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2. Project Description

2.1 Introduction

Hummock Hill Island provides one of Australia's prime tourist development opportunities. The island is strategically located 30 km south of Gladstone, 45 minutes by road from the Gladstone Regional Airport and major regional, retail, commercial and social services including hospitals, specialist health professionals, high schools, university campus and port and marina facilities.

Hummock Hill Island has an abundance of natural attributes and highly suitable topography for a major resort and recreational development. It is located 30 km south east of Gladstone, away from the industrial airshed. Hummock Hill Island faces north, with sandy beaches and a rocky headland overlooking Rodds's Bay, past the major shipping channel passing in front of the island into Gladstone to the west. The elevated land on Hummock Hill Island has views to Gladstone and Facing Island to the north-west, Rodd's Peninsula to the east and the large expanse of protected coastal waters of Colosseum Inlet, Boyne Creek and Seven Mile Creek to the south east and west.

Hummock Hill Island offers the only real opportunity for a major seaside tourism, holiday and recreational development in the Gladstone region. The coast from 1770 to Gladstone is mostly National Park and the coast north of Gladstone is quarantined for industrial development and oil shale exploitation. The natural beauty of the Hummock Hill Island with its abundance of beaches and warm seas, elevated hillsides with spectacular views, natural bushland and calm waterways and anchorages in a protected estuary will attract international, interstate and local visitors and holiday makers.

The HHI Development will provide public access to a coastline that is presently only accessible by boat. The area within the HHI development footprint is 518 ha with a proposed development area of 341 ha. Large areas of remnant vegetation will be retained within the development footprint to promote ecological connectivity on the island. The Proponent proposes to have the undeveloped parts of the island (84% - which includes the undeveloped parts of Special Lease area and Unallocated State Land) declared as Nature Refuge and protected under a formal agreement with the government agencies. The proposed development, apart from the boat ramp, bridge, pedestrian access on elevated walkways to the northern beaches and water infrastructure, is to be located outside the coastal management district which is also the erosion prone area.

The HHI Development will be to the highest environmental standards, utilising state-of-the-art engineering and architectural designs to minimise impacts on the local environment, to minimise the demand for (and use of) precious natural resources and to ensure long term environmental sustainability of the HHI Development. Environmental management plans will be prepared to monitor and manage any impacts on the surrounding environment identified in the Environmental Impact Assessment stage. At a property level, covenants will be placed on land parcels requiring land owners to retain remnant vegetation, use appropriate sustainable building designs, rainwater tanks and similar measures to minimise the ecological footprint of the HHI Development.

The HHI Development will consist of two high quality resort hotels, camping grounds, holiday accommodation, golf course and associated sporting facilities, education precinct, a commercial



centre, a small scale marine commercial facility and residential development. The development will offer a large range of privately owned, self-catered holiday properties located across the island in 1, 2, 3 and 4 bedroom configurations, accommodating from 1 to 10 people. A proportion of the residential development will be marketed to people who wish to work and live on Hummock Hill Island in support of the tourist industry developed there. Affordable housing will be developed to particularly cater to young people attracted to the island by opportunities to work in the tourism industry.

Hummock Hill Island will enhance quality of life for residents of Central Queensland, including those of the inland mining communities, by providing a recreational and holiday destination suitable for day and overnight trips as well as longer stays.

The Project is located in a sensitive environment where inappropriate or poorly planned and managed development would have irreversible impacts. The proposed HHI Development takes the environmental opportunities and constraints into consideration to ensure that the development takes place within the sustainable limits of the environment.

The Proponent will provide all necessary infrastructure for the development as well as contributions for external infrastructure so that local and State infrastructure providers are not affected. The Proponent proposes to enter into an operation and maintenance agreement with the Gladstone Regional Council to maintain and operate the service infrastructure for a period of years to be agreed and until such operation and maintenance costs can be covered by income from rates and service charges applied to the developed land. This period is likely to occur 12 years after commencement of development of Hummock Hill Island.

HHI Development is expected to deliver a range of community facilities which will be accessible to residents of Hummock Hill Island and adjoining communities, who currently lack easy access to these facilities. The community facilities will include a medical centre, emergency services, a public bus service, and a range of recreational facilities. The establishment of these facilities will be developed by the Proponent and then maintained and operated or subsidised by the Proponent until the costs of operation are matched by income from either local government rates and levies or from commercial operation of the facility.

2.2 Plan of Development

2.2.1 *Spatial Extent*

Several submissions requested supplementary information in the form of a map that shows the layout of all elements of the proposed HHI Development with specific reference to the cadastre and the Special Lease area (Lot 3 on FD 841442).

A Master Plan was presented in Section 3.3.1 of the EIS, although this was not shown in relation to the Special Lease area. A revised development footprint shown in relation to the boundary of the Special Lease area is provided as **Figure 2-1**. The development footprint has been revised and amended following the submission of the EIS. Although the development footprint has been reduced slightly in area the development yields remain unchanged.



