount and timing of the proponent's contribution. The proponent's contribution must be consistent with the mitigation measures identified in (b) above and may take the form of a financial contribution towards the cost of mitigation and/or a requirement that the proponent carry out certain works to address the mitigation.
- (e) CCRC will determine the value of any mitigation measures applicable to the Ella Bay development and method of contribution, taking into account the study noted in (a) above, the CCRC Priority Infrastructure Plan (forming part of the Johnstone Shire and Cardwell Shire Planning Schemes) and the CCRC Transport Network Plan.
- (f) Any works required to be undertaken by the proponent as identified in the agreement noted in (d) above must be carried out to comply with the CCRC Priority Infrastructure Plan, the FNQROC Development Manual and the CCRC Transport Network Plan.
- (g) In the event that agreement cannot be reached between CCRC and the proponent, the matter may be referred to the Coordinator-General, by either party, for mediation, direction or necessary action.

Condition 13. Road network plan

The Chief Executive of CCRC is the entity with jurisdiction for this condition.

- (a) The proponent must submit to CCRC, with a development application for each development stage, a detailed road network plan for each precinct of the Ella Bay development that is in accordance with Council's standards current at the time of development and relevant safety requirements.

Condition 14. Water management

The Chief Executive of CCRC is the entity with jurisdiction for this condition.

- (a) The proponent must prepare a recycled water management plan in accordance with the *Water Supply (Safety and Reliability) Act 2008* and submit to DEHP and CCRC for approval prior to making an application for a development permit for material change of use within the Ella Bay development.
- (b) All permanent water storages must be constructed in accordance with the *Queensland Water Recycling Guidelines* (EPA 2005) and the *Australian Mosquito Control Manual* (Mosquito Control Association of Australia 2002). Temporary water storages must be constructed in accordance with the *WSUD Technical Design Guidelines* (Healthy Waterways 2006).

Condition 15. Sewage and sewage treatment

The Chief Executive of CCRC is the entity with jurisdiction for this condition.

- (a) All sewage reticulation for the Ella Bay development must be designed, constructed and maintained in accordance with CCRC codes, policies, standards and specifications, applicable at the time and where relevant to CCRC requirements.
- (b) All sewage generated by the Ella Bay development must be directed to and treated at a sewage treatment plant(s) within the development area.
- (c) No septic tanks are to be installed within the Ella Bay development.

Condition 16. Stormwater and runoff

The Chief Executive of CCRC is the entity with jurisdiction for this condition.

- (a) The quantity of stormwater from the Ella Bay development site must be managed to avoid any increased flows to non-urban areas or adjacent urban areas.
- (b) Stormwater systems must be designed to comply with CCRC's planning scheme and policies and to:
 - (i) where practicable, make use of stormwater for recycling and water conservation
 - (ii) make use of drainage corridors for improved recreational values and open space or landscape area
 - (iii) avoid local flooding or increased risk to public safety
 - (iv) maintain existing runoff conditions and peak flow rates within existing drainage paths.
- (c) The quality of stormwater from the Ella Bay development site must be managed to avoid any contamination of groundwater or surface waters. Stormwater systems must be designed to:
 - (i) comply with the *Urban Stormwater Quality Planning Guidelines 2010* (DERM), the *State Planning Policy for Healthy Waters 2010* (DERM) and CCRC's planning scheme and policies
 - (ii) maintain environmental values specified in the *Environmental Protection (Water) Policy 2009*.

- (d) The stormwater designs and runoff assessment are to be submitted to DEHP and CCRC for review prior to the issue of a development permit for operational works.

Condition 17. Telecommunications

The Chief Executive of CCRC is the entity with jurisdiction for this condition.

- (a) The Ella Bay development is to be connected to telecommunications compatible with current modern housing in north Queensland. All works including any alterations, relocations, or upgrade work necessary for telephone/ internet installations resulting from or in connection with the Ella Bay development are to be provided at no cost to local or state government.

Condition 18. Landscaping

The Chief Executive of CCRC is the entity with jurisdiction for this condition.

- (a) Landscaping is to be undertaken in accordance with the JSPS and CCRC's codes and policies applicable at the time of development and shall be maintained to the satisfaction of CCRC.
- (b) The proponent is to prepare a detailed landscaping master plan (LMP) for the development to be approved by CCRC.
- (c) The LMP required in (b) above must address the management of existing vegetation and the design and management of the public areas such as urban or tourist areas as well as adjacent to infrastructure such as roads. The LMP must detail plant species and densities, and proposed fertilizer and chemical usage.
- (d) The proponent must consult with DEHP and CCRC to determine appropriate vegetation to use in landscaping for the development.

Condition 19. Weed management

The Chief Executive of CCRC is the entity with jurisdiction for this condition.

- (a) The proponent is to minimise the risk of dispersal of weed species by implementing its weed management plan which addresses all stages of the development from construction to operation and which meets standards acceptable to Department of Agriculture, Fisheries and Forestry (Biosecurity Queensland) and CCRC prior to any disturbance occurring on site.

Condition 20. Visual amenity

The Chief Executive of CCRC is the entity with jurisdiction for this condition.

- (a) The proponent must implement the following measures to avoid where possible or mitigate visual amenity impacts of the Ella Bay development:
 - (i) no building to exceed the height as set out in the Ella Bay Development Local Area Plan (Volume 6 Report 6.5a of the additional information document (SEIS Submission Response dated June 2012)
 - (ii) limit development on the elevated sections of Ella Bay as proposed in the Ella Bay Local Area Plan and conform to CCRC requirements
 - (iii) all buildings and essential infrastructure to be screened by native vegetation

- (iv) external finishes of buildings and roofs to be non-reflective and of muted tones, selected to match and blend with the existing and proposed vegetation
- (v) revegetation to be in accordance with the revegetation staging plan presented in Figure 3.17 Revegetation Staging Plan (Additional information document (SEIS Submission Response dated June 2012) prior to the commencement of each development stage
- (vi) plant landscaped areas in public and private spaces with species that are native and occur locally around Ella Bay and in the WTQWHA
- (vii) implement 'black sky' lighting (that is, no up-lighting) for the development and access road
- (viii) shield external lighting in environmentally sensitive areas within the development to limit extraneous light where necessary or face away from coastal and habitat areas
- (ix) screen embankments and cuttings with native vegetation and conserve mature trees where possible on the access road.

Condition 21. Sustainability measures

The Chief Executive of CCRC is the entity with jurisdiction for this condition.

- (a) The proponent must incorporate sustainability measures, as outlined in the EIS, SEIS and list of commitments included in Appendix 3 of this report, in buildings and structures proposed to be erected in the Ella Bay development site. Such measures are to be included in the design guidelines for the development.

Condition 22. Environmental management plans

The Chief Executive of CCRC is the entity with jurisdiction for this condition.

- (a) The proponent and/or its contractor(s) must finalise the Ella Bay integrated resort development environmental management plans (EMPs) for construction and operational management to the satisfaction of DEPH and CCRC prior to the issue of a development permit for operational works.
- (b) The EMP must take account of the results of investigations and plans developed in accordance with other conditions relating to the Ella Bay development.
- (c) The proponent and/or its contractor(s) must comply with all requirements of approved EMPs.
- (d) The proponent and/or its contractor(s) must regularly review the EMP and implement further or alternative mitigation measures in response to monitoring results, where non-conformance is notified and corrective action is required.

DEPARTMENT OF ENVIRONMENT AND HERITAGE PROTECTION

Condition 23. Erosion prone area management

The Chief Executive of DEHP is the entity with jurisdiction for this condition.

- (a) The proponent must provide to DEHP, prior to commencement of construction, a survey plan which clearly shows the erosion prone area on Lot 320 NR157629

measured in accordance with the erosion prone area definition on the Cassowary Coast Regional Local Government Area plan.

- (b) The survey plan noted in (a) above must be consistent with the linear distance depicted on Figure 5.1 of this report.
- (c) No development (including operational works) other than construction of nature walkways, pedestrian access to the beaches (including pedestrian bridges), the day spa area and any life saving structures, is to be undertaken within that part of Lot 320 NR157629 that is within the erosion prone area as noted in Figure 5.1 of this report.
- (d) The structures noted in (c) above are to be temporary in nature and not protected in the case of erosion.
- (e) The proponent must rectify any erosion or loss of sand resulting from the works required for the Ella Bay Road upgrade on Lot 337 NR53 prior to completion of works.
- (f) The proponent must stabilise all areas of exposed sand that are vulnerable to wind erosion.

Condition 24. Beach and foreshore management plan

The Chief Executive of DEHP is the entity with jurisdiction for this condition.

- (a) The proponent must prepare and implement a beach and foreshore management plan (BFMP), in consultation with DEHP, to protect the environmental values within the coastal management district during construction and operation of the Ella Bay development. The BFMP is to be finalised prior to commencement of construction and must be provided to DEHP and CCRC. The objective of the plan is for the proponent to establish reasonable and practical measures to ensure:
 - (i) physical dimensions (height and width) and vegetative cover of the beach and dune system fronting the project site are maintained in the same condition as the beach and dune system fronting the adjoining undeveloped areas
 - (ii) water chemistry and ecological values of the natural wetlands adjacent to the site are not affected
 - (iii) local and regional drainage or hydrological systems are not affected.

Condition 25. Waste management

The Chief Executive of DEHP is the entity with jurisdiction for this condition.

- (a) Construction and operation of the Ella Bay development shall minimise the generation of waste materials.
- (b) Management of waste generated by the development must avoid environmental harm.
- (c) Prior to the issue of a development permit for the operational works for the project, the proponent must prepare and submit to DEHP for review and approval a waste management and minimisation plan for the construction and operational activities.

- (d) The plan noted in (c) above must be prepared in accordance with the *Environmental Protection (Waste Management) Policy (2000)*.

Condition 26. Erosion and sediment control

The Chief Executive of DEHP is the entity with jurisdiction for this condition.

- (a) For all stages of the development (including construction of the access road) erosion protection and sediment control measures must be implemented and maintained to minimise erosion and the release of sediment in accordance with an erosion and sediment control plan (ESCP) endorsed by a certified professional in erosion and sediment control. The ESCP should consider the requirements of CCRC's planning scheme and policies.
- (b) Best practice environmental management technology sediment and litter control devices must be included on stormwater systems within the development and along the access road in consultation with DEHP and CCRC.

Condition 27. Water quality monitoring

The Chief Executive of DEHP is the entity with jurisdiction for this condition.

- (a) The proponent must develop and implement a water quality monitoring program (WQMP) which is to be designed in accordance with relevant guidelines including the *Queensland Water Quality Guidelines* (DERM 2009), the *Urban Stormwater Quality Planning Guidelines 2010* (DERM), the *State Planning Policy for Healthy Waters 2010* (DERM), the *ANZECC/ARMCANZ (2000) Guidelines* and the *Water Quality Guidelines for the Great Barrier Reef Marine Park* (GBRMPA 2009). The objective of the WQMP is to ensure that the stormwater discharges from the development do not significantly affect the environmental values of adjacent receiving water bodies.
- (b) The WQMP required in (a) above must be submitted to DEHP and CCRC for review prior to an application for a development permit for material change of use within the Ella Bay development.
- (c) As part of the WQMP, the proponent must undertake water quality baseline monitoring of turbidity, sediment pollutant concentrations and other parameters in streams and waterways impacted by the development and in the GBRWHA adjacent to the road access and the development.
- (d) The findings of the WQMP must be used to determine water quality parameters for discharges from the development into the surrounding receiving water bodies.

Condition 28. Rehabilitation

The Chief Executive of DEHP is the entity with jurisdiction for this condition.

