Mission Beach Safe Boating Infrastructure Project

Public Information Package

All comments and submissions in relation to the project should be directed to:
Great Barrier Reef Marine Park Authority
Attn: Assessments Team
PO Box 1379
Townsville QLD 4810
E: assessments@gbrmpa.gov.au
Website: www.gbrmpa.gov.au/about-us/consultation
We now seek public comment under regulation 88D of the Great Barrier Reefs Marine Park Regulations 1983 (C’th) and s15 of the Marine Parks Regulation 2006 (Qld).
Public submissions will be considered by the Great Barrier Reef Marine Park Authority (GBRMPA) and the Queensland Parks and Wildlife Service (QPWS) in making a decision on this permit.
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1 Introduction

The Department of State Development Infrastructure and Planning, has designed the Mission Beach Safe Boating Infrastructure Project (Project) to improve boating safety within Boat Bay Reserve, Mission Beach through the enhancement of maritime infrastructure.

Existing facilities within Boat Bay include the Perry Harvey Jetty at Narragon Beach and the Clump Point Boat Ramp. Supporting infrastructure at the Clump Point Boat Ramp includes a rock breakwater, finger pontoon and car parking facilities.

Existing facilities in Boat Bay support recreational fishing and boating, tourism, and enjoyment of the Great Barrier Reef Marine Park. However, current facilities in Boat Bay are in need of various upgrades to improve boating safety.

The Project improvements outlined within this Information Package include a combination of works at the Perry Harvey Jetty and the Clump Point Boat Ramp.

The Project proposal represents the outcome of an ongoing consultation process undertaken since 2011 which identified solutions to improve boating safety, whilst being respectful of the existing environmental, amenity, heritage and community values of Boat Bay. New infrastructure has been specifically designed to minimise impacts on the marine environment, and to avoid capital dredging.

1.1 Objectives and proposed solutions

The objective of the Project is to improve conditions for safe boating within Boat Bay.

The proposed infrastructure aims to improve the operational window for the safe berthing of commercial vessels at the jetty, and to improve the layout and functionality of boating infrastructure at the boat ramp. By improving the layout and design of existing infrastructure, the project will enable vessels to operate more safely within Boat Bay; and to improve accessibility to the boat ramps during peak periods.

The Project does not propose any the expansion or widening of existing navigational channels or the addition of new navigational channels.

The Project is comprised of the following works:

**Perry Harvey Jetty**
- An overtopping breakwater to shelter the jetty (with a crest length of approximately 125 m)
- An access ramp and berths on the northern side of the jetty to improve passenger transfer
- Two permanent moorings to reduce risk of vessel grounding

**Clump Point Boat Ramp**
- A third boat ramp lane and approach reclamation to reduce congestion
- A second floating walkway to improve boat access
- Improved drainage system to reduce siltation
- Expansion of parking facilities to reduce conflict
- Reclamation and revetment works for safer parking facilities (comprising 1880 m² below highest astronomical tide (HAT)).
- Removal of two isolated high level rocks to reduce risk of grounding
1.2 Purpose of this Public Information Package

This Information Package has been prepared to provide an overview of the Project, associated with the advertising of the Marine Park Permit. Details of the project, the assessment process and potential environmental impacts are outlined in this Information Package.

The Project involves undertaking works within the ‘Habitat Protection Zone’ of the Great Barrier Reef Marine Park. Accordingly, a marine parks permit is required under the *Great Barrier Reef Marine Park Zoning Plan 2003* to authorise the proposed works.

An application for a Marine Parks Permit was submitted to the Great Barrier Reef Marine Park Authority (GBRMPA) in December 2014. The application is currently in the advertising period.

Two referrals have been previously submitted to the Commonwealth Minister of the Environment under the *Environmental Protection and Biodiversity and Conservation Act 1999* (EPBC Act). The project was determined to be ‘not a controlled action’, and no further assessment under the EPBC Act is required.

1.3 Making a submission

We now seek public comment under regulation 88D of the *Great Barrier Reefs Marine Park Regulations 1983* (C’th) and s15 of the *Marine Parks Regulation 2006* (Qld). Public submissions will be considered by the Great Barrier Reef Marine Park Authority (GBRMPA) and the Queensland Parks and Wildlife Service (QPWS) in making a decision on this permit.