The footprint of the HHI Development has been reassessed to incorporate the following rationale:

- 1) all development is to be contained within the Special Lease areas;
- 2) The proposed development, apart from the boat ramp, bridge, pedestrian access on elevated walkways to the northern beaches and water infrastructure, is to be located outside the coastal management district which is also the erosion prone area;
- 3) a major east-west fauna movement corridor (minimum 300 m in width) is incorporated into the development design;
- 4) impacts on Endangered regional ecosystems in the western development precinct have been minimised by amending the development layout; and
- 5) firebreaks between development areas and surrounding open space are accommodated internally within the development footprint.



- LEGEND**
- 1 BRIDGE ENTRY TO HUMMOCK HILL
 - 2 VILLAGE CENTRE
 - 3 BOAT RAMP
 - 4 BOYNE CHANNEL RESIDENTIAL
 - 5 BOYNE CHANNEL APARTMENTS
 - 6 SALT DRYING AREA
 - 7 GOLF COURSE
 - 8 GOLF COURSE RESIDENTIAL
 - 9 GOLF COURSE APARTMENTS
 - 10 GOLF CLUBHOUSE
 - 11 DRIVING RANGE
 - 12 GOLF MAINTENANCE FACILITIES
 - 13 SEWAGE TREATMENT PLANT
 - 14 AIR STRIP
 - 15 HILLSIDE TERRACES
 - 16 RIDGETOP RESIDENTIAL
 - 17 EDUCATION CENTRE / SPORTS / FACILITIES
 - 18 TOWN CENTRE
 - 19 VILLAGE TOWNHOUSES
 - 20 SEASIDE COTTAGES
 - 21 BEACHFRONT HOLIDAY HOMES
 - 22 HEADLAND RESORT APARTMENTS
 - 22A HEADLAND TOWNHOMES
 - 23 HEADLAND RESORT HOLIDAY HOMES
 - 24 BEACHFRONT APARTMENTS
 - 25 HEADLAND RESORT
 - 25A MOTEL
 - 26 RESORT TOWN APARTMENTS
 - 27 PUBLIC FACILITIES
 - 28 BEACHFRONT TOURIST HOTEL
 - 29 ECO HOME SITES
 - 30 LAGOON VILLAS
 - 31 SCHOOL RECREATIONAL CAMP GROUND
 - 32 TO BOAT RAMP AT BOYNE CHANNEL

This figure must be read in conjunction with the data disclaimers located at the front of this report.
 The data acquired for this report is known to be of low resolution, and as such no representations or warranties about its accuracy, reliability or suitability are given.
 Assumptions and conclusions made from this figure and the associated data must be made with full understanding of the data limitations.
 SKM accepts no liability or responsibility whatsoever for, or in respect of any use of or reliance upon the figure.

Figure 2-1. Hummock Hill Island Master Plan





2.2.2 Tourist and Recreational Facilities

HHI Development will provide a large range of tourism and leisure facilities, catering to broad cross section of tourists and local residents. The facilities include:

- 240 room resort hotel - 4 star;
- 150 room beachfront tourist hotel - 3 star;
- 70 room motel;
- tourist park;
- large range of self-catered holiday properties in 1, 2, 3 and 4 bedroom configurations;
- restaurants and cafes;
- conference centre;
- health spa;
- golf course;
- sports centre;
- tennis courts;
- squash courtslawn bowling club;
- jet ski/boat/canoe hire;
- tourist information Centre;
- community market;
- Traditional Owners cultural heritage interpretive centre;
- helicopter transfers to Gladstone Airport and to the GBR Islands;
- gift shops;
- bait and tackle shop;
- sailing club;
- camping ground; and
- Hummock Hill lookout.

The recreation facilities will be developed and established by the Proponent.

2.2.3 Community Facilities and Social Services

Submissions questioned the capacity of the proposed HHI Development to provide adequate services to the community, and expressed concern that the delivery of services to Hummock Hill Island would draw resources away from other regional areas.

The HHI Development proposes to fund the provision of all necessary services to create a relatively self-contained community. These community facilities will be accessible to residents of Hummock Hill Island and adjoining communities who currently lack easy access to these facilities.



The proposal aims to meet best practice in design and delivery of community services, utility and transport infrastructure through achieving a high degree of self containment. This is reflected in the provision of an integrated tourist and residential community that has access to employment on the island, and is intended to provide community services that would be expected of an established coastal town of similar size.

As stated in Section 16.2.7 of the EIS, the HHI Development will provide a number of community facilities as part of the Town Centre and Village Centre that will be accessible to both Hummock Hill Island residents and adjoining communities. The range of facilities will include:

- community centre;
- emergency services including fire and ambulance and police facilities;
- medical centre;
- education and research centre;
- boat ramps;
- airport/aero club;
- kindergarten;
- picnic and barbecue areas;
- boat storages;
- surf life saving club;
- public bus service;
- cycle paths; and
- post office.

The establishment of these facilities will be developed by the Proponent and then maintained and operated or subsidised by the Proponent until the costs of operation are matched by income from either local government rates and levies or from commercial operation of the facility.

2.2.3.1 Educational Facilities

A site of sufficient size for a primary school, research centre and sporting grounds has been identified within the HHI Development. The primary school may be established as the population of Hummock Hill Island grows and the demand is created. In the interim, the land will remain open space and the Proponent will establish a bus service to link with existing school bus services to existing schools in the Region.