- (a) The proponent must undertake rehabilitation/revegetation within designated conservation areas with final success criteria including as a minimum:
- (i) disturbed areas to have the same dominant species composition as the reference zones surveyed prior to disturbance
 - (ii) disturbed areas revegetated by re-establishing species recorded on site
 - (iii) evidence of weed control
 - (iv) all waste materials to be removed from site

- (b) The proponent must, prior to commencement of development, provide to DEHP for review and comment, a finalised rehabilitation/revegetation plan based on the commitments of the EIS and SEIS. The proponent must include DEHP requirements in the plan.
- (c) The rehabilitation/revegetation plan to be provided to the administering authority must include at least the following details:
 - (i) anticipated timetable (short and long term schedule for the revegetation/rehabilitation works)
 - (ii) technical requirements to be adopted including pedestrian control, planting, weed management, fire management, vehicle access management. Access control should incorporate restricting access to those rehabilitation/revegetation sites
 - (iii) final and milestone success criteria for successful rehabilitation/revegetation
 - (iv) monitoring and maintenance requirements to meet final success criteria
 - (v) appropriately qualified person to provide advice on successful rehabilitation/revegetation for the disturbed areas at the end of three years for the following attributes:
 - (A) species composition and percent cover or vegetation in representative areas of each zone
 - (B) species density in representative areas in each zone
 This information to be included in the final success criteria.
 - (vi) milestone success criteria developed for each year of the rehabilitation/revegetation works. Milestone success criteria are to include information on the attributes recorded for the reference site
 - (vii) details of progress reporting to the administering authority for each year of the rehabilitation/revegetation works. Progress reporting on the works should include details of the attributes recorded for the reference site
 - (viii) details of the contractual arrangements for the rehabilitation works until achievement of the final success criteria
 - (ix) details of contingency measures for not meeting yearly success criteria, unforeseen storm events and other scenarios such as fire, vandalism etc.

Condition 29. Protected plants

The Chief Executive of DEHP is the entity with jurisdiction for this condition.

- (a) The proponent must undertake plant surveys on the proposed clearing sites. The survey needs to determine the presence or absence of Schedule 2-5 protected plants (that is, those species classified as Endangered, Vulnerable or Near Threatened (EVNT)) and the extent of vegetation that will be cleared as a result of proposed development.
- (b) The proponent must consider options for avoiding or minimising impacts to Schedule 2-6 protected plants listed in the *Nature Conservation (Wildlife)*

Regulation 2006 and discuss specific requirements and available clearing exemptions with DEHP, before commencing clearing.

- (c) If required, the proponent must obtain a permit under the *Nature Conservation Act 1992* to remove/clear protected plants. The application for a clearing permit must list all plant species to be cleared in accordance with the relevant schedules under the *Nature Conservation (Wildlife) Regulation 2006*.
- (d) If any of the protected plants to be cleared are EVNT plant species, the proponent's application may be required to include an offset proposal in line with the requirements set out in the Queensland Biodiversity Offset Policy.
- (e) The proponent must develop a species management program if an animal breeding place is to be impacted (as per the *Nature Conservation (Wildlife Management) Regulation 2006*) during the clearing and construction stages of development. The following conditions are must also be employed during clearing activities:
 - (i) clearing is to be conducted in a sequential manner and must be conducted in a way that directs escaping wildlife away from roads and into adjacent natural areas.
 - (ii) a licensed spotter/catcher must be employed where there is a risk to native fauna present within the clearing site. The permit holder must ensure any injured animals are referred to an appropriate wildlife carer group or veterinarian.
- (f) The proponent must obtain a wildlife rehabilitation permit under the *Nature Conservation (Wildlife Management) Regulation 2006* and *Nature Conservation (Administration) Regulation 2006* if protected animals need to be rescued, particularly during the clearing and construction stages of development.

Condition 30. Wildlife

The Chief Executive of DEHP is the entity with jurisdiction for this condition.

- (a) Prior to commencement of construction, the proponent must develop and implement, in consultation with DEHP and WTMA a monitoring program to determine the impacts of the Ella Bay access road and site roads on wildlife, in particular the southern cassowary.
- (b) The monitoring program noted in (a) above must set out parameters for monitoring including timing, recording methodologies, reporting responsibilities and how findings will be used to provide greater protection for wildlife near the road corridors.

DEPARTMENT OF AGRICULTURE, FORESTRY AND FISHERIES

Condition 31. Fish passage

The Chief Executive of DAFF is the entity with jurisdiction for this condition.

- (a) The proponent must meet DAFF requirements for waterway barriers, proposed creek crossings or in-stream infrastructure at the detailed planning stages and during construction and operation of the development (including road

infrastructure) to avoid, or otherwise minimise, any impacts on fish passage within the site.

Condition 32. Marine plants and fish habitats

The Chief Executive of DAFF is the entity with jurisdiction for this condition.

- (a) Any beach access and other infrastructure required to be placed within the wetland and foreshore dunal systems must avoid disturbance to marine plants and fish habitats. Where avoidance is not possible, the path and area of least disturbance is to be taken.
- (b) An operational works approval must be obtained from DAFF for any marine plant disturbance.

Condition 33. Pests

The Chief Executive of DAFF is the entity with jurisdiction for this condition.

- (a) The proponent must minimise the risk of dispersal of pest species to adjacent areas by developing and implementing a pest management plan for the site and surrounds which addresses all stages of the development from construction to operation and which meets standards acceptable to the DAFF, Queensland Health and DEHP prior to any disturbance occurring on site.

DEPARTMENT OF NATURAL RESOURCES AND MINES

Condition 34. Indigenous cultural heritage

The Chief Executive of DNRM is the entity with jurisdiction for this condition.

- (a) The proponent must submit a Cultural Heritage Management Plan (CHMP) prepared in consultation with, and signed by, the traditional owners to DNRM for approval prior to commencing development.

Condition 35. Regional ecosystems

The Chief Executive of DNRM is the entity with jurisdiction for this condition.

- (a) Before clearing any REs on the project site and adjacent to the access road, the proponent must:
 - (i) complete and submit detailed mapping of REs on and around the project site in consultation with DNRM
 - (ii) obtain a development permit for operational works for the clearing of native vegetation.
- (b) An application for a development permit for operational works for the clearing of native vegetation must include an offset for endangered and of concern REs in accordance with DNRM's *Policy for Vegetation Management Offsets—version 3* (30 September 2011) and the *Regional Vegetation Management Code for Coastal Bioregions—version 3* (6 November 2009)
- (c) The offset(s) must meet criteria 4 and 5 of the *Policy for Vegetation Management Offsets* and must be secured (if not already done so) prior to any clearing of native vegetation.

Condition 36. Acid sulfate soils

The Chief Executive of DNRM is the entity with jurisdiction for this condition.

- (a) All building or operational works within the Ella Bay development site must be managed to avoid any release of untreated acid sulfate material, and particularly to avoid contamination of groundwater or surface waters.
- (b) Acid sulfate soils must be managed in accordance with:
 - (i) *State Planning Policy 2/02: Planning and Managing Development Involving Acid Sulfate Soil*
 - (ii) *the State Planning Policy 2/02 Guideline: Acid Sulfate Soils, and with reference to the Guidelines for Sampling and Analysis of Lowland Acid Sulfate Soils in Queensland*
 - (iii) *the Queensland Acid Sulfate Soil Technical Manual: Soil Management Guidelines*
 - (iv) *Instructions for the Treatment and Management of Acid Sulfate Soils* or any updates of them as they become available.
- (c) A site-specific acid sulfate soil management plan shall be developed in consultation with DNRM to demonstrate best practice measures as outlined in the abovementioned documents. The plan must be developed by consultants experienced in large scale development projects containing acid sulfate soils and finalised prior to commencement of any construction.

DEPARTMENT OF COMMUNITY SAFETY

Condition 37. Safety

The Chief Executive of the Department of Community Safety is the entity with jurisdiction for this condition.

- (a) The Ella Bay development must provide for the safety of residents and visitors during, and immediately after, emergency events.

Emergency events include tropical cyclones, local flooding, fire or any other serious disruption in the Ella Bay community that requires a coordinated response by State or local government entities to help the community recover from the disruption.
- (b) A risk management plan and emergency management/response and evacuation plan must be developed and implemented, for all stages of the project. The plan must be developed in consultation with the Department of Community Safety, other emergency services agencies and CCRC, and shall include measures that:
 - (i) provides safe refuge on-site
 - (ii) facilitates the safe and orderly evacuation of occupants to on site safe refuges or to appropriate off-site locations
 - (iii) does not significantly affect the resourcing of regional emergency services agencies and CCRC
 - (iv) ensures all on-site infrastructure maintains its function during, and immediately after, natural hazard events, up to and including one per cent annual exceedence probability.

- (c) The emergency response measures throughout all development stages must be equivalent to, or better than those currently provided within the CCRC local government.

Appendix 2. Conditions to be attached to a development approval for the commencement of environmentally relevant activities

ERA 63 Sewage Treatment (*Environmental Protection Act 1994*)

The sewage treatment plant will require approval from DEHP as an ERA (ERA63) and as such will require a development approval for an MCU.

It is DEHP's view that enough information has been provided by the proponent to recommend the following conditions:

Agency Interest: General

G1 This development approval authorises the operation of a sewage treatment works with a peak design capacity of 3,800 equivalent persons (based on a wastewater generation rate of 200L/ep/day) to treat up to 760 kL of sewage generated per day.

Prevent and/or Minimise Likelihood of Environmental Harm

G2 In carrying out an ERA to which this development approval relates, all reasonable and practicable measures must be taken to prevent and/or to minimise the likelihood of environmental harm being caused.

Maintenance of Measures, Plant and Equipment

G3 The registered operator of the ERA to which this development approval relates must:

a) install all measures, plant and equipment necessary to ensure compliance with the conditions of this approval; and

b) maintain such measures, plant and equipment in a proper and efficient condition; and

c) operate such measures, plant and equipment in a proper and efficient manner.

Alterations

G4 No change, replacement or operation of any plant or equipment is permitted if the change, replacement or operation of the plant or equipment increases, or is likely to substantially increase, the risk of environmental harm above that expressly provided for by this development approval.

Records

G5 Record, compile and keep all monitoring results and reports required by this development approval and present any monitoring results or reports to the administering authority when requested.

- G6 All records required by this development approval must be kept for at least five (5) years.

Site-based management plan

- G7 A site-based management plan (SBMP) must be implemented that provides for the effective management of the actual and potential environmental impacts resulting from the carrying out of the activity to which this development approval relates. Documentation relating to the SBMP must be kept.

- G8 The SBMP must provide for at least the following functions:

- a) Staff training in awareness of the environmental issues related to the activities and operational procedures and responsibilities for minimising potential impacts;
- b) An environmental policy and commitments to best practice environmental management of the activities including specific performance targets and objectives;
- c) Control procedures to be implemented for routine operations for day to day activities to minimise the likelihood of environmental harm;
- d) Contingency plans and emergency procedures to be implemented for non-routine situations to deal with foreseeable risks and hazards, including corrective responses to prevent and mitigate environmental harm (including any necessary site rehabilitation);
- e) Organisational structure and responsibility to ensure that roles, responsibilities and authorities are appropriately defined to ensure effective management of environmental issues;
- f) Effective communication procedures to ensure two-way communication on environmental matters between operational staff and higher management;
- g) Monitoring of contaminant releases to the environment including procedures, methods and record keeping and investigation into the environmental impact of any release that causes or is likely to cause serious or material environmental harm;
- h) A Stormwater Management Plan which has the objective of avoidance and minimisation of contaminated stormwater;
- i) The periodic review of environmental performance and procedures, not less frequently than annually; and
- j) A program for continuous improvement.

- G9 The SBMP must not be implemented or amended in a way that contravenes any condition of this development approval.

Incident recording

- G10 Maintain records of the time, date and duration of equipment malfunctions, where the failure results, or is reasonably likely to result, in the release of contaminants which causes environmental harm.

Notification

- G11 Notify the administering authority as soon as practicable after becoming aware of any release of contaminants that occurs other than in accordance with the conditions of this development approval, or any event where environmental harm is caused or threatened.

Please Note: The DEHP Pollution Hotline (1300 130 372) is the most appropriate contact for pollution incidents.