All comments and submissions in relation to the project should be directed to:

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*Note: This Information Package outlines the nature of development proposed as part of the overall Project and includes a description of both marine based and land based works. However, it is noted that the Marine Park Permit application currently assessed by GBRMPA relates only to works which are located within the Great Barrier Reef Marine Park (C’th). Therefore, submissions related to the project should be limited to GBRMPA’s jurisdiction to assess the extent of maritime works that are located within the Great Barrier Reef Marine Park.*
Mission Beach Safe Boating Infrastructure Project

Figure 1.1: Overview of Proposed Works

Clump Point Boat Ramp
- Breakwater head repair
- Flushing system and drainage upgrade
- Navigation channel rock removal
- Northern Car/Trailer Park
- Reclamation
- Seawall realignment
- Floating walkway
- Boat ramp

Clump Point Boat Ramp (Excluded works - Refer s.4.1.1)
- Utility and services
- Toilet block and washing station
- Southern Car Park

Perry Harvey Jetty
- Access Ramp and Berth
- Overtopping Breakwater
- Moorings
- Navigational aids

Legend


Date: 26/11/2014
Version: 1
2 Project need and safety hazards

The local community and boating users acknowledge that existing facilities in Boat Bay are in need of various upgrades to improve public safety, and enjoyment of the marine park.

Clump Point, a northerly facing headland provides Boat Bay with a moderate level of natural protection from prevailing south-easterly winds and waves. A breakwater shelters the Clump Point public boat ramp from north-easterly winds and waves. However, the Perry Harvey Jetty has no protection from northerly winds and waves which occur regularly. Wave heights of 1 metre or more occur regularly, making the jetty an unsafe landing and berthing platform, even for commercial vessels.

Because conditions at the jetty are frequently unsafe, the Clump Point public boat ramp has become the preferred location to operate commercial vessels. On occasions, conflict results between commercial and recreational users who compete for access to the pontoon and land based facilities.

Another hazard affecting the safe use of the boat ramp is the presence of two high level rocks which are situated within the navigational channel. A diving survey identified evidence of several propeller strikes on these rocks.

Boat Bay also does not contain safe mooring location for commercial vessels. This has resulted in illegal anchoring activity, presenting safety hazards associated with grounding of vessels; in addition to potential environmental impacts associated with anchors and chains.

3 Project definition and consultation

Definition of the Project scope has been the subject of ongoing consultation between the Department of State Development, Infrastructure and Planning (DSDIP), local business, boating users, community groups, residents, the Djiru People, the Cassowary Coast Regional Council (CCRC) and state government agencies since 2011.

In June 2011 the Department of Transport and Main Roads (DTMR) engaged GHD to undertake an assessment of wind and wave conditions in Boat Bay. This investigation, and subsequent discussions with coastal engineering and environmental experts, and community representatives, concluded that upgrade options at the jetty and boat ramp were worth investigating further. Concept designs were subsequently developed and presented to key stakeholders in Mission Beach. At this time, DSDIP conducted individual stakeholder meetings in Mission Beach. Stakeholder meetings revealed a strong community desire for improving boating safety in Boat Bay Reserve; however no single option received the community’s majority support.

In September 2013, DSDIP engaged Aurecon to undertake a multi criteria analysis (MCA) to identify a preferred design solution to improve boating safety. The results of the MCA were presented to state government agencies, representatives of the Djiru People and key stakeholders in Cairns and Mission Beach in November 2013.

Following the MCA in January 2014, the former DSDIP issued a Project brochure to all residents of Mission Beach, including a short survey seeking feedback on the proposed design solutions. Feedback received indicated a desire to separate commercial and recreational facilities in Boat Bay, and strong support for the provision of land based amenities at the Clump Point Boat Ramp. At this time a number of alternative proposals were also put forward by the community; and were investigated by DSDIP and Aurecon. Alternative solutions were determined to be unsuitable due to being generally inconsistent with objectives to minimise environmental impact (such as the requirement for extensive dredging and reclamation), and/or exceeded the available project budget.
Following the survey, some amendments were made to the Project scope and design solutions, including provision for two permanent moorings and land based amenities at the boat ramp. The amended design solutions were presented to the Mission Beach community between 31 March and 2 April 2014.

DSDIP has held regular meetings and discussions with representatives of the Djiru Warangbarra Aboriginal Corporation (the Djiru People), the determined traditional owners of lands surrounding Mission Beach and their legal representatives the North Queensland Land Council (NQLC), to discuss approaches to formally recognising native title and cultural heritage. Representatives of the Djiru People were provided with a Project overview in Innisfail in April 2014 from the former DSDIP’s Indigenous Services Unit and Major Project Office (MPO).

Regular project updates have also been issued to over 200 interested stakeholders, approximately once every month. A project web page has been maintained on the DSDIP available at the following link:


4 Project area and existing facilities

4.1 Location

The Project area is located within Boat Bay Reserve, Mission Beach, approximately 135 km south of Cairns, and 235 km north of Townsville. Figure 4-1 illustrates the location of the Project area.