The education site is also intended to include a research centre that will support research in environmental management and provide facilities for residents and tourists to undertake study programs linked to a major Queensland university. Research programs will provide grants for postgraduate students and work experience opportunities for undergraduate students will be available. Postgraduate research will provide long term information on the effectiveness of the environmental management of the island and the impacts of the development on the natural environment around Hummock Hill Island.



A site has also been identified for a school recreation camp (Section 3.3.3.20 of the EIS) which provides camping and associated facilities and caters for recreational needs with a sporting field and associated ancillary buildings. The site has the potential to maximise the educational opportunities of the natural resources and environment of Hummock Hill Island.

This is an excellent example of a private enterprise endorsement of the Government's Smart State Policy. The proposed project is of strategic significance to Central Queensland and the State of Queensland as a whole.

2.2.3.2 Health Facilities

The HHI Development will deliver a range of community facilities, including a medical centre and ambulance service. The development and timing of implementation of the social and community infrastructure will be planned in partnership between the Proponent, community organisations and Gladstone Regional Council and funded through a combination of funds and in-kind support from the stakeholders.

The Proponent will work with private health care professionals to provide incentives for the establishment of facilities staffed by a general practitioner. In addition, the hotels will provide a level of primary health care support for visitors.

2.2.3.3 Retail facilities

Hummock Hill Island will include a range of retail and hospitality facilities to support the tourist and residential users, as well as residents and visitors to the broader region. Facilities include:

- food & beverage outlets;
- convenience retail;
- tourist retail;
- supermarket;
- service station; and
- retail shopping.

2.2.4 Tourist and Leisure Activities

A wide range of sporting and leisure activities will be available to visitors and residents of Hummock Hill Island including:

- swimming;
- nature and bush walks;
- tennis;
- mini golf;
- fishing: game, deep sea, beach, estuarine;
- deep sea diving;
- exploring the sheltered waterways;



- nature education: bushland interpretive centre, turtle nesting watch, bird watching;
- tours to the Great Barrier Reef/Heron Island/Lady Musgrave Island/Lady Elliot;
- boat tours to Colosseum Inlet, Wild Cattle Creek, Busted Head and Pancake Creek;
- educational courses in sustainable development, aboriginal heritage, natural environment;
- surfing;
- sea kayaking;
- golf;
- squash;
- fishing charters;
- crabbing;
- beachcombing;
- lawn bowls;
- target sports: archery, shooting;
- joy flights; and
- water skiing.

2.2.5 Development Schedule

A number of submitters requested further details of the proposed development schedule, with particular concern that the development of community facilities be appropriately scheduled to meet the requirements of the resident population.

The Development Schedule provided in **Figure 2-2**, shows a 17 year development program after obtaining project approvals from the Local, State and Commonwealth governments by the end of 2010.

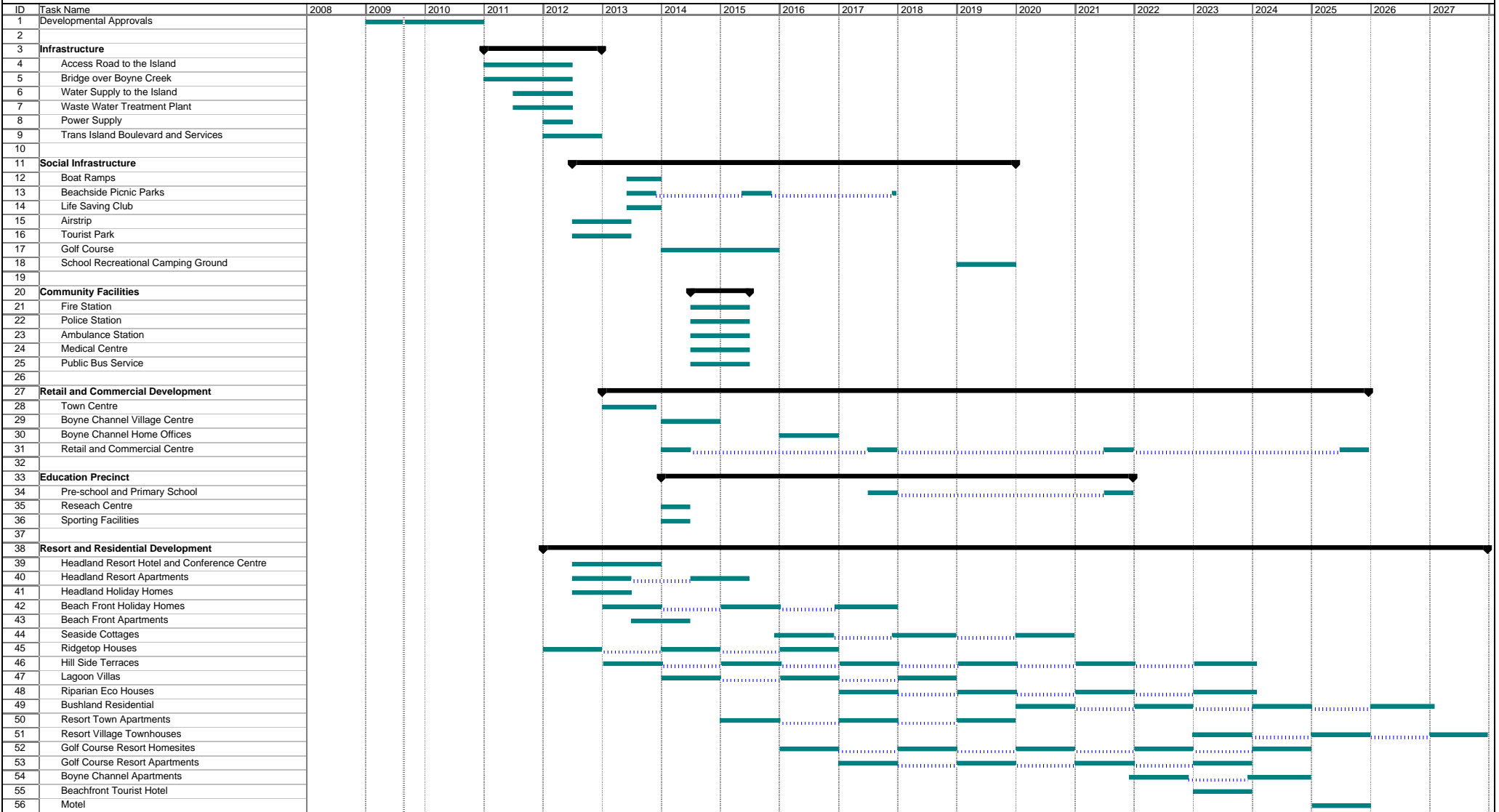
The initial two years of the program will concentrate on development of primary infrastructure (access road, bridge over Boyne Creek, water supply and sewage headworks, power supply) as required under the terms of the Special Lease.