- G12 Written advice detailing the following information must be provided to the administering authority within fourteen (14) days following any notification in accordance with condition G10:

- a) The name of the operator, including their approval / registration certificate number;
- b) The name and telephone number of a designated contact person;
- c) The quantity and substance released;
- d) The location of the release/event;
- e) The time of the release/event;
- f) The time the registered operator became aware of the release/event;
- g) The suspected cause of the release/event;
- h) A description of the resulting effects of the release/event;
- i) The results of any sampling performed in relation to the release/event;
- j) Actions taken to mitigate any environmental harm (including environmental nuisance) caused by the release/event; and
- k) Proposed actions to prevent a recurrence of the release/event.

Spill kit

- G13 An appropriate spill kit, personal protective equipment and relevant operator instructions/emergency procedure guides for the management of wastes and chemicals associated with the ERA must be kept at the site.

Spill kit training

- G14 Anyone operating under this approval must be trained in the use of the spill kit.

Monitoring

- G15 A competent person(s) must conduct any monitoring required by this development approval.

Equipment calibration

- G16 All instruments, equipment and measuring devices used for measuring or monitoring in accordance with any condition of this development approval must be calibrated, and appropriately operated and maintained.

Sample analysis

- G17 All analysis and tests required to be conducted under this development approval must be carried out by a laboratory that has NATA certification for such analysis and tests, except as otherwise authorised by the administering authority.

Water and wastewater quality sampling

- G18 All water and wastewater quality sampling must be done in accordance with methods prescribed in the latest edition of the Department of Environment and Heritage Protection Water Quality Sampling Manual

Competency

- G19 Ensure that the operation and maintenance of all plant and equipment is carried out by or under the supervision of a suitably qualified person to operate and maintain the plant and equipment.

Backup power supply

- G20 A backup power supply of a capacity sufficient to maintain operation of the sewage treatment works must be available in the event that normal power supply is interrupted.

Agency Interest: Air

Nuisance

- A1 The release of noxious or offensive odours or any other noxious or offensive airborne contaminants resulting from the activity must not cause a nuisance at any nuisance sensitive or commercial place.
- A2 When requested by the administering authority, monitoring must be undertaken to investigate any complaint of environmental nuisance caused by a release to the atmosphere, and the results thereof notified to the administering authority within 14 days following completion of monitoring.

Agency Interest: Land

Land disposal

- L1 The only contaminants permitted to be released to land are treated sewage effluent to the areas shown in Attachment 1: Map of Irrigation Area.
- L2 Monitor and keep records of the quality of effluent released to land for the parameters at the monitoring point, and at the frequency specified in Table 1. Contaminant Release Limits to Land.

Table A1. Contaminant Release Limits to Land

Monitoring Point	Quality Characteristic	Release Limit				Monitoring Frequency
		Minimum	Median	80 th Percentile	Maximum	
Outlet from treated effluent tank	BOD5 (mg/L)	-	20	-	30	Quarterly
	Dissolved Oxygen (mg/L)	2	-	-	-	Weekly
	pH	6.5	-	-	8.5	Weekly
	Suspended Solids (mg/L)	-	5	-	30	Quarterly
	Total Nitrogen (mg/L)	-	-	-	15	
	Total Phosphorus (mg/L)	-	-	-	5	
	*E.Coli (CFU/100ml)	-	<10	200	-	Monthly

*From a minimum of five (5) samples, taken at not less than half-hourly intervals in any one day.
 "80th percentile" means not more than one (1) of the measured values of the quality characteristic is to exceed the stated release limit for any five (5) consecutive samples for a sampling point at any time during the environmental activity(ies) works
 "median" means the middle value, where half the data are smaller, and half the data are larger. If the number of samples is even, the median is the arithmetic average of the two (2) middle values

- L3 A minimum area of 91 hectares of land, excluding any necessary buffer zones, must be utilised for the irrigation of treated effluent.
- L4 The maximum annual volume of effluent applied through irrigation should not exceed 127,000,000 litres per year.
- L5 The irrigation of effluent must be carried out in a manner such that:
 - a) vegetation is not damaged;
 - b) soil erosion and soil structure damage is avoided;
 - c) there is no surface ponding of effluent;
 - d) percolation of effluent beyond the plant root zone is minimised;
 - e) the capacity of the land to assimilate nitrogen, phosphorus, salts, organic matter as measured by oxygen demand and water is not exceeded; and
 - f) the quality of ground water (equivalent to pre-development) is not adversely affected.
- L6 Notices must be prominently displayed on areas undergoing effluent irrigation, warning the public that the area is irrigated with treated effluent and not to use or drink the effluent. These notices must be maintained in a visible and legible condition.

- L7 The daily volume of contaminants released to land must be determined or estimated by an appropriate method, for example a flow meter, and records kept of such determinations and estimates.
- L8 A minimum of 11 000 000 litres of wet weather storage must be available to store treated effluent when conditions prevent irrigation.
- L9 When conditions prevent the irrigation of treated effluent to land (such as during or following rain events), the contaminants must be directed to a wet weather storage or alternative measures must be taken to store/lawfully dispose of effluent (such as wet weather storage or tanking off site to another treatment plant or sewer). A record must be kept of any removal or discharge off site, should the wet weather storage capacity be exceeded, including destination, transporter, dates and volumes. The actions to address disposal of waste from the sewage treatment plant, including responsibility for such decisions, should be addressed in an EMP approved by the administering authority.
- L10 Any spillage of wastes, contaminants or other materials must be cleaned up as quickly as practicable to prevent such spills entering the stormwater system. Such spillages must be cleaned in a manner which prevents the release of wastes, contaminants or material to any stormwater drainage system, roadside gutter or waters.

Containment of chemicals, fuels and other liquid contaminants

- L11 All chemicals, fuels and other liquid contaminants must be contained within an on-site containment system and controlled in a manner that prevents environmental harm, and in accordance with AS1940—Storage and Handling of Flammable and Combustible liquids.

Agency Interest: Noise

Noise nuisance

- N1 Noise must not cause an environmental nuisance at any nuisance sensitive place or commercial place.

Agency Interest: Social

Complaint response

- S1 Record the following details for all complaints received and provide this information to the administering authority on request:
- a) time, date, name and contact details of the complainant;
 - b) reasons for the complaint;
 - c) any investigations undertaken;
 - d) conclusions formed; and
 - e) any actions taken.

Agency interest: Waste

- W1 Waste must not be released to the environment, stored, transferred or disposed contrary to any condition of this development approval.
- W2 Sludge generated by the sewage treatment process must not be:
- a) Disposed on site; or
 - b) Stored on site for any period of time longer than necessary to dewater the sludge and prepare it for transport to a facility lawfully able to accept such wastes.

Waste handling

- W3 All regulated waste removed from the site must be removed by a person that holds a current approval to transport such waste in accordance with the provisions of the *Environmental Protection Act 1994*.

Off-site movement of regulated waste

- W4 Where regulated waste is removed from the site, the registered operator must monitor and keep records of the following:
- a) the date, quantity and type of waste removed; and
 - b) the name of the waste transporter and/or disposal operator that removed the waste; and
 - c) the intended treatment, disposal and destination of the waste.

Agency Interest: Water

Release to waters

- WA1 Contaminants must not be released from the site to any waters or the bed and banks of any waters.

Stormwater management

- WA2 There must be no release of stormwater runoff that has been in contact with any contaminants at the site to any waters, roadside gutter or stormwater drain.

Groundwater monitoring

- WA3 Develop and implement an ongoing groundwater monitoring program (GMP), including the development of a suitable groundwater monitoring network, to monitor the quality of groundwater potentially impacted by any direct or indirect release of contaminants associated with the authorised activity.
- WA4 Prior to implementation, the GMP must be submitted to the administering authority for review and comment. The proponent must have due regard for any comments provided by the administering authority.
- WA5 The GMP must include the following requirements:
- a) the groundwater bores must be hydrologically located to detect potential groundwater impacts from irrigating treated effluent to land and include reference (non-impacted) sites;

b) groundwater samples taken from the bores must be representative of the aquifer(s).

c) sampling frequency undertaken that is commensurate with the environmental risk to groundwater.

d) monitoring for the parameters including but not limited to: total nitrogen, phosphorus and their constituents, salinity, E. coli.

Environmental Impact Monitoring Program

WA6 Develop and implement an on-going Environmental Impact Monitoring Program (EIMP), including the development of a suitable background and impacted site monitoring network, to monitor the quality of surface waters potentially impacted by any direct or indirect release of contaminants associated with the authorised activity.

WA7 Prior to construction, the EIMP must be submitted to the administering authority for review and comment. You must have due regard for comments provided by the administering authority.

WA8 The EIMP must include the following requirements:

a) representative sampling at suitable background and potentially impacted sample locations, located in accordance with the methodology set out in the ANZECC (2000) Water Quality Guidelines and Queensland Monitoring and Sampling Manual 2009 (Environmental Protection (Water) Policy 2009 Version 2 September 2010).

b) sampling must be undertaken at a frequency commensurate with the environmental risk of the effluent irrigation.

c) monitoring for the parameters including but not limited to: total nitrogen, phosphorus and their constituents, salinity, E. coli.

Appendix 3. Proponent commitments

The following commitments have been made by the proponent to manage the impacts of the Ella Bay integrated resort. Commitments must be fully implemented.

Commitment 1. Flora and Fauna

- 1.1 To minimise impacts on stream dwelling rainforest frog species, the proponent will:
- (a) implement the stream dwelling rainforest frog species management sub-plan for chytrid fungus control
 - (b) implement the weed management sub-plan which will ensure chemicals are frog and aquatic friendly
 - (c) implement the fauna sensitive road design in the Ella Bay Road design and environmental management report (Volume 4). Specifically:
 - (i) to provide habitat connectivity by constructing and maintaining fauna friendly culvert underpasses specifically designed with riffle zones for amphibian mobility at locations identified as fauna underpasses (Volume Seven, drawing EBR1CE-PD10)
 - (ii) to minimise road mortality directional frog fencing will be installed and maintained for 25 m either side of creek crossings at locations identified as Culverts 15 & 16 and Bridges 2 and 3 (Volume Seven, drawing EBR1CE-PD06)
 - (d) Induct all staff, construction workers, residents, and provide information to visitors with significance of common mist frog and risks to species viability.
- 1.2 To avoid impacts on spectacled flying-fox, the proponent will:
- (a) implement the spectacled flying-fox management sub-plan
 - (b) induct all staff, construction workers, residents, and providing information to visitors with significance of the spectacled flying-fox and risks to species viability and Lyssavirus disease risk management.
- 1.3 To minimise the impact on marine turtle species, the proponent will:
- (a) implement the marine turtle species management sub-plan and monitor the foreshore during turtle nesting season
 - (b) implement the weed management sub-plan to control exotic species and revegetate with endemic species
 - (c) restrict vehicular access on the beach all year round except for emergency vehicles or with permit for human derived rubbish collection
 - (d) ensure that all lighting within the development area will be designed not to 'spill' into adjoining habitat areas
 - (e) induct all staff, construction workers, residents, and provide information to visitors with significance of marine turtles and risks to species viability.

- 1.4 To minimise the impact on the ecological community, littoral rainforest and coastal vine thickets of Eastern Australia, The proponent will:
- (a) implement the significant flora management sub-plan and the weed management sub-plan to control exotic species including pond apple and revegetate with endemic species
 - (b) prepare and implement the erosion and sediment control sub-plan to prevent hydrological impact
 - (c) restrict human and vehicle access during the construction of Ella Bay Road to the identified littoral rainforest through:
 - (i) fencing with temporary high visibility barrier fencing and signage to restrict access to construction workers
 - (ii) induction for construction workers to advise of the access restriction
 - (d) provide educational material for all visitors, staff and construction workers. An awareness program will be a requirement for the induction for cassowary fence maintenance contractors.
- 1.5 To protect the welfare of the Agile Wallaby population, the proponent will prepare and implement a pest and agile wallaby management sub-plan prior to commencement of the first resort or residential subdivision to aid the transition for the population from a pastoral to an urban environment.
- 1.6 The proponent will conduct further freshwater fish surveys to improve knowledge of fish species present and their habitat requirements for rehabilitation purposes, including long term monitoring of water health.