Figure 4-1 Project locality, Boat Bay, Mission Beach (Source: Bing Maps)
4.2 Existing facilities

Existing maritime facilities within Boat Bay include the Perry Harvey Jetty at Narragon Beach, and the Clump Point Boat Ramp at Clump Point. Supporting infrastructure at the Clump Point Boat Ramp includes a rock breakwater, finger pontoon and car and boat trailer parking facilities. Figure 4-2 illustrates the project area and the location of existing maritime facilities within Boat Bay.

![Figure 4-2 Location of existing infrastructure within Boat Bay (Source: Bing Maps)](image1)

Photos illustrating the current appearance of existing facilities are provided in Figure 4-3 and 4-4 below.

![Figure 4-3 Clump Point Boat Ramp, rock breakwater and finger pontoon (photo taken looking south-east)](image2)

![Figure 4-4 Perry Harvey Jetty (photo taken looking east)](image3)
4.3 Marine Park Zoning
The Project area is located within the ‘Habitat Protection Zone’ of the Cairns/Cooktown Management Area according to the Great Barrier Reef Marine Park Zoning Plan 2003 (C’th) and the Marine Parks (Great Barrier Reef Coast) Zoning Plan 2004 (Qld) (Map 6 – Innisfail). Figure 4-5 illustrates the location and zoning of the Project area.

Figure 4-5 Zoning of the project locality, Great Barrier Reef Marine Park Zoning Plan 2003 (C’th) and the Marine Parks (Great Barrier Reef Coast) Zoning Plan 2004 (Map 6 – Innisfail).

4.4 Clump Point Site Management Arrangements 2005
The ‘Clump Point Site Management Arrangements’ were developed in 2005 by GBRMPA, Queensland Parks and Wildlife Service (QPWS) and Maritime Safety Queensland (MSQ) for the Boat Bay Reserve. The site management arrangements create a framework for the location (via the activity plan), permitting and management of mooring facilities in this location. Figure 4-6 illustrates the Activities Map of the Clump Point Site Management Arrangements, and the location of existing facilities within Boat Bay.

If the Project is approved, the current site management arrangements will be revised to appropriately reflect the new infrastructure.
5 Proposed development

A combination of infrastructure solutions has been identified to enhance the safety and functionality of existing maritime infrastructure within Boat Bay. The Project is comprised of the following works:

**Perry Harvey Jetty**

- An overtopping breakwater to shelter the jetty (with a crest length of approximately 125 m)
- An access ramp and berths on the northern side of the jetty to improve passenger transfer
- Two permanent moorings to reduce risk of vessel grounding

**Clump Point Boat Ramp**

- A third boat ramp lane and approach reclamation to reduce congestion
- A second floating walkway to improve boat access
- Improved drainage system to reduce siltation
- Expansion of parking facilities to reduce conflict
- Reclamation and revetment works for safer parking facilities (comprising 1880 m² below highest astronomical tide (HAT)).
- Removal of two isolated high level rocks to reduce risk of grounding
A key objective for the Project was to ensure that proposed infrastructure solutions were designed and implemented in a manner to maximise the safety and functionality of maritime infrastructure in this location, whilst minimising the impacts on the ecological and heritage values of the Great Barrier Reef Marine Park. To this end, new infrastructure has been designed to integrate with existing maritime facilities, limit reclamation and avoid the need for capital dredging works.

Figure 1-1 illustrates the extent of works proposed, and proposal drawings’ illustrating the design, scale and location of proposed works are provided in Appendix A.

The table below provides a summary of the facilities proposed as part of this project.

### 5.1 Proposed facilities

<table>
<thead>
<tr>
<th>Table 5-1 Mission Beach Safe Boating Infrastructure Project - Proposed facilities</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Perry Harvey Jetty – Proposed Works</strong></td>
</tr>
</tbody>
</table>

**Overtopping breakwater**

The overtopping breakwater at the jetty aims to improve safety by providing wave attenuation to shelter the head of the jetty. The overtopping breakwater is proposed to be constructed approximately 45 m offshore from the head of the jetty. The overtopping breakwater will also increase the operational window for berthing access at the jetty.