On completion of these works and freeholding of the development area, construction of the Headland Resort Hotel, tourist park and headland apartments will commence. The first homesites around the village centre will be offered for sale at this time.

Development of the town centre, adjacent to the hotel, will commenced in Year 3 of the development schedule, and include the first stage of retail and commercial facilities and the Emergency Services Centre

Further development of the retail facilities will parallel the growth in the tourist and permanent population.

Figure 2-2 Proposed Hummock Hill Island Development Plan of Development Schedule



Project: HHI Plan of development sche

Task	[Solid Teal Bar]	Milestone	◆	Rolled Up Task	[Solid Black Bar]	Rolled Up Progress	[Dashed Blue Bar]	External Tasks	[Solid Grey Bar]	Group By Summary	[Thick Solid Black Bar]
Progress	[Thick Solid Black Bar]	Summary	[Thick Dashed Blue Bar]	Rolled Up Milestone	◇	Split	[Dotted Blue Bar]	Project Summary	[Thick Dashed Grey Bar]	Deadline	↓



2.3 Sustainable Development/Buildings

The HHI Development is founded on principles of sustainability at a location ideally situated with respect to existing and emerging economic centres and communities.

With this in mind, and to maximise outcomes for environmental, social and economic aspects of the Project, the following development goals have been identified:

- Natural environment is maintained, protected and enhanced so that areas and features of conservation significance are retained and the human population can enjoy living in close proximity to, and harmony with the natural ecosystems;
- Social environment will be based on a vibrant, dynamic and diverse community that has a strong environmental awareness and is committed to sustainable living and self development. Individuals and households will come to Hummock Hill Island seeking quality of life in its fullest sense and fulfilling educational and outdoor recreational experiences. Visitors will include residents of the region and will experience holiday and recreational opportunities focussed on family and outdoor activities; and
- Built environment will be appropriate to the scale of the development and the natural environmental setting. Infrastructure systems will be based on latest advances in sustainable living, but will be suitable for management and basic maintenance by the householders

Development principles will be incorporated into design, construction and operation phases of the project, with particular emphasis on the design phase. This approach recognises that the most effective means to minimise negative impacts associated with any development is to incorporate measures to avoid or reduce impacts into project design. Environmental impacts that cannot be “designed out” must then be addressed through appropriate management during construction and operation. Design and operations guidelines for all buildings will be prepared by the Proponent. The guidelines will include:

- sustainable, smart housing design principles;
- energy and waste strategies;
- height and bulk, colours and energy efficiency for individual buildings;
- regulation of water supply, water demand management and wastewater disposal;
- photo-voltaic electricity and solar hot water generation requirements for each building;
- communications infrastructure;
- bush fire management practices and fire protection protocols;
- landscape design and vegetation management;
- requirements for greenhouse efficient hot water systems, energy efficient lighting, AAA-rated shower roses, and water pressure-limiting devices;
- requirements for rainwater tanks of a specified size for all residential lots;
- requirements for commercial buildings to capture rainwater from roof areas for irrigation of gardens and cleaning of public areas; and



- the height of buildings will be generally limited to three levels and will be below tree line or ridge crest level. All exterior colours and finishes will be designed to blend in with the natural bush colours of the surrounding area.

The guidelines will form the basis of building covenants that will be attached to all land titles and contracts of sale.

2.4 Infrastructure

The Proponent will provide all necessary infrastructure for the development as well as contributions for external infrastructure so that local and State infrastructure providers are not affected. The Proponent proposes to enter into an operation and maintenance agreement with the Gladstone Regional Council to maintain and operate the service infrastructure for a period of years to be agreed and until such operation and maintenance costs can be covered by income from rates and service charges applied to the developed land. This period is likely to occur 12 years after commencement of development of Hummock Hill Island.