Commitment 2. Protection of habitat, revegetation and rehabilitation strategy

- 2.1 To protect or enhance habitat, the proponent will:
- (a) prepare and implement a revegetation and rehabilitation management sub-plan based on the species and learnings of the revegetation trial. This plan will include locations, species, numbers, site preparations, and timing of activities and will identify management actions (such as revegetation, appropriate species, weeding and fencing), performance criteria, responsibilities and costs needed to effectively restore and manage cassowary habitat on site.
 - (b) implement initial revegetation before any major construction works to establish the east/west and northern section of the cassowary corridors and to ensure positive contribution to cassowary habitat prior to clearing
 - (c) maintain the minimisation of impacts on watercourse setbacks for all minor tributaries within the site in accordance with the vegetation management code, consisting of a 25 metre vegetation strip on each bank
 - (d) prepare and implement schedules of prohibited noxious weeds and potentially invasive plants (as declared or defined by the local authority or state Government) or undesirable plants (as defined in Schedule 3 to the wet tropics management plan) in the landscaping on the site

- (e) investigate alternative means of weed control other than herbicides such as flame and steam that will assist in providing extra protection for frogs, including the two mentioned endangered species
- (f) not use any mechanical control (chain pulling, dozer pushing) for any clearing of weeds and only use appropriate chemical treatment.

Commitment 3. Protection of the southern cassowary and habitat

- 3.1 Impacts of the development on the southern cassowary will managed through the implementation of the southern cassowary management sub-plan.
- 3.2 To protect the habitat of the southern cassowary, the proponent will:
 - (a) implement a conservation covenant over areas denoted as Conservation Zone B of 67.8ha and Conservation Zone C of 87.3ha on Lot NR320 N157629 for protection and in perpetuity as described in Figure 3.18 Ella Bay Conservation Zones
 - (b) revegetate and rehabilitate Conservation Zones B and C described above with cassowary plant foods in the western section and non-cassowary plant foods in the eastern resort area
 - (c) provide fauna corridor connectivity by constructing and maintaining cassowary underpasses at locations described in the road network & transport management sub-plan.
- 3.3 To protect the southern cassowary from feral pests and domestic animals, the proponent will:
 - (a) prepare and implement a feral pest and wallaby management sub-plan to control feral animals and manage wallaby impact on revegetation. The plan will include cassowary safe trapping and baiting of feral pigs, control of feral and domestic dogs and cats, including non-target safe monitoring and active management actions
 - (b) prepare and implement a community management statement over Lot NR320 N157629 which details the prohibition of cats and dogs, (excluding guide and assistance dogs).
- 3.4 To minimise the impact of increased vehicular traffic on the southern cassowary, the proponent will:
 - (a) prepare and implement a road network and transport management sub-plan for Ella Bay development. The plan will include on-site speed limits, (40km/hr), traffic calming and management for the fauna corridor road crossings. The plan will include a requirement for all the roads within the precincts to be perimeter fenced and precincts to be linked by bridges or low speed gated crossings. The plan will include for regular appraisal and review of its success by specialist fauna and flora and the on-going responsibility for fencing maintenance and repairs will ultimately be the responsibility of the Ella Bay Body Corporate Cassowary consultants.
 - (b) prepare and implement the Ella Bay Road construction management sub-plan prior to the commencement of construction works. The plan will

include details of speed limits, (40km/hr), traffic calming, temporary and permanent fences with one-way emergency gates. Specifically:

- (i) warning signs, speed bumps/platforms and transverse line markings and rumble strips to alert drivers to the likely presence of cassowaries
- (ii) installation of a fauna underpass at chainage 440 to provide cassowary habitat continuity between State Land (Lot 18 USL35566) and Ella Bay National Park (Lot 1024 NPW151)
- (iii) installation of two fauna underpasses at chainages 3000 and 3250 on EBR1CE-PD010 to provide cassowary habitat continuity over two unnamed creeks within Lot 337 NR53
- (iv) a fauna overpass (Flying Fish Point Bypass) will be installed to provide cassowary habitat continuity over state land Lot 8 USL35566 located at chainage 500 on EBR1CE-PD010

3.5 To protect the southern cassowary in the event of cyclone, the proponent will:

- (a) prepare and implement cyclone, fire and emergency management sub-plan. The plan will identify post-cyclone cassowary feeding stations based on home range surveys, procedures for cassowary fence stowing and temporary traffic management procedures to minimise the risk of cassowary vehicle strike
- (b) enhance the resilience of existing vegetation through additional plantings, edge closure and species selection
- (c) plant 'cyclone tolerant' species to protect less tolerant species intermingled with cassowary 'fruit sources' that fruited in the late wet season or early dry season.

3.6 To minimise impacts on the southern cassowary from human disturbance and interaction, the proponent will:

- (a) prepare, provide and monitor a compulsory educational induction for all workers and contractors throughout construction on appropriate behaviour around cassowaries including food and waste hygiene, and 'no feeding'
- (b) prepare and provide educational information consistent with the *Recovery Plan for the Southern Cassowary*, to residents, guests, visitors and staff to discourage handfeeding and/or approaching cassowaries
- (c) prepare and implement guidelines on appropriate methods for removing cassowaries from construction, residential or resort areas
- (d) provide cassowary movement corridors around the site that are unimpeded pre-development to post-development.

3.7 There will be a greater risk of road trauma to cassowaries occupying adjacent or nearby habitat. To manage this risk, a road traffic management strategy for the Ella Bay property and access road will be in place during the construction phase. Key requirements will include:

- (a) erection of temporary cassowary exclusion fencing prior to the start of each stage of construction to exclude cassowaries from accessing construction sites (refer to Volume four Chapter 10 & 11, and to Volume Six 6.1k Cassowary fencing strategy)
- (b) a requirement that all vehicles are to remain within the designated road alignment
- (c) any cassowary habitat areas or road crossings that are unfenced include
 - (i) signpost of 20km/hr speed limits for all construction and non-construction vehicles including road crossing points
 - (ii) a traffic control program with specific road-based mitigation strategies at known cassowary crossing points
 - (iii) daily inspections of the status of cassowary crossing points, looking at aspects such as fencing integrity and evidence of crossings
 - (iv) establishment of reporting system for vehicle and workforce incidents with cassowaries.

3.8 There will be a greater risk of negative human interactions with the southern cassowary from the increased level of human activity at the Ella Bay property and along the access road during the construction phase of the development. Inadequate litter disposal can attract the cassowaries to the site and there is the risk of habituation due to feeding. To manage these risks, the following conditions will be in place:

- (a) an induction course on appropriate behaviour around cassowaries which all staff and subcontractors will have to attend
- (b) no access by the workforce to the adjoining forest
- (c) a waste management strategy to ensure the correct disposal of construction material such as wires, plastics or other 'attractive' items that may be ingested by cassowaries
- (d) food consumption only permitted in designated areas and covered bins for the disposal of food scraps will be provided in these areas
- (e) avoidance of extended activities in or adjacent to known cassowary road crossing points and highly frequented habitat
- (f) erection of temporary cassowary exclusion fencing (barrier mesh) prior to the start of each stage of construction to dissuade birds from accessing construction sites
- (g) protocol on appropriate methods for removing cassowaries from construction areas
- (h) a nominated 'vet-on-call' to provide immediate response for cassowary incidents.

3.9 One of the highest priorities will be continual education on the significance of the cassowary within the Wet Tropics environment, and measures to prevent or

discourage inappropriate interactions. The education will comprise the Welcome Centre and associated community education program, signage, resort literature, regular newsletters and information sessions. The following measures will be adopted:

- (a) compulsory inductions for all workers and residents
- (b) provision of target specific education literature to resort and day guests on appropriate behaviour around cassowaries which include:
- (c) strictly enforced 'no feeding' policy and the importance of this policy
- (d) education on the dangers of interaction
- (e) advice on appropriate behaviour within the precinct with regards to food, rubbish and 'attractive' items that may be ingested by cassowaries
- (f) advice on appropriate behaviour in cassowary habitat, specific responses and behaviour for golfers, walkers and cyclists in open spaces
- (g) advisory signage on cassowary behaviour at open space entrance locations
- (h) monitoring and location awareness through cassowary sighting reports
- (i) adaptive management through reporting of cassowary incidents within the precincts and open space
- (j) the development of guidelines on appropriate methods for removing cassowaries from construction, residential or resort areas.

3.10 Traffic impact mitigation strategies for cassowary including fencing, escape gates, underpasses and bridges will be monitored to determine cassowary use. The monitoring program will comprise of:

- (a) logging opportunistic sightings and incidents by the public, staff and cassowary fence surveys
- (b) monitoring of the fauna underpass usage with remote cameras
- (c) monitoring of cassowary escape gates with remote cameras, counters or sand print beds
- (d) transect surveys of road envelope area combined with strategic placement of monitoring cameras
- (e) possible monitoring of dynamic movement by GPS telemetry to model cassowary land use patterns within the reserve and east side of the range to fauna underpass usage.

3.11 To aid in developing an effective cassowary rescue, rehabilitation and release programme Ella Bay is collaborating with the University of Queensland to monitor and reintroduce rehabilitated orphaned cassowaries back into the wild. To monitor the results of the sub-adult's translocation Ella Bay purchased 5 GPS units to tag the birds and is also financing their recovery for analysis.

- 3.12 To improve understanding of cassowary ecology and threats to its survival a cassowary research station is to be located within the 5ha cyclone tolerant fruiting trees revegetation trail, with a number of ongoing projects being monitored, such as the monitoring of cassowary use of the revegetation plot, determining cassowary diet and energetics through remote sensing. The UQ tagging of sub-adults will provide dispersal pattern and other population information.
- 3.13 Cassowary management on the golf course will be based on a strategy that avoids contact between cassowaries and users of the golf course as much as possible. This will be achieved by restricting transport across the golf course to the use of a motorised buggy. If the technology can be developed the GPS tracking system for cassowary monitoring will be used as cassowary proximity alert alarm.

Commitment 4. Water resources

- 4.1 The proponent will manage water resources by preparing and implementing an integrated water management sub-plan. The plan will include measures to manage groundwater abstraction, manage and minimise nutrient and stormwater runoff, erosion and sedimentation and a detailed monitoring and reporting regime for both the construction and operational phase.
- 4.2 Storm and surface waters from all development areas including the golf course open areas will be treated through constructed wetlands and bioretention filters to remove nutrients and sediment and to maintain the hydrological flow regime of the creeks.
- 4.3 The hydrological objectives of the stormwater treatment will be to manage the increased impervious surfaces and rainwater harvesting to preserve:
- (a) waterway stability to predevelopment discharge to minimise disturbance of benthic habitat; and
 - (b) preserve the dry duration during dry season (avoid drying out):
 - (i) preserve the pre-development 30-day low flow duration frequency curve for the dry season (July to November)
 - (ii) preserve the low flow spells frequency curve for the dry season.
 - (c) preserve the wet duration during year (avoid over wetting)
 - (d) preserve the pre-development 30-day high flow duration frequency curve for entire year (all months).
- 4.4 The primary objective of the constructed wetlands will be to remove sediment and nutrients from the development stormwater flows. The quality objective of the constructed wetlands and bioretention filters will be to reduce the nutrients and sediment of post development discharge by:
- (a) total suspended solids loads of > 80%
 - (b) total phosphorus loads of > 65%
 - (c) total nitrogen loads of > 35%

- (d) gross pollutants loads of > 90%.
- 4.5 The proponent will also manage water resources by preparing and implementing a sewerage and recycle management sub-plan. The plan will include measures to manage sewage treatment, quality, recycling, wet weather storage, and a detailed monitoring and reporting regime for both the construction and operational stages.
- 4.6 To protect water quality and ecosystems, all areas of the proposed development requiring ground disturbances located below 5 metres AHD shall be subject to an acid sulphate soil investigation and management where identified, in accordance with the Queensland State Planning Policy 2/02.
- 4.7 The existing hydrological connectivity of wetlands will be maintained by the use of swales, vegetated waterways, and wetlands rather than pipes and lined channels for the stormwater system.
- 4.8 The proponent plans to use water sensitive urban design (WSUD) techniques within the development as part of sediment control measures during and following construction. This includes:
 - (a) water harvesting and porous paving to reduce run-off from hardstand areas;
 - (b) limiting the extent of disturbed areas open at any time
 - (c) managing surface water using WSUD techniques such as constructed swales, sediment/wetlands treatment areas and gross pollutant traps to reduce flow velocities and provide suitable retention times to trap sediment prior to discharge off-site
 - (d) implementing WSUD techniques that will also maximise the direction of surface water sheet flow into natural buffers to waterways that will be provided by vegetation to be retained and rehabilitated adjacent to gullies, creeks and wetlands.
- 4.9 All liquid waste generated from water used for domestic purposes plus backwash from the water supply treatment plant and the swimming pool lagoons will be disposed of through the sewage treatment plant.