The layout and design of the overtopping breakwater was determined through consideration of operational safety, cost and environmental criteria. The primary factors influencing the design of the layout of the overtopping breakwater are:

- **Navigation** – provision for sufficient space between the breakwater and jetty to ensure safe navigation and berthing of vessels
- **Wave attenuation** - to attenuate waves to reduce the ambient wave climate at the berth. The breakwater has been developed to be of a height and width to sufficiently attenuate the easterly and north-easterly waves
- **Environmental and aesthetic impacts** - to minimise environmental impacts (including sedimentation effects) through a reduced length and reduced crest elevation
- **Cost** – to limit the scale of the structure to minimise the required capital costs

In line with these considerations, the overtopping breakwater has a non-linear geometry, with a smaller scale and footprint when compared with a standard breakwater. The overtopping breakwater has been designed to shelter the berth from wave action during ambient conditions, but allows ongoing overtopping (ie waves will pass over the top of the structure).

With the addition of the overtopping breakwater, the wave climate at the jetty will be substantially improved for all vessels.

**Berth and access ramp**

A new berth and access ramp is proposed to be developed on the northern side of the jetty to improve the safety of berthing and the loading and unloading of passengers and goods. Landing platforms at each section of the access ramp will support boarding at all tide levels, and provide a flat area for passengers when getting on and off vessels.

**Moorings**

Two moorings are proposed to be established within Boat Bay to provide safe designated mooring for large vessels (such as a passenger ferry), and minimise the risks of illegal mooring. The moorings have been located broadly between the Clump Point Boat Ramp and the Perry Harvey Jetty, within the nominated Boat Bay mooring area shown on the current GBRMPA ‘Clump Point Site Management Arrangements’. This area is also at suitable water depths to accommodate the design vessel during low tide and design wave conditions.
### Clump Point Boat Ramp – Proposed works

<table>
<thead>
<tr>
<th>Additional boat ramp lane</th>
<th>An additional boat ramp lane is proposed to be constructed adjoining the southern side of the existing boat ramp lanes. The additional lane is intended to improve access for recreational vessels, and minimise the congestion between vehicles and boats during periods of peak demand. The additional boat ramp lane will provide opportunities for the launch and retrieval of boats on both sides of the existing finger pontoon.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reclamation</td>
<td>To alleviate congestion for parking facilities and ensure there is sufficient space for vehicle manoeuvring during the launch and retrieval of boats, it is proposed to undertake reclamation at the western side of Clump Point, adjacent to the new boat ramp lane. Reclamation will provide for a manageable turning circle at the head of the boat ramp, and support provision for additional parking near to the near boat ramp lane to manage potential traffic conflicts. Reclamation comprises an area of 1880 m² below highest astronomical tide (HAT).</td>
</tr>
<tr>
<td>Floating walkway</td>
<td>A floating walkway is proposed adjacent to the existing rock breakwater to provide a second launching platform for recreational vessels, and minimise congestion which often occurs during the launching and retrieval of vessels.</td>
</tr>
<tr>
<td>Additional car and boat trailer parking facilities</td>
<td>Car and boat trailer parking facilities at Clump Point are proposed to be upgraded to minimise congestion which occurs at the boat ramp during periods of high demand. Additional parking spaces are to be accommodated across the existing land area at the boat ramp, within a proposed reclamation area on the western side of Clump Point (adjacent to the boat ramp lanes), and within a land-based extension of the existing car park. The layout of car parking areas has been determined to minimise the clearing of vegetation and marine plants as far as practicable, whilst still meeting acceptable design standards.</td>
</tr>
<tr>
<td>Improved drainage infrastructure</td>
<td>There is no significant drainage infrastructure at Clump Point. Currently, water from overtopping waves and stormwater runoff is transferred, uncontrolled, to the marine environment. The impact of waves and runoff is observed to be dislodging pavement material from the road and car park areas and transferring this to the marine environment. Pavement material is evident within the intertidal zone adjacent to the boat ramp, and this may be restricting further mangrove establishment in this location. To control runoff at the boat ramp, a drainage channel is proposed alongside the eastern side of the Clump Point headland. The drainage channel will extend from the southern extent of the ‘northern car park’ to the existing boat ramp lanes, discharging adjacent to the rock breakwater (and below the floating walkway). This drainage channel system will capture stormwater from overland flow and overtopping waves at Clump Point, transferring this to the navigational channel at the boat ramp. The drainage discharge will be concentrated at the boat ramp toe so that it flushes any sediment that may deposit at the toe of the boat ramp. The drainage discharge channel is expected to mitigate the need for future maintenance dredging. The drainage channel will also reduce erosion of the car park when the area is overtopped by waves.</td>
</tr>
<tr>
<td>Breakwater repair</td>
<td>A minor repair of a defined section of the existing rock breakwater is proposed where previous damage has occurred and rock armouring has been displaced.</td>
</tr>
<tr>
<td>Seawall edge</td>
<td>A new seawall is proposed to be developed alongside the eastern edge of the Clump Point headland, extending south from the head of the existing boat ramp lanes, alongside the ‘northern car park’ edge. The seawall will be comprised of rock armour material. All existing rock material will be re-used on the wall where possible, to minimise the extent of imported material required.</td>
</tr>
<tr>
<td>Relocation of isolated boulders</td>
<td>To improve navigational safety, it is proposed to re-locate two isolated rocks to increase water depth within the channel. These rocks would be relocated to an area of similar water depth and having similar habitat characteristics. Further information relating to this component of the project is outlined below.</td>
</tr>
</tbody>
</table>
Vegetation clearing