Leading edge (but proven) technologies are being proposed for water supply and wastewater treatment. At detailed design phase of the development the Proponent will again investigate the technologies for water and waste water treatment, renewable energy and storm water management to ensure the most efficient and effective systems are being used. All of the infrastructure proposals will be approved by Gladstone Regional Council.

Appendix B4 of the Supplementary Report includes a detailed description of the water supply and treatment process for the project. Below is an overview of the scheme and further details are included in Appendix B4.

2.4.1 *Water Supply and Treatment*

The potable water requirement for HHI Development has been determined to be 441 kL/d. If the MVC desalination technology is adopted, the required volume of water to produce 441 kL/d is approximately 550 kL/d. This is a very small desalination plant requiring an intake pipe of approximately 250 mm.

Two options were considered to provide a supply of potable water to the HHI Development - a desalination plant and a pipeline from the mainland supply. Preliminary analysis indicated that cost of either option was quite similar. The desalination plant is the preferred water supply option for the following reasons:

- alignment with the desired objectives for the development by ensuring that it is not reliant on a water supply from the mainland;
- desalination is a non climate dependent source providing long term security of supply; and
- the plants are modular in nature and as such the final capacity of the plant can be determined when better information on consumption trends for the development become known.



Other suitable options for the supply of water can be considered during detailed planning and design for the development.

A pipeline from Awoonga Dam to Agnes Water / 1770 is currently under consideration and may also provide a viable alternative. Further detailed analysis and consultation with Gladstone Area Water Board (GAWB) and Gladstone Regional Council will be required to ensure that the proposed solution is consistent with their long term supply strategy for the area.

2.4.1.1 Design details for the desalination plant

Several submissions requested further clarification of the location, cost and operational requirements of the proposed desalination plant, including the location of the proposed intake point and the location of evaporation ponds.

A number of submissions requested further information pertaining to the desalination plant including:

- siting requirements;
- the location of intake and outtake piping;
- the disposal of brine from the desalination plant; and
- potential associated impacts on the GBRWHA.

As discussed in Section 3.1.2 of Appendix B4, desalination is one of several possible options for supplying water to the island, at this stage of investigation it is considered to be the most favourable option. Further detailed analysis (including analysis of ocean impacts) will be required to confirm this. Several additional approvals (eg ERA) will also be required prior to construction of the plant, and these will require extensive studies and analysis to be completed.

It is proposed that seawater will be extracted from Boyne Channel via a seawater intake pump located on the northern (island side) pier of the bridge. The pump will be programmed to pump seawater during the upper half of the tidal cycle to ensure a consistent quality of raw water. A stainless steel submersible pump will be screened to prevent the ingress of debris and organisms into the pipeline. Flows in the pump will be quite low compared to current in the Boyne Channel and are not expected to entrap marine organisms. Detailed hydrodynamic modelling will be required to confirm the suitability of this location.

The process proposed in the EIS is a MVC Desalination Process (refer section 3.4.1.4 of the EIS). The process is a commercially available technology which is capable of producing high quality desalinated water from a range of operating environments and is considered to be an appropriate technology for Hummock Hill Island. Further details of the technology are provided in the MPI report included as part of the EIS.

It should be noted that the MVC process is only one potentially viable technology; a range of suitable technologies will be considered during the detailed planning and design phases to ensure that the most appropriate technology is utilised.



The water provided by the desalination plant will meet the requirements of the Australian Drinking Water Guidelines (2004) and the *Water Supply (Safety and Reliability) Act 2008*. Comprehensive HACCP and Drinking Water Quality Plans will be developed to ensure that any potential human health impacts are managed throughout the design and operation of the plant.

The potential impacts of HHI Development on the Great Barrier Reef World Heritage Area is discussed in Section 13.11 of the Supplementary Report.

2.4.1.2 Management of Water Supply

Submissions requested further information in relation to ownership and maintenance arrangement for the water supply system.

The Proponent will provide all necessary infrastructure for the development as well as contributions for external infrastructure so that local and State infrastructure providers are not affected. The Proponent proposes to enter into an operation and maintenance agreement with the Gladstone Regional Council to maintain and operate the service infrastructure for a period of years to be agreed and until such operation and maintenance costs can be covered by income from rates and service charges applied to the developed land. This period is likely to occur 12 years after commencement of development of Hummock Hill Island.

2.4.1.3 Evaporation Ponds

As part of the concept identified for the desalination plant, the EIS proposed that evaporation ponds would be used to manage the brine waste from the desalination plant.

Should desalination prove to be the most appropriate option for supplying water to the HHI Development, further detailed analysis would be required to confirm the sizing, location and dimensions of the evaporation ponds. Preliminary analysis has indicated that four ponds, each 65 m x 65 m would be required to manage the brine stream.

The sizing has allowed for containment of a 1 in 100 year storm event. However provision will also be made for the monitoring of the salinity in the ponds during wet weather events. Should the salinity in the ponds be less than seawater, excess water can be discharged to the ocean. If the salinity is greater than seawater (and there is a potential for overflow of the ponds) the water can be blended with either seawater or recycled water prior to discharge.