Commitment 5. WHA Values

- 5.1 The goal for Ella Bay development will be to fully retain the visual character of the landscape by ensuring that development is either not evident in the viewed landscape or only temporarily apparent. The goal for the completed development will be to enhance the scenic values through extensive revegetation and sensitive design.
- 5.2 To protect the scenic values and visual amenity, the proponent will:
 - (a) prepare and implement the Ella Bay Road construction management sub-plan prior to the commencement of construction works. The plan will include measures to screen embankments and cuttings with native vegetation, conserve mature trees where possible and a detailed

monitoring and reporting regime for both the construction and operational phase

- (b) ensure that no building will exceed the height as set out in the Ella Bay development local area plan and will be screened by native vegetation. External finishes will be non-reflective and of dark tones, selected to match and blend with the existing and proposed vegetation
- (c) implement the revegetation staging plan as presented in Figure 3.17 revegetation staging plan prior to the commencement of each development stage.

5.3 The landscape integration strategy (Volume 4 Ella Bay road design and environmental management report and Volume four Appendix 1 Visual landscape assessment Ella Bay Road) identified the following outcomes:

- (a) retain the corridor effect created by dense vegetation
- (b) retain existing mature trees, in particular trees with canopy connectivity
- (c) relocate where possible EVNT (endangered, vulnerable or near threatened) flora within clearing envelope
- (d) remove existing weed infestations of batters, drains and shoulders and revegetate with frangible edge closure vegetation
- (e) influence the natural surrounds with a comprehensive revegetation strategy;
- (f) include water sensitive design coupled with revegetation to improve roadside aesthetics and assist in weed control
- (g) discrete shade cloth fencing to reduce the potential mortality of the southern cassowary
- (h) stabilisation of embankments using vegetated gabions
- (i) protect the existing rainforest and woodland from edge effects
- (j) promote this 4 kilometre stretch of road as a tourist drive in conjunction with local council and Wet Tropics Management Authority.

5.4 To protect the values of the Wet Tropics of Queensland World Heritage Area (WTWHA) and the Great Barrier Reef World Heritage Area, the proponent will:

- (a) prepare and implement the Ella Bay Road construction management sub-plan prior to the commencement of construction works. The plan will include measures to manage and minimise nutrient and stormwater runoff, erosion and sedimentation and a detailed monitoring and reporting regime for both the construction and operational phase
- (b) prepare and implement an integrated water management sub-plan. The plan will include measures to manage groundwater abstraction, manage and minimise nutrient and stormwater runoff, erosion and sedimentation and a detailed monitoring and reporting regime for both the construction and operational phase

- (c) prepare and implement a golf course management sub-plan prior to the commencement of construction works. The plan will be based on recommendations of the Improving the eco-efficiency of golf courses in Queensland (AGCSA, 2001) and will include measures to manage and minimise nutrient and stormwater runoff, detail the organic principles for the areas that drain to the northern wetland and a detailed monitoring and reporting regime for both the construction and operational phase.

5.5 To protect the values of the WTWHA the proponent will:

- (a) prepare and implement the Ella Bay Road construction management sub-plan prior to the commencement of construction works. The plan will include measures to manage and minimise the clearing of mature trees and revegetate along the road corridor as referred to in the Ella Bay Road design and environmental management report Chapter 9 Flora sensitive road design
- (b) implement a conservation covenant over areas denoted as Conservation Zone B of 67.8 ha and Conservation Zone C of 87.3 ha on Lot NR320 N157629 for protection and in perpetuity as described in Figure 3.18 Ella Bay conservation zones
- (c) prepare and implement the revegetation and rehabilitation management sub-plan. The plan will include the priority as presented in Figure 3.17 Revegetation staging plan and identify the areas, management actions, and performance criteria
- (d) implement the weed management sub-plan, to control exotic species including pond apple and revegetate with endemic species
- (e) prepare and implement a feral pest and wallaby management sub-plan to control feral animals and manage wallaby impact on revegetation. The plan will include cassowary safe trapping and baiting of feral pigs, control of feral and domestic dogs and cats, including non-target safe monitoring and active management actions
- (f) implement the hygiene protocol referred to in stream dwelling rainforest frog species management sub-plan for chytrid fungus control
- (g) prepare and implement a community management statement over Lot NR320 N157629 which details the prohibition of cats and dogs, excluding guide and assistance dogs.

Commitment 6. Cultural heritage

6.1 To protect cultural heritage values of the site, the proponent will:

- (a) implement the cultural heritage management sub-plan, to control, manage and protect cultural artefacts during excavation
- (b) provide education on the traditional owner cultural heritage values and history and adopt indigenous natural heritage management principles at the Welcome Centre.

- 6.2 Ella Bay Developments will work with the Bagirbarra and MAMU to establish the Ella Bay Bagirbarra Development Trust. The goals will be to:
- (a) promote Bagirbarra cultural heritage through tourism initiatives
 - (b) develop an Ella Bay Pty Ltd Bagirbarra Development Plan
 - (c) consult with Bagirbarra to understand their goals around training, employment and economic development
 - (d) support the Bagirbarra in their efforts to obtain economic independence through tourism and other initiatives
 - (e) liaise on behalf of Bagirbarra, if required, around the customization of training and the engagement of apprentices during construction phases
 - (f) assist the sustainability of Bagirbarra cultural heritage
 - (g) provide opportunities for training, work experience, employment and economic development during pre-construction, construction and post-construction at Ella Bay.
- 6.3 Ella Bay Developments will work with the Ella Bay Bagirbarra Development Trust to provide Bagirbarra and MAMU Traditional Owner employment through:
- (a) Traditional Cultural Learning & Experience Centre featured in the Welcome Centre which will promote traditional owner culture, language and dance
 - (b) traditional owner cultural guides will promote cultural interpretation walks, cultural information guidance, traditional dancers, communicate traditional language and internal cultural advice
 - (c) potential traditional owner tourism opportunities for example, a Healing Centre;
 - (d) potential traditional owner employment opportunities relating to management of the land and wildlife, including revegetation.

Commitment 7. Road and transport

- 7.1 The construction of Ella Bay Road will potentially impact on fauna and flora. Mitigation measures that will be implemented to manage these potential impacts include:
- (a) clear designation of work areas, vehicle tracks and foot-access areas together with the use of barrier mesh and prohibition signage to prevent staff and contractors from trespass, and/or introduction of clothing borne weeds and soil pathogens
 - (b) the use of dust suppression measures and road speed restrictions to minimise dust
 - (c) the minimisation of vibration and noise, in particular that the machinery complies with construction noise limits specified under the Environment Protection Act

- (d) minimising construction impact through the use of designated bunded Construction management compounds for vehicle parking, fuel and materials stores, stockpile areas and workers facilities, and the use of offsite shuttle parking for Ella Bay Road construction
 - (e) adhere to best practice procedures for the importation of materials
 - (f) weed control will adhere to the weed management sub-plan including washdown of all off-road vehicles
 - (g) an approved erosion and sediment control sub-plan will be implemented at all construction sites and relevant staff/subcontractors will be trained in erosion and sediment control techniques and infrastructure maintenance.
- 7.2 Within Ella Bay, a public shuttle bus service (powered by electricity or LP Gas) will provide regular transportation around the Ella Bay Integrated Resort. This will minimise the need for tourists, residents and staff to use their personal vehicles within Ella Bay.
- 7.3 It is the proponent's intention to provide a shuttle bus from Ella Bay to Innisfail for residents, guests and day visitors.

Commitment 8. Built environment

- 8.1 The design and living principles will be prepared and form part of the sale contract of lots and units. The principles will establish the building and design covenants for residential buildings. It will contain mandated and preferred ESD strategies, architectural and landscaping design.
- 8.2 The Ella Bay Welcome Centre will be the place people visit when they first arrive at Ella Bay. Its main purpose will be to:
- (a) induct visitors to the Ella Bay development as part of a formal process of registration and education about the development and its ecologically sustainable practices, procedures and rules
 - (b) provide a memorable 'first impressions' experience of the Ella Bay development by designing the Welcome Centre as a significant tourist attraction in its own right
 - (c) centralise important management and administration functions in the one location
 - (d) provide a location from which commercial, retail and other services can transition from on a staged basis to the Ella Bay Village Precinct (as it develops).
- 8.3 There will be an extensive network of pedestrian and bicycle pathways throughout the precincts and open space, including:
- (a) pedestrian/bicycle pathways along the edge of 100m wide main fauna corridors (conservation Zone C)
 - (b) elevated pedestrian walkways through or crossing the main cassowary corridors that are above the forest floor to separate cassowaries and

people, and to provide unhindered cassowary use of the creek and associated vegetation

- (c) the pedestrian walkways will be strategically located to minimise any disturbance to the normal behaviour of the cassowary
- (d) the pedestrian 'walkovers' may serve as a focal point for ecological interpretation, particularly that of the endangered cassowary
- (e) bicycle and buggy pathways crossing the creeks and the main cassowary corridors will have at least 10m of elevated section for cassowary movement under the structure, the pathways leading to the bridge will not be fenced or prevent cassowary access across them
- (f) nature walkways, predominately boardwalks will provide access for ecological interpretation through Zone C.

8.4 The Ella Bay development will be comprehensively prepared for cyclone and storm surge danger with cyclone, fire and emergency management sub-plan. Cyclone shelters will be located in the Welcome Centre which will operate as the emergency command and control centre, at resorts and each Residential Precinct will have a community centre which will be designed to the mechanical guidelines for category 5 cyclones. Additional emergency access options will include a helipad.

8.5 A fire appliance (light truck) will be available to the Ella Bay community and be maintained on Site to be available on a 24-hour basis, seven days a week. All residential precincts, resorts, retail and commercial outlets will be fitted with fire hydrants, with water supply from the recycled water storage tank.

8.6 A fibre optic cable will be laid under the road, and the development will be connected to the NBN. Mobile phone capability will be provided by a Telecoms provider.

Commitment 9. Sustainability energy and waste

9.1 The Ella Bay goal will be to live sustainably with the minimum carbon footprint, utilising solar, harvesting and recycling water, and minimising pollution, through the general philosophy of ecological living and principles of sustainable development.

9.2 The proponent's environmentally sensitive design approach in this area would be based upon achieving energy efficiency in key areas include:

- (a) providing comprehensive management information systems to measure and monitor energy demand patterns for residences, commercial facilities and resorts at Ella Bay
- (b) efficient building design with efficient lighting
- (c) promoting the use of innovative sustainable alternatives such as wet back/chilled water air conditioning, to avoid the use of conventional air conditioning systems
- (d) mandating the use of high efficiency four or five star rated appliances

- (e) adopting high efficiency electric motors (either DC or 3 phase) where appropriate
- (f) supplying reticulated LP gas for solar hot water boosting, cooking and drying to all residential buildings
- (g) setting and using appropriate benchmarks together with financial measures and indicators to monitor energy consumption
- (h) using extensive solar PV installations and other renewable sources of energy wherever possible
- (i) installing a low carbon emitting, stand by power generation system
- (j) using motion sensor activated night street lighting for efficiency and 'dark sky' policy
- (k) using solar peak charged electric vehicles on site for commuting, and maintenance.