The clearing of marine plants (mangroves) and terrestrial vegetation will be required to accommodate proposed infrastructure at the Clump Point Boat Ramp. Mangrove species identified within the project footprint include the red mangrove, grey mangrove, river mangrove, cedar mangrove and yellow mangrove. Figure 5-1 below illustrates the area of vegetation clearing required for the Project, including the locations where mangrove species have been identified. The Project will require the clearing of approximately 1,640 m² of land containing mangroves. Offsets will be provided for the clearing of marine plants in accordance with the *Environmental Offsets Act 2014* (Qld).

Figure 5-1 Clearing footprint, Clump Point Boat Ramp

5.2 Associated construction activities

5.2.1 Relocation of isolated rocks

Surveys undertaken by Aurecon identified the presence of large isolated rocks in the vicinity of the boat ramp which may present a risk to safe navigation, identified below.
Two rocks in particular (referred to as ‘J4’ and ‘T1’ above) present a hazard to boating due to being in the likely turning path of most vessels, and reducing water depth at low tides. The survey also identified evidence of several propeller strikes on these rocks. This confirms feedback received from the recreational boating community that the access channel to the boat ramp has historically been compromised by underwater obstructions.

Diving surveys also identified evidence of coral and algae growth on these rocks, including:

- **Coral** – *Porites* sp., *Favia* sp. *Acropora* sp., *Montipora* sp., *Xenia* sp., colonial zoanthid
- **Alga** – *Bryopsis* sp., *Phaeophyta* sp., other unidentified green, red and brown algae

Whilst coral species were identified, none are considered rare or threatened.

**Proposed safety improvement**

To improve navigational safety, it is proposed to re-locate rocks ‘T1’ and ‘J4’ to increase water depth within the channel. These rocks would be relocated to a receiving environment at similar water depth and having similar habitat characteristics.

A potential methodology for the re-location of these rocks has been discussed with GBRMPA during pre-lodgement discussions. These discussions highlighted the need to ensure that any proposed re-location method is able to ensure the survival of inhabiting species (coral, alga) in the new location. It is noted that the complete avoidance of impacts would not be achievable, however, the re-location method must seek to minimise impacts to marine ecology as far as practicable.

A possible methodology to relocate these rocks is outlined below:

- Use an air blower to remove sand under the rock and loosen its hold on the seabed;
- Sling a broad ‘webbing’ under the rock to make a basket;
- Hook the basket to a barge crane;
Maintain the rock under water and move via barge crane to the proposed receiving location; and
At the receiving location, settle the rock into the new location by scouring out sand at the sea floor.

It is understood that such a methodology has previously been carried out for the re-location of coral bommies within the GBRMP, resulting in the survival of species in a new location. Whilst the above methodology has previously been carried out successfully in the Marine Park, it is possible that other options may be explored in line with work practicalities and environmental management objectives.

6 Environmental assessment

The Project area is located within the boundaries of the Great Barrier Reef Marine Park (GBRMP). The GBRMP is inscribed on the World Heritage and National Heritage lists for its unique natural environment and value in representing complex interrelationships between flora and fauna species.

Potential environmental impacts as a result of the proposed works will comprise both short term impacts associated with construction activities, and potential long term impacts to coastal geomorphology. An assessment of the potential impacts associated with the project is provided below, including the identification of potential mitigation measures, where appropriate.

6.1 Terrestrial ecology

The protection of significant vegetation and habitat features was a key consideration for the design of land based infrastructure at the boat ramp, including identifying suitable locations for development and determining a suitable layout for the proposed works.

Ecological surveys have been undertaken to review the nature of terrestrial flora and fauna present within the proposed clearing footprint. The surveys confirmed that within the areas proposed for clearing associated with reclamation and construction of the ‘northern car park’ at the boat ramp (Refer Figure 1-1); is defined by scattered, regrowth mangrove vegetation (mature and regrowth) and large boulders which are associated with the existing seawall structure.