Evaporation ponds would be lined with either clay or a geotextile, typically with permeability less than 0.01 mm/day. Specific measures such as the need for screening of the ponds and the potential for mosquito breeding would also be considered in more detail during the design phase.

2.4.1.4 Salt concentrate

Salt concentrate produced as a by product of the desalination plant operation is considered by the Proponent to have value and will endeavour to secure a market for the salt concentrate. As part of the design of the desalination plant, the Proponent will ensure holding areas will be not permit seepage, or infiltration of salt by products to the groundwater system.



2.4.2 Wastewater Treatment

High Velocity Sonic Disintegrator (HVSD) technology has been proposed for the production of recycled water. This new technology has distinct advantages over conventional biological treatment plants of this size (Average Dry Weather Flow (ADWF) of 1.0 ML/d) as described in the EIS. It is proposed that the plant will be constructed in two stages of 500 kL capacity each.

The plant is not flow or temperature dependent, is highly flexible and able to treat largely fluctuating flows. The plant is highly effective in destroying pathogens and provides an effluent quality exceeds Australian Drinking Water Guidelines. The plant will be designed to minimise odours. In particular, inlet works and digesters with odour scrubbing facilities are fully enclosed, allowing effective capture and management of odorous compounds arising from untreated wastewater.

The proposed technology has been shown to be very reliable and low maintenance. The plant does not rely on residence time as part of the treatment process; the treatment process takes about 30 minutes. Inlet storage will mean that wastewater can be held temporarily if either of the duplicate plants is undergoing maintenance.

The wastewater treatment plant will require approval from DERM as an Environmentally Relevant Activity (ERA). Detailed design of the plant will be submitted as part of the ERA application. The potential impacts of odour from the wastewater treatment plant will be assessed as part of the ERA application.

2.4.2.1 Use of Innovative Wastewater Treatment Technologies

Several submissions raised the issue that proposed water treatment approaches and uses were untested and therefore inappropriate. For example, one submission requested that the performance of the "sonic disintegrator" technology be reviewed to determine operational performance.

As part of the EIS the use of High Velocity Sonic Disintegrator (HVSD) technology has been proposed for the production of recycled water. This has been identified as a potentially feasible technology to achieve the desired water quality. However, many other treatment technologies would be suitable.

It is difficult to specify the most appropriate technology at this point in time. It is likely tenders for the construction of the sewage and recycled water treatment plants would be undertaken on a performance based specification. This means that a particular technology would not be identified upfront, but rather, the market would be asked to respond to a tender on the basis of the most suitable technologies available at the time that could produce the desired effluent quality.

Several additional approvals (including an ERA) would be required and would evaluate the proposed technology. A verification process would also be required to ensure that the plant is capable of consistently producing Class A+ recycled water.



2.4.2.2 Location of emergency discharge point

A submission noted that the location of the emergency discharge point from the Hummock Hill Island Sewage Treatment Plant should be amended so that it will have no impact upon the declared Colosseum Inlet Fish Habitat Area.

Preventative measures and a “no discharge policy” have been developed in order to reduce the likelihood of the use of the emergency discharge point. Despite this, the location has been amended so that it will be above HAT on the non-tidal area of the island and as such will not impact on the declared Colosseum Fish Habitat Area.

2.4.2.3 MEDLI Modelling

One submission suggested that waste water irrigation should have been modelled using the MEDLI modelling tool as part of the Recycled Water Management Plan.

A MEDLI model was prepared for the feasibility study and identified that irrigation with recycled water could be managed at a sustainable level on Hummock Hill Island. Further MEDLI modelling will be undertaken during the detailed design phase as part of the formulation of Recycled Water Management Plans to provide for the sustainable use of the Recycled Water.

2.4.3 General Water Supply Issues

2.4.3.1 Water Usage Rates

One submission raised the issue that the modelling of water usage rates for the population of Hummock Hill Island was very conservative. The following household water balance (Table 2-1) was adopted for the development and shows the volume of water used to determine overall project water needs.

■ **Table 2-1 Adopted household water balance**

Location		Typical Uses	Consumption	
			L/p/d	L/hh/d
Internal	Kitchen	Drinking, cooking	13	29
	Bathroom	Washing hands, cleaning teeth, shower	55	121
	Toilets	Toilet flushing	24	53
	Laundry	Washing Machine, hand clothes washing	27	59
	Hot Water	Shower, Dishwashing, hand basins	58	128
External	Garden	Garden irrigation		175
	Other	Car washing, etc		25
Total Household Use			177	589

The above water balance can be compared to a standard residential property. Based on an estimated occupancy of 2.7 persons per household, the total household demand becomes 678 L/d ($177 \times 2.7 + 200$), which is around 15% lower than the current demand of approximately 800 L/p/d in say the Tannum / Boyne area.



Modelled usage rates are therefore reasonable, particularly considering the improvements in water efficient appliances and fittings, and the increased awareness of water conservation in the community. This also equates to 250 L/p/d (total demand) which is just above the “Target 230” included within the Draft South East Queensland Regional Water Strategy (QWC, March 2008).

2.4.3.2 Fire Fighting Water Supply

Several issues were raised in relation to the fire fighting water supply, namely the capacity of proposed storages and the protection of water quality within those storages.