Commitment 10. Socio-economic

- 10.1 A communication plan will be prepared and implemented to advise stakeholders of all construction activities, schedules and progress. As the construction phase approaches, the proponent will host quarterly information sessions between the peak employer groups, as well as implement regular reports to the community sector meetings to be held every two months.
- 10.2 The proponent will explore opportunities for local industry participation in construction and operation of the Ella Bay development in consultation with DSDIP, Industry Development Division.
- 10.3 The proponent will continue to explore training opportunities by partnering with relevant education and training providers including The Innisfail campus of Tropical North Queensland Institute of TAFE and Department of Employment and Industrial Relations.
- 10.4 Managing environmental compliance, the ongoing development of conservation and protection policies, and the range of issues facing such a township community and resort will be the prime responsibility of the Body Corporate at Ella Bay.
- 10.5 During construction of the road, a local area traffic management plan will be prepared and implemented to:
 - (a) minimise disturbance and inconvenience for residents of Coconuts and Flying Fish Point through the local area traffic management plan
 - (b) minimise workforce traffic movements through Coconuts and Flying Fish Point;
 - (c) manage traffic during construction
 - (d) communicate the plan to residents and workforce.
- 10.6 The local area traffic management plan will include:

- (a) bussing of workers will be used to minimise traffic movements in particular of light traffic
- (b) a mustering and parking centre will be provided to the west of Coconuts at Catalan Road for bus set-down/pick-up area
- (c) heavy vehicle and plant equipment travel will be reduced to less than 10 heavy vehicle movements per hour during the school zone times (7.30 – 9 am to 2.30 –4 pm)
- (d) All heavy vehicles travelling to the construction area will be required to report to the Catalan Road office for weed inspection, washdown and to satisfy traffic management curfew restrictions.

10.7 The Ella Bay Environmental Trust will be established for directing funding provided by the Proponent and other bodies to research projects, revegetation and rehabilitation, and other conservation programs in an efficient and effective way. The trust will provide ongoing auditing, updating and reporting to ensure that programs, including landscape rehabilitation procedures for the rehabilitation and revegetation of habitat, are successful.

Commitment 11. Air quality, noise and vibration

11.1 To minimise the impact of light, noise and human activity within Ella Bay development, the proponent will:

- (a) reduce motor vehicle noise within the precincts through the use of electric buggies
- (b) discourage cassowaries from accessing the more intense resort areas of the development on the east of the property through removal of the pond apple
- (c) surround conservation areas by open space areas to allow for a combined open space and conservation area that is 2½ times greater than the precinct area, thereby reducing disturbances
- (d) control light spread by using downlights, necessary for species such as turtle and nocturnal fauna.

11.2 To reduce dust emissions, the current gravel surface of Ella Bay Road will be upgraded with a bitumen seal. It is expected that the majority of dust emissions will occur at the construction site. If excess fugitive dust is observed, work will cease or phase down while the source is being actively investigated and suppression measures are being implemented.

Commitment 12. Health and Safety

12.1 For health and safety issues, the proponent will:

- (a) prepare and implement a mosquito management sub-plan prior to the commencement of the first resort or residential subdivision. Mosquitoes should be controlled by implementing an integrated approach of appropriate built environment design, including protection to buildings, water storages (tanks), storm-water systems, outdoor entertainment and

recreational focal points and also by implementing an active mosquito control program when required

- (b) develop a strategy for the safe management of pesticides and fertilisers during the operational works phase of constructing the golf course. Slow release organic fertilisers will be used on greens to minimise and slow down the release of these organic compounds in heavy rainfall conditions. Impacts on waterways will be constantly monitored
- (c) implement non-chemical termite control (such as termite mesh) throughout the development and implement integrated water cycle management system to intercept pollutants where non-chemical termite control is not feasible.

Appendix 4. Outstanding universal values for the Wet Tropics of Queensland World Heritage Area

Criteria VII—contain superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance

The OUV include:

- the exceptional coastal scenery that combines tropical rainforest, white sandy beaches and fringing reefs just offshore;
- rugged mountain peaks and gorges;
- extensive vistas of undisturbed forest and valleys which descend rapidly in the lower reaches through spectacular waterfalls and cascades; and
- superb gorge scenery with swiftly flowing rivers and spectacular waterfalls (for example, Wallaman Falls which has the longest single drop (278 metres) of any waterfall in Australia).

Criteria VIII— be outstanding examples representing major stages of earth's history, including the record of life, significant on-going geological processes in the development of landforms, or significant geomorphic or physiographic features.

The Wet Tropics of Queensland contains one of the most complete and diverse living records of the major stages in the evolution of land plants, from the very first land plants to higher plants (Gymnosperms and Angiosperms), as well as one of the most important living records of the history of marsupials and songbirds. The property provides exceptional examples representing eight of the major stages in the earth's evolutionary history including:

- Age of the Pteridophytes;
- Age of the Conifers and Cycads;
- Age of the Angiosperms;
- the final break-up of Gondwana;
- biological evolution and radiation during 35 million years of isolation;
- the origin and radiation of the songbirds;
- the mixing of the continental biota of the Australian and Asian continental plates; and
- the extreme effects of the Pleistocene glacial periods on tropical rainforest vegetation.

The OUV include:

- ancient plant taxa representing two main branches of the earliest land plants, the Psilotopsida and the Lycopsidea;
- 7 ancient families of true ferns, including Lycopodiaceae, Selaginellaceae, Ophioglossaceae, Marattiaceae, Osmundaceae, Schizaeaceae and Gleicheniaceae;
- taxa in the oldest and most primitive families of the largest group of pteridophytes, the Schizaeaceae and Gleicheniaceae;
- 31 of 36 families of pteridophytes (including 111 of 364 described genera);
- fern genera of East Gondwanan origins, including Coveniella, Lastreopsis, Polystichum, Pteridoblechnum, Steenisioblechnum, Oenotrichia, Leptopteris, Todea, Tmesipteris, Lycopodiella and Huperzia;
- the ancient, fern-like cycad *Bowenia spectabilis*;
- the cycad families Cycadaceae, Zamiaceae (including the genera *Cycas*, *Lepidozamia* and *Bowenia*);

Criteria VIII— be outstanding examples representing major stages of earth’s history, including the record of life, significant on-going geological processes in the development of landforms, or significant geomorphic or physiographic features.

- the rare assemblage of *Lepidozamia hopei*, *Podocarpus grayi* and *Agathis robusta* which includes the closest living counterparts of Jurassic-age fossils;
- species of the only two surviving araucarian genera *Araucaria* and *Agathis*;
- 3 endemic species of the podocarp genera *Prumnopitys* and *Podocarpus*;
- 12 primitive angiosperm families in the orders Magnoliales and Laurales (*Annonaceae*, *Austrobaileyaceae*, *Eupomatiaceae*, *Himantandraceae*, *Myristicaceae*, *Winteraceae*, *Hernandiaceae*, *Gyrocarpaceae*, *Idiospermaceae*, *Lauraceae*, *Monimiaceae* and *Atherospermataceae*);
- small, primitive, relict angiosperm families including *Austrobaileyaceae*, *Idiospermaceae*, *Eupomatiaceae* and *Himantandraceae*;
- plant taxa considered to occupy major nodal positions in the evolution of the angiosperms (including taxa in the orders Hamamelidales, Rosales, Euphorbiales, Dilleniales, Violales, Theales, Celastrales and Gentianales);
- relict taxa from Cretaceous angiosperm families (including *Cunoniaceae*, *Proteaceae*, *Winteraceae*, *Myrtaceae*, *Monimiaceae*, *Rutaceae*, *Sapindaceae*, *Aquifoliaceae*, *Callitrichaceae*, *Chloranthaceae*, *Trimeniaceae*, *Epacridaceae*, *Olaceae* and *Loranthaceae*);
- 153 genera in 43 families of angiosperms believed to represent the longest continuous history associated with the Gondwanan landmass;
- frog species from the Gondwanan families *Myobatrachidae* and *Hylidae* (including primitive species from the genera *Mixophyes*, *Taudactylus*, *Litoria* and *Nyctimystes*);
- reptiles of Gondwanan origin including geckoes of the subfamily *Diplodactylinae* and legless lizards of the endemic family *Pygopodidae*;
- skinks of the *Sphenomorphus*, *Egernia* and *Eugongylus* groups, which are represented in the Oligo-Miocene fossil fauna of Riversleigh;
- rainforest birds of Gondwanan origins including the Southern Cassowary, the orange-footed scrubfowl (*Megapodius reinwardt*) and the Australian brush-turkey (*Alectura lathami*);
- primitive insect taxa that are relicts of the Gondwanan fauna;
- primitive genera of the *Proteaceae* including *Placospermum*, *Sphalmium* and *Carnarvonia*;
- 5 endemic species in the *Myrtaceae* group *Metrosideros*, which is the most primitive in the family and includes the genera, *Barongia*, *Ristantia*, *Sphaerantia* and the undescribed ‘*Stockwellia*’;
- the East Gondwanan genus *Gymnostoma*, an ancestral form of the *Casuarinaceae*;
- species in the genera *Euodia* and *Medicosma* in the family *Rutaceae*;
- 9 species of dasyurids including one relict species, *Antechinus godmani*.
- mammalian genera related to those of Oligo-Miocene age at Riversleigh, including *Hypsiprymnodon*, *Cercatetus*, *Pseudochirops* and *Trichosurus*;
- the Musky Rat-kangaroo, *Hypsiprymnodon moschatus*, the most primitive of the kangaroos and the only living member of its group;
- 5 species of ringtail possums, including 4 rainforest-dependent species;
- passerine (*Oscines*) birds representing ancestral lineages of Australo-Papuan songbirds, (for example, the bowerbirds and the scrubwrens, thornbills and gerygones);
- *Chowchilla*, *Orthonyx spaldingii*, a relict endemic species also found in late Oligocene deposits (~25 million years BP) at Riversleigh;
- areas where the extant rainforest flora and fossil pollen deposits provide a record of the mixing of long separated floras including old Gondwanan and Asian elements;
- plant genera considered to have been of Gondwanan or Laurasian descent and to have

Criteria VIII— be outstanding examples representing major stages of earth’s history, including the record of life, significant on-going geological processes in the development of landforms, or significant geomorphic or physiographic features.

- entered Australia following collision of the Australian and Asian plates (including: Alangium, Allophylus, Althoffia, Alyxia, Anthocephalus, Barringtonia, Berrya, Bombax, Bulbophyllum, Calophyllum, Canthium, Celtis, Cordia, Epipogium, Garcinia, Gardenia, Leea, Lethedon, Melia, Oreodendron, Phaleria, Securinega and Trema);
- taxa in the frog families Microhylidae and Ranidae which provide outstanding examples of the impact on the biota of the collision of the Australian and Asian plates;
 - Bats and rodents (including Hydromys, Pogonomys, Uromys and Melomys) which are considered to have entered Australia since connections with the Asian Plate were established;
 - fossil pollen records going back over 200,000 years from Butcher's Creek, Lynch's Crater and Lake Euramoo; and
 - Ancient taxa in the Araucariaceae (5 species), Podocarpaceae (7 species) and Casuarinaceae (1 species of Gymnostoma).

Criteria IX— be outstanding examples representing significant on-going ecological and biological processes in the evolution and development of terrestrial, fresh water, coastal and marine ecosystems and communities of plants and animals

The OUV include:

- the high genetic diversity and endemism of the tropical rainforest ecosystems which constitute a major centre of evolution of rainforest flora;
- endemic rainforest plant taxa (including 43 genera and at least 500 species);
- plant and animal taxa exhibiting allopatric speciation (including the plant genera Haplostichanthus, Pseuduvaria, Elaeocarpus, Ceratopetalum, Polyosma, Endiandra, Uromyrtus, Pilidistigma, Buckinghamia, Orites, Stenocarpus, Sarcotoechia, Bubbia, Planchonella and Symplocos);
- plant and animal taxa which occur as disjunct populations, such as those associated with altitudinal and geographic barriers to gene flow; and
- the diversity of flora and fauna, which includes 3,000 species of vascular plants (representing 1164 genera in 210 families), 11 mammal species, 370 bird species, 53 frog species, 170 reptile species, and 78 species of freshwater fish (in 48 genera and 35 families), more than 200 species of butterflies, 6 species of crayfish, and 217 species of land snails, and stream invertebrates).