Proposed works at the Clump Point Boat Ramp may benefit the terrestrial ecology through the provision of designated parking facilities, which may avoid the need for users to park alongside the verge of Clump Point Lookout Road, minimising edge effects associated with the use of vehicles in close proximity to adjoining vegetation. The resealing of existing car park and reclaimed car park pavement area may also minimise the transfer of dust associated with traffic movements along Clump Point Lookout Road.

Measures will be adopted during construction through a Construction Environmental Management Plan (CEMP) to ensure works to not cause unnecessary impacts to surrounding terrestrial habitat areas. Such measures will include clear delineation of the clearing footprint and areas for specific protection, presence of an appropriately qualified and licenced spotter-catcher during site clearing activities, and sediment and erosion control to prevent dust and sedimentation impacts to surrounding areas.

It is also noted that evidence of Class 3 pests (plants) as listed under the Land Protection (Pest and Stock Route Management) Act 2002 have been identified within the vicinity of the Project area. Therefore, appropriate site management procedures will also be implemented through the CEMP to avoid the transfer of plant species off site. This may include physical plant removal in sensitive areas (i.e. hand pulling, chipping or cutting weeds).
6.2 Marine ecology

The Project area exists within the boundaries of the Great Barrier Reef World Heritage Area (GBRWHA). To inform the design process and assess the potential impact of the Project on the outstanding universal values of the GBRWHA, marine ecology, water quality, and terrestrial ecology surveys have been undertaken by Aurecon, involving diving surveys of the Project marine footprint.

The marine ecology surveys undertaken for the Project identified the water quality within the investigation area to be relatively turbid. No notable benthic habitat was identified during surveys, with the exception of number of sparsely placed sediment covered rocks with evidence of red, brown and green algae growth, hard and soft corals. The results identified a disturbed environment within the investigation area, with sparse seagrass and coral growth.

Isolated coral species were identified, although none were rare or threatened, and complex reef structures were not identified within the project area. Overall, the marine ecology of the investigation area was reflective of a moderately disturbed environment.

The selection and design of proposed infrastructure solutions has been undertaken with particular regard to maximising the effectiveness of existing infrastructure, and minimising the additional development footprint within this environment.

It is considered that impacts to marine ecology will be primarily confined to the construction phase. Such impacts may include disturbance or displacement of marine fauna species due to noise and vibration, and unintended impacts to surrounding vegetation or habitat.

Appropriate methods will be established through the CEMP to mitigate the potential impacts of construction activities. The CEMP will include procedures for the following:

- Environmental awareness training for all workers and ongoing task/activity-specific training
- Protection of water quality through the implementation of sediment and erosion control practices
- Scheduling of construction works during low tide (where possible) to avoid impacts to marine fauna
- Implementation of the ‘Soft Start’ (Ramp Up) Procedure for all machinery operated near to the marine environment
- Visual observations and monitoring for marine fauna by a suitably trained person

Through the implementation of these mitigation measures, impacts to marine ecology are considered to be minor.

6.3 Marine water and sediment

Construction works have the potential to impact on water quality as a result of sediment disturbance, exposure of contaminated materials and the use of machinery and hazardous substances within a marine environment. Accordingly, the CEMP will include the following:

- Sediment and erosion control measures, such as fencing and/or bunding (where appropriate) and use of a non-pollutant water for dust suppression
- Works requiring access to the tidal environment to be scheduled during low tide (where possible)
- Works to be undertaken in stages to ensure earthworks are limited to the daily extent of works, and the need for stockpiles of rock material is minimised
- Implement a visual turbidity monitoring program throughout construction. Should visible turbid plumes occur as a result of construction works, construction works will decrease until the plume settles.
Acid sulphate soils
The Project site is identified as at an area risk of containing Potential Acid Sulfate Soils (PASS) and/or Actual Acid Sulfate Soil (ASS), being located on coastal land located below 5m AHD. For this Project, only minor excavation is required below 5m AHD, and no marine sediment is proposed to be removed from the tidal environment. Therefore, the risk of marine impacts associated with ASS/PASS is considered to be low. Notwithstanding, strict management measures will be adhered to during construction to minimise the risk of exposure.

Should PASS or ASS be encountered during construction works, adequate control measures to prevent environmental harm, including monitoring and treatment, will be managed in accordance with mitigation measures and control strategies to be developed prior to construction. Any material which is required to be removed from below 5 m AHD is proposed to be tested in situ and treated appropriately.

6.4 Coastal geomorphology and sediment transport

6.4.1 Overtopping breakwater

A breakwater type structure may have a localised impact on sediment transport patterns at the adjacent beach. As a result of its function to provide wave attenuation, sediment that is mobilised by wave action may be deposited on the landward side of the structure where wave energy is reduced. Additionally, as waves refract around the structure a salient could develop as sand transport is modified in the shadow of the breakwater.