The Queensland Fire and Rescue Service (QFRS) have endorsed the use of Class A+ recycled water for fire fighting. Within the HHI Development, it is proposed that the fire fighting capacity is included within the recycled water network and storages. This will include a recycled water tank (approx 1.5 ML capacity, co-located with the potable water tank) and a pressurised reticulation network. Through the detailed design phase, network analysis will be undertaken to size the water and recycled water mains to ensure that adequate flow and pressure are able to be provided.

2.4.3.3 Rainwater Tanks

Several submissions questioned the cost of installing rainwater tanks and the reliability of rainfall to fill the tanks.

Rainwater tank modelling has indicated that a yield of around 120 L/d could be obtained from a 22 kL tank, while a 45 kL tank would provide 215 L/d. The analysis was based on a 50 year daily rainfall record and an occupancy of 2.5 persons per household. If necessary, the rainwater tanks could be topped up with potable water (or potentially recycled water should regulations change in the future). It should also be noted that the HHI Development will not rely independently on rainwater tanks providing water to residences. Water supply for the development will be provided by a desalination plant, rainwater tanks and recycled wastewater.

2.4.4 Telecommunication Towers

One submission raised the issue of the location of the microwave telecommunications tower, mentioned in Table 3-3 of the EIS. This table lists the strategy that the Proponent may use to meet the telecommunications needs of the community of Hummock Hill Island. A decision on the need for a microwave relay tower or its specific location is yet to be determine and will be addressed when the detailed design of the development is undertaken.

2.5 Tenure and Management of Balance Areas

The Proponent proposes to have the undeveloped parts of the island (84% - which includes the undeveloped parts of Special Lease area and Unallocated State Land) declared as Nature Refuge and protected under a formal agreement with the government agencies. The HHI Development boundary will be fenced and have a barrier to prevent vehicular access and uncontrolled pedestrian access to the Nature Refuge. The conserved areas will be maintained, protected and enhanced through a management contract between the Proponent and an appropriate environmental management company who will also be contracted to manage the offset areas. The Proponent



propose the Gladstone Regional Council impose a special area environmental levy on land owners to cover the cost of these environmental services.

As part of the contract the environmental management company will run regular community development and information programs to engage the people living on and using, Hummock Hill Island in natural resources protection and management. The environmental management company will also undertake fire, weed, pest and bushland management, track maintenance, litter collection and community education/extension roles.

The environmental management company will assist the Proponent to:

- establish the Nature Refuge;
- negotiate conditions with state and local government;
- develop covenant arrangements; and
- register biodiversity offsets.

The environmental management company will then be responsible for:

- fire management;
- weed management;
- pest management;
- fence maintenance;
- incidental rubbish removal;
- track maintenance;
- enforcement of access restrictions;
- establishment of a native plant nursery;
- propagation, revegetation and regeneration services;
- training of site management staff; and
- training and education programs for construction personnel.

The environmental management company will develop a community based program of engagement and education in the management of the Nature Refuge and the beaches and marine interface areas. The ongoing program will establish within the island community a strong sense of ownership of their natural surroundings. The program will develop appreciation of the natural and cultural heritage value of the area through education and interpretation activities. These include guided walks, videos, publications and self-guided walking tracks through a range of plant and forest types. The Proponent also intends to employ an Aboriginal elder from the local community as a consultant for cultural training and interpretation activities.

Human settlement and activity within and surrounding areas of environmental significance can be effectively managed to protect the environmental values of these areas. Substantial tourist activity on Fraser Island and the Central Eastern Rainforest Reserves is actively and effectively managed by



a range of State agencies. It is intended that the environmental management company will have a similar role.

2.6 Vegetation Clearing

The HHI Development footprint has been revised to reduce impacts on endangered regional ecosystems, increase the width of fauna corridors, increase buffers to tidal lands, wetlands and waterways.

A number of submissions raised the issue of the project's impact on the areas of vegetation retained within the development boundary.

In the EIS the area quoted as being impacted by the project was based on the direct impact of development, roads, infrastructure and open space (ie the development footprint). Large areas of remnant vegetation will be retained within the development footprint to promote ecological connectivity on the island. The area of vegetation enclosed by the development boundary is presented in Table 2-2. Table 2-2 lists the regional ecosystems affected, its status under the *Vegetation Management Act 1999*, whether the regional ecosystem provides essential habitat and the area of the regional ecosystem affected. The Proponent has used this table as the basis for securing offsets for the project.

Significant areas of the vegetation shown in Table 2-2 will not be cleared and remain an important part of the landscape and park areas of the HHI Development. DERM has advised the Proponent all threatened regional ecosystems within the development boundary will need to be offset under the DERM's Policy for Vegetation Management Offsets. The total areas of vegetation within the development boundary are provided in Table 2-2.