Criteria X—contain the most important and significant natural habitats for in-situ conservation of biological diversity, including those containing threatened species of outstanding universal value from the point of view of science or conservation

The OUV include:

- plant communities and animal habitats, recognised as being floristically and structurally the most diverse in Australia (including 13 major structural types and 27 broad communities types of rainforest fringed and dissected by a range of sclerophyll forest and woodland types, mangroves and swamp communities);
- plant taxa of conservation significance and their populations (which include more than 700 species of endemic plants representing 43 genera in 33 angiosperm, and 6 gymnosperm and fern families); and
- animal taxa of conservation significance and their populations.

Appendix 5. Outstanding universal values for the Great Barrier Reef World Heritage Area

Criteria IX—be outstanding examples representing significant on-going ecological and biological processes in the evolution and development of terrestrial, fresh water, coastal and marine ecosystems and communities of plants and animals

Biologically the Great Barrier Reef supports the most diverse ecosystem known to man and its enormous diversity is thought to reflect the maturity of an ecosystem, which has evolved over millions of years on the northeast Continental Shelf of Australia. The OUV include:

- the heterogeneity and interconnectivity of the reef assemblage;
- size and morphological diversity (elevation ranging from the sea bed to 1142m at Mt. Bowen and a large cross-shelf extent encompass the fullest possible representation of marine environmental processes);
- on going processes of accretion and erosion of coral reefs, sand banks and coral cays, erosion and deposition processes along the coastline, river deltas and estuaries and continental islands;
- extensive Halimeda beds representing active calcification and sediment accretion for over 10 000 years;
- evidence of the dispersion and evolution of hard corals and associated flora and fauna from the 'Indo-West Pacific centre of diversity' along the north-south extent of the reef;
- inter-connections with the Wet Tropics via the coastal interface and Lord Howe Island via the East Australia current;
- indigenous temperate species derived from tropical species;
- living coral colonies (including some of the world's oldest);
- inshore coral communities of southern reefs;
- five floristic regions identified for continental islands and two for coral cays;
- the diversity of flora and fauna, including:
 - Macroalgae (estimated 400-500 species);
 - Porifera (estimated 1500 species, some endemic, mostly undescribed);
 - Cnidaria: Corals - part of the global centre of coral diversity and including:
 - hexacorals (70 genera and 350 species, including 10 endemic species);
 - octocorals (80 genera, number of species not yet estimated);
 - Tunicata: Ascidians (at least 330 species);
 - Bryozoa (an estimated 300-500 species, many undescribed);
 - Crustacea (at least 1330 species from 3 subclasses);
 - Worms:
 - Polychaetes (estimated 500 species);
 - Platyhelminthes: include free-living Tubellaria (number of species not yet estimated), polyclad Tubellaria (up to 300 species) and parasitic helminthes (estimated 1000's of species, most undescribed);
- Phytoplankton (a diverse group existing in two broad communities);
- Mollusca (between 5000-8000 species);
- Echinodermata (estimated 800 extant species, including many rare taxa and type specimens);
- fishes (between 1200 and 2000 species from 130 families, with high species diversity and heterogeneity; includes the Whale Shark *Rhynchodon typus*);
- seabirds (between 1.4 and 1.7 million seabirds breeding on islands);

Criteria IX—be outstanding examples representing significant on-going ecological and biological processes in the evolution and development of terrestrial, fresh water, coastal and marine ecosystems and communities of plants and animals

- marine reptiles (including 6 sea turtle species, 17 sea snake species, and 1 species of crocodile);
- marine mammals (including 1 species of dugong (*Dugong dugon*), and 26 species of whales and dolphins);
- terrestrial flora: see 'Habitats: Islands' and;
- terrestrial fauna, including:
 - invertebrates (pseudoscorpions, mites, ticks, spiders, centipedes, isopods, phalangids, millipedes, collembolans and 109 families of insects from 20 orders, and large over-wintering aggregations of butterflies); and
 - vertebrates (including seabirds (see above), reptiles: crocodiles and turtles, 9 snakes and 31 lizards, mammals);
- the integrity of the inter-connections between reef and island networks in terms of dispersion, recruitment, and the subsequent gene flow of many taxa;
- processes of dispersal, colonisation and establishment of plant communities within the context of island biogeography (for example, dispersal of seeds by air, sea and vectors such as birds are examples of dispersion, colonisation and succession);
- the isolation of certain island populations (for example, recent speciation evident in two subspecies of the butterfly *Tirumala hamata* and the evolution of distinct races of the bird *Zosterops* spp);
- remnant vegetation types (hoop pines) and relic species (sponges) on islands.
- evidence of morphological and genetic changes in mangrove and seagrass flora across regional scales; and
- feeding and/or breeding grounds for international migratory seabirds, cetaceans and sea turtles.

Criteria VII— contain superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance

The Great Barrier Reef provides some of the most spectacular scenery on earth and is of exceptional natural beauty. The OUV include:

- the vast extent of the reef and island systems which produces an unparalleled aerial vista;
- islands ranging from towering forested continental islands complete with freshwater streams, to small coral cays with rainforest and unvegetated sand cays;
- coastal and adjacent islands with mangrove systems of exceptional beauty;
- the rich variety of landscapes and seascapes including rugged mountains with dense and diverse vegetation and adjacent fringing reefs;
- the abundance and diversity of shape, size and colour of marine fauna and flora in the coral reefs;
- spectacular breeding colonies of seabirds and great aggregations of over-wintering butterflies; and
- migrating whales, dolphins, dugong, whale sharks, sea turtles, seabirds and concentrations of large fish.

Criteria VIII— be outstanding examples representing major stages of earth’s history, including the record of life, significant on-going geological processes in the development of landforms, or significant geomorphic or physiographic features.

The Great Barrier Reef is by far the largest single collection of coral reefs in the world. The OUV of the property include:

- 2904 coral reefs covering approximately 20 055km²;
- 300 coral cays and 600 continental islands;
- reef morphologies reflecting historical and on-going geomorphic and oceanographic processes;
- processes of geological evolution linking islands, cays, reefs and changing sea levels, together with sand barriers, deltaic and associated sand dunes;
- record of sea level changes and the complete history of the reef’s evolution are recorded in the reef structure;
- record of climate history, environmental conditions and processes extending back over several hundred years within old massive corals;
- formations such as serpentine rocks of South Percy island, intact and active dune systems, undisturbed tidal sediments and ‘blue holes’; and
- record of sea level changes reflected in distribution of continental island flora and fauna.

Criteria X—contain the most important and significant natural habitats for in-situ conservation of biological diversity, including those containing threatened species of outstanding universal value from the point of view of science or conservation

The Great Barrier Reef contains many outstanding examples of important and significant natural habitats for in situ conservation of species of conservation significance, particularly resulting from the latitudinal and cross-shelf completeness of the region.

The OUV include:

- habitats for species of conservation significance within the 77 broadscale bioregional associations that have been identified for the property and which include:
 - over 2900 coral reefs (covering 20 055km²) which are structurally and ecologically complex;
 - large numbers of islands, including:
 - 600 continental islands supporting 2195 plant species in 5 distinct floristic regions;
 - 300 coral cays and sand cays;
 - seabird and sea turtle rookeries, including breeding populations of green sea turtles and Hawksbill turtles; and
 - coral cays with 300-350 plant species in 2 distinct floristic regions;
 - seagrass beds (over 5000km²) comprising 15 species, 2 endemic;
 - mangroves (over 2070km²) including 37 species;
 - Halimeda banks in the northern region and the unique deep water bed in the central region; and
- large areas of ecologically complex inter-reefal and lagoonal benthos; and
- species of plants and animals of conservation significance

Appendix 6. Proposed vegetation clearing and offsets

Table A2. Areas subject to Queensland regulatory offsets

Areas Subject to Queensland Regulatory Offsets					
	<i>Revocation of National Park</i> ¹	<i>Clearing of National Park Of Concern</i> ²	<i>Clearing of Essential Cassowary habitat</i> ³	<i>Clearing of remnant Of concern RE</i> ⁴	<i>Total Area</i>
Ella Bay Road	0.014 ha	0.33 ha	2.13 ha	0.34 ha	2.814 ha
Ella Bay Development			0.70 ha	0.25 ha	0.95 ha
TOTAL	0.014 ha	0.33 ha	2.83 ha	0.59 ha	3.764 ha
<i>Impact : Offset Ratio</i>	5	5	5	2.5	
TOTAL Offset	0.70 ha	1.65 ha	14.15 ha	1.475 ha	17.35 ha

^{1,2} Policy for Biodiversity Offsets - Appendix 2 Offset Rules section - Protected area estate

³ Policy for Biodiversity Offsets - Appendix 2 Offset Rules section - Endangered Species

⁴ Regional Vegetation Management Code for Coastal Bioregions – Of Concern RE

The property-based offset will comprise 22.60 hectares of RE 7.11.1 and RE 7.11.1b (essential cassowary habitat) located on the south-western corner of Ella Bay property. This area will be donated and titled to National Parks. The land will provide higher level of tenure for the north-south cassowary corridor along the Seymour Range.

The offset will be 22.60 hectares for the 17.35 hectares regulatory requirement for the clearing of 3.764 hectares of equivalent habitat within the same bioregion and biodiversity values. The overall offset ratio is 6:1.

The timeframe to deliver the offset will be less than 12 months.

Table A3. Areas subject to EPBC Act—endangered fauna

Areas Subject to EPBC –Endangered Fauna					
	<i>Isolation Essential cassowary habitat</i>	<i>Isolation General cassowary habitat</i>	<i>Edge Effect Essential cassowary habitat</i>	<i>Edge Effect Essential cassowary habitat</i>	<i>Total Area</i>
Ella Bay Road	1.05 ha		8.38 ha		9.43 ha
Ella Bay Development		1.07 ha		8.05 ha	9.12 ha
TOTAL	1.05 ha	1.07 ha	8.38 ha	8.05 ha	18.55 ha
<i>Impact : Offset Ratio</i>	3	1	1.5	1	
TOTAL Offset - Fauna	3.15 ha	1.07 ha	12.57 ha	8.05 ha	24.84 ha

The property-based offset will comprise 40.18 ha of RE 7.11.1, 7.3.3a, 7.3.10c, 7.2.9, 7.2.4, 7.2.1d and 7.2.7a (essential cassowary habitat) located on the northern boundary of the Ella Bay property. This area will be donated and titled to National Parks. The land will provide a higher level of tenure and include the southern extent of the nationally significant Ella Bay Swamp Wetland in the extension to Ella Bay National Park; and

The offset will comprise 40.18 hectares for 24.84 hectares regulatory requirement, for the edge effect and habitat isolation of 18.55 hectares. Which will be equivalent habitat within the same bioregion and biodiversity values, and including the unprotected portion of the Nationally significant Ella Bay Swamp Wetland. The overall offset ratio is 2.2:1.

The timeframe to deliver the offset will be less than 12 months.