The potential effect on shoreline geomorphology was considered throughout the design process of the overtopping breakwater at Perry Harvey Jetty. Investigations indicated:

- Wave attenuation structures having a large physical footprint (eg piled wave screen, normal breakwater) were rejected through a multi criteria analysis at the beginning of the Project, due to the magnitude of potential shoreline impacts

- The size, shape and position of the proposed overtopping breakwater was optimised through physical testing to minimise shoreline impacts as described below.

Physical testing

As wave processes dominate the sediment transport processes within Boat Bay and along Narragon Beach, the overtopping breakwater was studied in detail via numerical modelling and physical testing. Physical testing involved the creation of a scaled 3D model to investigate the impact of the structure on waves, storm tide and sediment transport; as well as to optimise its location, orientation and physical dimensions.

The results indicated that during ambient conditions, the presence of the overtopping breakwater, over time, may result in localised changes to the shoreline within the shadow zone north and south of the position of the overtopping breakwater. Over a period of years a pro-gradation of the shoreline may be observed at the shoreline south of the overtopping breakwater. Additionally, minor erosion may be observed at the shoreline to the north of the overtopping breakwater.

Investigations confirmed that shoreline movements with the addition of the overtopping breakwater are likely to be comparable to the existing sediment transport pattern. Localised erosion and accretion of the beach is evident immediately behind the overtopping breakwater following a major cyclone. However, over the long-term the shoreline returns almost to its pre-cyclone state.

It is important to note that the reduced scale and size of the overtopping breakwater has been specifically refined through the physical testing process to minimise impacts on sediment transport.
6.4.2 Clump Point Boat Ramp

Owing to the partial sheltering provided by the Clump Point headland and breakwater, there is limited sediment movement in the area of the boat ramp (with the exception of during high tide and strong northerly wave conditions). Additionally, siltation near the toe of the boat ramp is observed to occur only episodically (typically during major storms and cyclones), although this siltation mostly clears itself overtime. The driving mechanism for siltation is wave action. The recovery mechanism (cleaning) is driven by a combination of tidal currents, propeller wash and small waves during low tides.

Importantly, maintenance dredging is not absolutely necessary to operate the Clump Point boat ramp although the amenities become intermittently restricted during the lowest tides because of episodic siltation. Flushing improvement through the drainage channel is likely to reduce the time taken for silt to clear between siltation episodes. However, the observed self-cleaning ability of the boat ramp basin remains unchanged as does the mechanism responsible for siltation.

The proposed works will have a negligible effect on existing coastal processes, hydrodynamics or geomorphology. The Project utilises the existing navigational channel and does not require any capital dredging or trigger additional maintenance dredging in the future. The design of the drainage channel will flush away sediments and further mitigate the need for maintenance dredging.

6.5 Visual amenity

Visual amenity values provide an important contribution to the ‘outstanding universal value’ of the Great Barrier Reef Marine Park. It must be emphasised that all works, including the overtopping breakwater, were designed to limit their visible scale and footprint. The former DSDIP also considered alternative proposals submitted by a number of community stakeholders, including a significant expansion of the existing rock breakwater and reclamation at the Clump Point Boat Ramp; and an artificial island with a sheltered berthing basin. The investigation of alternative solutions was especially cognisant of the need to minimise visual and aesthetic impacts, and is reflected through the proposed design.

Computer generated imagery (CGI) has been developed to provide an approximate representation of the visual appearance of the overtopping breakwater. Images taken from the CGI are provided in Figure 6-1 to 6-3. It can be seen that the low-crested overtopping breakwater proposed allows uninterrupted views of the horizon from any vantage point. The overtopping breakwater features a low-crested, variable crest height such that it peaks at Highest Astronomical Tide (HAT), and only a small portion of the structure is visible at mean high water springs (MHWS).
Figure 6-1 Representation of the potential view of the overtopping breakwater as seen from the Perry Harvey Jetty (image illustrates appearance at MHWS).

Figure 6-2 Aerial representation of the potential view of the overtopping breakwater (image illustrates appearance at approximately MHWS).
Figure 6-3 Aerial representation of the potential view of the overtopping breakwater (image illustrates appearance at approximately MHWS).

It is considered that the visual amenity of Boat Bay Reserve from the Clump Point Boat Ramp will be largely unaltered by the project given the overtopping breakwater will be approximately one kilometre distant (across the water) and only a small portion of the structure will be above the MHWS.