■ **Table 2-2 Vegetation Areas within the Development Boundary**

RE	Vegetation Management Status	Essential Habitat	RE Affected (ha)
12.3.10/12.3.3	Endangered – Dominant	Yes	8.915
12.3.3	Endangered – Dominant	Yes	4.039
clear	Non-remnant / regrowth	No	54.572
regrowth	Non-remnant / regrowth	No	2.032
12.1.2	Not Of Concern	No	0.453
12.1.3	Not Of Concern	No	0.107
12.12.7	Not Of Concern	No	86.415
12.2.11	Not Of Concern	No	134.882
12.2.14	Not Of Concern	No	0.091
12.12.12	Of Concern – Dominant	Yes	195.136
12.12.19	Of Concern – Dominant	No	0.286
12.12.28	Of Concern – Dominant	No	0.149
12.12.8	Of Concern – Dominant	No	5.461
12.2.11/12.1.1	Of Concern - Sub-dominant	No	25.425
12.2.11/12.2.2/12.2.11	Of Concern - Sub-dominant	No	0.103
Total Area of Development Boundary			518.068



The Proponent has opted to provide an offset in accordance with the DERM Policy for Vegetation Offsets (the Offset Policy). The Offset Policy sets targets for the condition, area, configuration and status of vegetation offsets, and the Compensatory Habitat Strategy seeks to meet these targets.

The vegetation offset framework set rigorous standards for the selection and management of offset sites. Benefits derived from vegetation offsets include the following:

- the offset strategy will ultimately protect an area of habitat which is otherwise unprotected from clearing at some future point;
- the offset seeks to maintain ecological processes at the sub-regional level;
- the offset area must support an area of vegetation of equal or higher conservation status than the area to be cleared;
- the offset area must obtain ecological equivalence to the area cleared; and
- offset areas will be managed for conservation purposes in the long term and will be legally secured.

Details of the vegetation offsets are included in **Section 12.7** and **Section 12.8**.

Considerable progress has been made in identifying and the locating appropriate vegetation offsets and negotiations are proceeding with landowners. The Proponent has identified 603 ha of non-remnant vegetation to satisfy the Policy for Vegetation Management Offsets. If approval is granted for the Project to proceed, formal agreements would be reached with the landowners and management plans put into place.

2.7 Population

Submissions requested supplementary information clarifying the maximum number of persons to be accommodated on the island. The master plan (presented in section 3.3 of the EIS) for the Project incorporates a diverse range of tourist facilities and accommodation including resort hotels, holiday units, camping grounds, holiday housing, boating facilities, golf course and recreational facilities and a town centre based around retail and educational services that will cater for a broad range of people. The community will consist of an estimated 2,300 tourists during peak periods and 1,600 residents when the township is fully developed over a period of 17 years.

2.8 Intensification of Uses

A single submission expressed concerns in relation to the allowable intensification of the proposed development permitted by the proposed Plan of Development. More specifically, the submission expressed the view that intensification of development may be possible via the Reconfiguration of Lot and Material Change of Use provisions of the Plan of Development.

The Plan of Development was included in Appendix 2 of EIS to provide conceptual guidance on the proposed HHI Development. The Plan of Development will be refined as part of the approvals process and submitted to Gladstone Regional Council, as part of the Material Change of Use application for Gladstone Regional Council assessment. Through this application Gladstone Regional Council will be able to condition the Plan of Development prior to it being finalised to ensure it is compatible with and is integrated into the new Planning Scheme. The Proponent will work with



Council to ensure the Plan of Development satisfies Gladstone Regional Council's requirements. This approach will allow strong control over the potential future intensification of uses.

The Proponent proposes to have the undeveloped parts of the island (84% - which includes the undeveloped parts of special lease area and Unallocated State Land) declared as Nature Refuge and protected under a formal agreement with the government agencies.

2.9 Land Management Arrangements

One submission raised the issue regarding the responsibility of ongoing land management.

The Proponent proposes to have the undeveloped parts of the island (84% - which includes the undeveloped parts of Special Lease area and Unallocated State Land) declared as Nature Refuge and protected under a formal agreement with the government agencies. The HHI Development boundary will be fenced and have a barrier to prevent vehicular access and uncontrolled pedestrian access to the Nature Refuge. The conserved areas will be maintained, protected and enhanced through a management contract between the Proponent and an appropriate environmental management company. The Proponent propose the Gladstone Regional Council impose a special area environmental levy on land owners to cover the cost of these environmental services.

2.10 Performance Guarantees

One submission noted that a discussion of securitisation or bond will be required by the Proponent in the unlikely event that construction works were unable to be completed.

Local Councils in Queensland often impose conditions of approval on planning applications which seek to have the developer carry out works, make payments to Council or conduct construction and development in accordance with the approved plans. As a means of achieving compliance with these conditions, it is common practice to require security in the form of a cash bond or trading bank guarantee. The Proponent is willing to enter into such an arrangement in accordance with local government requirements.

The Proponent holds a Special Lease over 1163 ha of Hummock Hill Island. The lease conditions permit the Proponent to develop the Special Lease area for business, industrial commercial, residential, tourist and recreation purposes subject to a number of conditions including environmental and development approvals from local, State and Commonwealth governments.

The Proponent will provide all necessary infrastructure for the development as well as contributions for external infrastructure so that local and State infrastructure providers are not affected. The Proponent must provide the HHI Development with essential infrastructure; access road bridge over Boyne Creek, water supply, sewerage and power before having the right to purchase the proposed development land from the Government.

The Lease requires that the Proponent also provide a performance bond of \$5,000,000 before commencing construction of the development. The bond will be held in full by the Government until the satisfactory completion of the HHI Development.