Table A4. Proposed land-based direct offsets

<i>Land-based Offset</i>				
<i>Action Summary</i>	<i>Offset Area</i>	<i>Contribution</i>	<i>Value (est.)</i>	<i>Timing</i>
Queensland VMA & NCA For clearing of 3.764 ha and revocation of 0.014 ha National Park EB REF CZ A.1	22.60 ha	In perpetuity regional corridor and essential cassowary habitat protection. Legally handed over to State for National Park	\$ 250,000	<1 year
EPBC Direct Impact For edge effect and isolation of 29.42 ha EB REF CZ A.2	40.18 ha	In perpetuity essential cassowary habitat protection and extension of protection to Ella Bay Swamp Wetland. Legally handed over to State for National Park.	\$ 450,000	<1 year
EPBC Indirect Impact Eubenangee Offset Property	63.62 ha	In perpetuity key regional cassowary corridor protection. Legally handed over to State for National Park.	\$ 400,000	<1 year
Implementation of Management Strategy for Eubenangee Offset Property		Establishment of vegetated connectivity corridor between key habitats	estimated \$ 500,000+	1-3 years
TOTAL	126.42 ha		\$ 1,600,000	

Table A5. Proposed research-based indirect offsets

<i>EPBC Indirect Offsets</i>			
<i>Action Summary</i>	<i>Contribution</i>	<i>Value (est.)</i>	<i>Timing</i>
Cassowary tracking	UQ/QPWS/Ella Bay/San Diego Zoo/CSIRO project Using GPS telemetry to track rehabilitated juvenile Cassowaries	\$40,000	In progress <1 year
Cassowary Diet and DNA analysis	University of Queensland/QPWS/CSIRO project Determining Cassowary Diet and Energetics through Remote Sensing,	\$40,000	In progress <1 year
Cassowary Fencing & Escape Gate Research Project	Ella Bay Developments. Design, develop and trial Cassowary Fence & Escape Gate	\$100,000	complete
Impact of Ella Bay Development on cassowaries, fauna and flora.	James Cook University Environmental impacts of Ella Bay Development access and internal roads, design of strategies to mitigate road impacts on adjacent habitats and internal corridors, and monitoring of road mitigation strategies	\$130,000	Before and after construction +3 year
TOTAL		\$290,000	

Appendix 7. Machinery of government change

QUEENSLAND GOVERNMENT CHANGES

During the EIS process for the project, the names of some Queensland Government agencies changed due to machinery-of-government changes. Full details of the changes are documented in the following:

- *Public Service Departmental Arrangements Notice* (No. 2) 2009 (for changes which occurred on 26 March 2009)
- *Administrative Arrangements Order* (No. 4) 2012 (for changes which occurred on 24 May 2012).

Following is a summary of the change to Queensland Government agencies' names.

Table A6. Change to Queensland Government agencies between 2009 and 2012

Pre-26 March 2009	24 May 2012
Department of Education, Training and the Arts	Department of State Development, Infrastructure and Planning
Department of Housing	Queensland Treasury and Trade
Department of Employment and Industrial Relations	Queensland Health
Department of Natural Resources and Water	Department of Education, Training and Employment
Department of Primary Industries and Fisheries	Department of Agriculture, Fisheries and Forestry
Queensland Health	Department of Natural Resources and Mines
Environmental Protection Agency (EPA)	Department of Energy and Water Supply
Department of Main Roads	Department of Housing and Public Works
Department of Local Government and Planning	Department of Science, Information Technology, Innovation and the Arts
Queensland Transport	Department of National Parks, Recreation, Sport and Racing
Department of Communities	Department of Tourism, Major Events, Small Business and the Commonwealth Games
	Department of Environment and Heritage Protection (formerly EPA and formerly Department of Environment and Resource Management)
	Department of Natural Resources and Mines
	Department of Transport and Main Roads

AUSTRALIAN GOVERNMENT DEPARTMENTAL CHANGES

New department	Previous department/s
Department of Sustainability, Environment, Water, Population and Communities—SEWPaC (14/9/10)	Department of the Environment and Heritage—DEH (7/04 – 1/07) Department of Environment and Water Resources—DEWR (1/07 – 12/07) Department of Environment, Water, Heritage and the Arts—DEWHA (12/07 – 9/10)

Acronyms and abbreviations

Acronym	Definition
ACH Act	<i>Aboriginal Cultural Heritage Act 2003</i> (Qld)
AHD	Australian Height Datum
ANZECC	Australian and New Zealand Environment Conservation Council
ARI	average recurrence interval
AS/NZS	Australian standard/New Zealand standard
CCRC	Cassowary Coast Regional Council
CHMP	cultural heritage management plan
DAFF	Department of Agriculture, Fishing and Forestry
DCS	Department of Community Safety (Qld)
DEEDI	Department of Employment, Economic Development and Innovation (Qld)
DEHP	Department of Environment and Heritage Protection (formerly DERM)
DERM	Department of Environment and Resource Management (formerly the Environmental Protection Agency) (Qld)
DEWHA	Australian Government Department of Environment, Water, Heritage and the Arts (now SEWPaC)
DNRM	Department of Natural Resources and Mines
DOC	Department of Communities (Qld)
DSDIP	Department of State Development, Infrastructure and Planning
EIS	environmental impact statement
EMP	environmental management plan
EP Act	<i>Environmental Protection Act 1994</i> (Qld)
EPA	Environmental Protection Agency (now DERM)
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i> (Cwlth)
EPC	exploration permit for coal
EPP	Environmental Protection Policy (water, air, waste, noise)
EPP (Water)	Environmental Protection (Water) Policy 2009
ERA	environmentally relevant activity
ESA	environmentally sensitive area
ESD	ecologically sustainable development
ESCP	erosion sediment control plan
FNQRP	<i>Far North Queensland Regional Plan 2025</i>
FTE	full-time equivalent
GBRMP	Great Barrier Reef Marine Park
GBRMPA	Great Barrier Reef Marine Park Authority
GBRWHA	Great Barrier Reef World Heritage Area
HERBRECS	The Queensland Herbarium's plant database
IAS	initial advice statement
IUCN	International Union for Conservation of Nature

Acronym	Definition
JSC	(former) Johnstone Shire Council—now CCRC
JSPS	Johnstone Shire Planning Scheme 2005
LMP	landscape management plan
MCU	material change of use
MNES	matters of national environmental significance
NC Act	<i>Nature Conservation Act 1992</i> (Qld)
NT agreement	native title agreement
OUV	outstanding universal value
PVA	population viability analysis
RE	regional ecosystem
REDD	Regional Ecosystem Description Database
Satori	Satori Resort Ella Bay Pty Ltd (the proponent)
SCL	strategic cropping land
SCMP	(former) State Coastal Management Plan
SDPWO Act	<i>State Development and Public Works Organisation Act 1971</i> (Qld)
SDWPO Regulation	State Development and Public Works Organisation Regulation (Qld)
SEIS	supplementary environmental impact statement
SEWPaC	Australian Government Department of Sustainability, Environment, Water, Population and Communities (formerly DEWHA)
SPA	<i>Sustainable Planning Act 2009</i> (Qld)
SPCM	State Policy for Coastal Management
SPP	state planning policy
SPRP	state planning regulatory provision
TMP	traffic management plan
TMR	Department of Transport and Main Roads (Qld)
TOR	terms of reference
UOSA	University of South Australia
VM Act	<i>Vegetation Management Act 1999</i> (Qld)
WONS	weeds of national significance
WQMP	water quality management program
WSUD	water supply urban design
WTMA	Wet Tropics Management Authority
WTQWHA	Wet Tropics Queensland World Heritage Area

Glossary

Term	Definition
assessment manager	For an application for a development approval, means the assessment manager under the <i>Sustainable Planning Act 2009</i> (Qld).
bilateral agreement	The agreement between the Australian and Queensland governments that accredits the State of Queensland's EIS process. It allows the Commonwealth Environment Minister to rely on specified environmental impact assessment processes of the state of Queensland in assessing actions under the <i>Environment Protection and Biodiversity Conservation Act 1999</i> (Cwlth).
construction areas	The construction worksites, construction car parks, and any areas licensed for construction or on which construction works are carried out.
controlled action	A proposed action that is likely to have a significant impact on a matter of national environmental significance; the environment of Commonwealth land (even if taken outside Commonwealth land); or the environment anywhere in the world (if the action is undertaken by the Commonwealth). Controlled actions must be approved under the controlling provisions of the <i>Environment Protection and Biodiversity Conservation Act 1999</i> (Cwlth).
controlling provision	The matters of national environmental significance, under the <i>Environment Protection and Biodiversity Conservation Act 1999</i> (Cwlth), that the proposed action may have a significant impact on.
Coordinator-General	The corporation sole constituted under section 8A of the <i>State Development and Public Works Organisation Act 1938</i> and preserved, continued in existence and constituted under section 8 of the SDPWO Act.
environment	As defined in Schedule 2 of the SDPWO Act, includes: <ol style="list-style-type: none"> a) ecosystems and their constituent parts, including people and communities b) all natural and physical resources c) the qualities and characteristics of locations, places and areas, however large or small, that contribute to their biological diversity and integrity, intrinsic or attributed scientific value or interest, amenity, harmony and sense of community d) the social, economic, aesthetic and cultural conditions that affect, or are affected by, things mentioned in paragraphs (a) to (c).
environmental effects	Defined in Schedule 2 of the SDPWO Act as the effects of development on the environment, whether beneficial or detrimental.
environmentally relevant activity (ERA)	An activity that has the potential to release contaminants into the environment. Environmentally relevant activities are defined in Part 3, section 18 of the <i>Environmental Protection Act 1994</i> (Qld).

initial advice statement (IAS)	<p>A scoping document, prepared by a proponent, that the Coordinator-General considers in declaring a significant project under Part 4 of the SDPWO Act. An IAS provides information about:</p> <ul style="list-style-type: none"> • the proposed development • the current environment in the vicinity of the proposed project location • the anticipated effects of the proposed development on the existing environment • possible measures to mitigate adverse effects.
matters of national environmental significance	<p>The matters of national environmental significance protected under the <i>Environment Protection and Biodiversity Conservation Act 1999</i>. The eight matters are:</p> <ol style="list-style-type: none"> a) world heritage properties b) national heritage places c) wetlands of international importance (listed under the Ramsar Convention) d) listed threatened species and ecological communities e) migratory species protected under international agreements f) Commonwealth marine areas g) the Great Barrier Reef Marine Park h) nuclear actions (including uranium mines).
nominated entity (for an imposed condition for undertaking a project)	<p>An entity nominated for the condition, under section 54B(3) of the SDPWO Act.</p>
properly made submission (for an EIS or a proposed change to a project)	<p>Defined under section 24 of the SDPWO Act as a submission that:</p> <ol style="list-style-type: none"> i) is made to the Coordinator-General in writing j) is received on or before the last day of the submission period k) is signed by each person who made the submission l) states the name and address of each person who made the submission m) states the grounds of the submission and the facts and circumstances relied on in support of the grounds.
proponent	<p>The entity or person who proposes a significant project. It includes a person who, under an agreement or other arrangement with the person who is the existing proponent of the project, later proposes the project.</p>
significant project	<p>A project declared as a 'significant project' under section 26 of the SDPWO Act.</p>

stated condition	<p>Conditions stated (but not enforced by) the Coordinator-General under sections 39, 45, 47C, 49, 49B and 49E of the SDPWO Act. The Coordinator-General may state conditions that must be attached to a:</p> <ul style="list-style-type: none"> • development approval under the <i>Sustainable Planning Act 2009</i> • proposed mining lease under the <i>Mineral Resources Act 1989</i> • draft environmental authority (mining lease) under Chapter 5 of the <i>Environmental Protection Act 1994</i> (EPA) • proposed petroleum lease, pipeline licence or petroleum facility licence under the <i>Petroleum and Gas (Production and Safety) Act 2004</i> • non-code compliant environmental authority (petroleum activities) under Chapter 4A of the EPA.
works	<p>Defined under the SDPWO Act as the whole and every part of any work, project, service, utility, undertaking or function that:</p> <ul style="list-style-type: none"> n) the Crown, the Coordinator-General or other person or body who represents the Crown, or any local body is or may be authorised under any Act to undertake, or o) is or has been (before or after the date of commencement of this Act) undertaken by the Crown, the Coordinator-General or other person or body who represents the Crown, or any local body under any Act, or p) is included or is proposed to be included by the Coordinator-General as works in a program of works, or that is classified by the holder of the office of Coordinator-General as works.



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