Furthermore, the tree lined road corridors, and morphology of the coastline between Mission Beach (to the south) and Bingil Bay (to the north), limit views of Boat Bay from all but its immediate environs. Boat Bay is only intermittently visible between the existing vegetation when travelling along Alexander Drive from Bingil Bay. The winding nature of the coastline, rocky outcrops and vegetated hills screen views of the Perry Harvey Jetty from most locations, as demonstrated by Figure 6-4 and Figure 6-5.

Figure 6-4 View from Alexander Drive, at the northern end of Boat Bay (17°50'34.41"S, 146° 6'18.98"E) (Source GoogleEarth).
Although the additional infrastructure at the jetty and boat ramp will be partially visible within Boat Bay Reserve, the Project should not detract from overall visual amenity of the bay.

6.6 Indigenous Cultural heritage

The area of Mission Beach and Clump Point is recognised to have particular indigenous cultural heritage value to the Djiru People. Clump Point headland is recognised as providing a focal point for indigenous cultural heritage activities within the wider region, due to the ease of access to the hinterland and coast. Clump Point is also a place that the Djiru People enjoy today for its natural beauty, environmental value, and sense of connection it provides to traditional country (Girringun Aboriginal Corporation, 2007).

A number of cultural heritage sites are recorded in the vicinity of Clump Point. These include two stone alignments within Boat Bay, and a fish trap immediately south of Clump Point headland. A historic ceremony ground is also known to be located at the base of the headland, and various artefacts have been identified within the region (Girringun Aboriginal Corporation, 2007).

Since the early stages of the Project, DSDIP has been engaged in regular consultation with the North Queensland Land Council (NQLC) and the Djiru People, to discuss measures to address cultural heritage aspects of the project. A Cultural Heritage Management Plan is in the process of being developed for the project, and a number of site visits have been undertaken by DSDIP, the Djiru People and the NQLC.

6.7 Traffic impacts

As the construction of the Project would be undertaken over a period of six to nine months, there is the potential for traffic impacts to the road network associated with the transport of construction materials and the removal of wastes from the Project sites.

A Traffic Management Plan would be required to be developed by the Project contractor, prior to the commencement of construction works, detailing routes for the transport of materials to site and the intended arrangements for laydown and storage. Pre-works notification will be provided to Cassowary

Figure 6-5 View of Boat Bay from Alexander Drive (17°50'37.21"S, 146° 6'15.30"E) (Source GoogleEarth).
Coast Regional Council, boating users, and the wider community, to advise of intended construction dates, and any road closures that may be required.

6.8 Public hazards
The construction of new physical works have the potential to create hazards associated with public access to (and around) facilities. During construction, it is intended that appropriate fencing and signage would be established to prevent public access to and within the area of works. Additionally, pre-works notification will be provided to the Council, boating users, and the wider community, to advise of intended construction dates, and any road closures that may be required.

Following the completion of construction, permanent signage is proposed to be erected to discourage access across coastal infrastructure, and to warn of the dangers of coastal hazards and inundation. Navigational aids will be constructed on the overtopping breakwater in accordance with Maritime Safety Queensland requirements.

7 Summary
This Information Package has been prepared to provide an overview of the Project, associated with the advertising of the Marine Park Permit for the Mission Beach Safe Boating Infrastructure Project.

The Project aims to improve boating safety in Boat Bay through the delivery of a combination of solutions to enhance existing facilities at the Perry Harvey Jetty and Clump Point Boat Ramp.

The proposed works represent an appropriate balance between maximising the safety and functionality of maritime infrastructure in this location, and minimising the potential environmental impacts on the ecological and heritage values of the Great Barrier Reef Marine Park.
9 Further information

Further information about the Project can be obtained from:

Project web page


Or by contacting DSDIP

The Mission Beach Project Manager
The Department of State Development, Infrastructure and Planning
P: 07 3452 7314
E: majorprojectoffice@dsdip.qld.gov.au

Submissions

Any submission to GBRMPA regarding this Information package should be directed as detailed in section 1.3.
Appendix A
Proposal drawings
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**Notes:**

1. For general notes refer to Dwg. No. AR-02.
2. UND TRAFFICABLE AREAS TO CONSIST OF 125mm DEPTH OF GRANULAR SUB-BASE AND 125mm TURF LOSS OVERALL.
3. SURFACING IS TO BE 2-COAT BITUMINOUS SEAL, USING 14mm AND 15mm AGGREGATE FOR FRESH AND SETTING COATS RESPECTIVELY.
4. FULL MATERIAL SHALL CONSIST OF CLASS A OR CLASS B MATERIAL (CIVIL WORKS SPECIFICATION – GENERAL CONTRACTS).
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