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Moreton Bay Regional Council

Northern Moreton Bay Shoreline Erosion Management Plan

Stage 2 Final Report

September 2014

Northern Moreton Bay Shoreline Erosion Management Plan - Stage 2

Prepared for:	Moreton Bay Regional Council
Prepared by:	BMT WBM Pty Ltd (Member of the BMT group of companies)

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Executive Summary

An investigation of coastal processes throughout Northern Moreton Bay Shoreline Erosion Management Plan (NMBSEMP) and a range of technical approaches have been considered to guide the future protection and management of the shoreline from coastal erosion. The total study area includes shorelines at Deception Bay, Beachmere, Godwin Beach, Sandstone Point, Toorbul and Donnybrook. The investigation recognises the history of development throughout the study area, issues surrounding shoreline management on public and private land, and the important role of shoreline stabilisation through vegetation.

The total study area was divided into beach units which are generally separated by undeveloped natural areas. To allow for more detailed descriptions of individual shoreline problems and the proposed management strategies, these broad beach units were divided into smaller sub-units where necessary. The key shoreline erosion management strategies promoted in the NMBSEMP are as follows:

- The exposed section of stone pitched seawall damaged during ex-TC Oswald and subsequently repaired with shotcrete in early 2013 (Captain Cook Parade Park) represents the most urgent works within the Deception Bay study area. This structure and section of shoreline remains vulnerable and should be upgraded in the short term.
- The mixture of public and private assets at the Beachmere shoreline is likely to present future management challenges for Council. In the short term, Council should consider its policy and obligation regarding shoreline management in areas adjacent to private assets and inform land owners of Council's position. Information to land owners regarding appropriate shoreline erosion management on private land is also encouraged, including the alignment and general geometry of shoreline structures and shoreline stabilisation with vegetation.
- Council has identified the need to upgrade the existing seawall protecting a road reserve (previously Huntley Street) at Biggs Avenue. This is the present priority works within the Beachmere study area and an application to upgrade the structure has received conditional approval.
- Council may wish to commence planning for an upgrade of the Godwin Beach seawall. The initial task would involve having the structural integrity of seawall assessed to determine the expected design life of the structure in its existing condition. This assessment may be considered in conjunction with the proposed Open Space Master Planning for the area.
- Public and private assets throughout Sandstone Point are generally located outside the erosion prone area. The priority shoreline management action is to maintain the natural sandy beach and grassy foreshore area accessed via Oxley Place (and other minor access points). This area has significant social and recreational value and provides ample buffer to coastal erosion processes. Coastal and shoreline management requirements should be considered as part of future development proposals to ensure any new assets remain outside the erosion prone area.
- Council has identified a need to upgrade a section of seawall within the Toorbul study area where significant damage occurred during ex-TC Oswald, January 2013. The seawall at this location was originally built by local residents in the 1970s and is therefore an unapproved structure. The proposed upgraded structure opposite Second Avenue will follow a straight alignment and is intended to protect the adjacent footpath and road.

- A general recommendation for the Toorbul study area is a comprehensive structural integrity assessment of the existing seawalls to establish their expected design life and prioritise future upgrades and capital works.
- Removal of previous timber, rock and concrete shoreline erosion control measures is recommended throughout Donnybrook. These materials are not likely to be performing as intended and better erosion control outcomes could be achieved through shoreline realignment, foreshore landscaping and revegetation activities.

There is significant opportunity to preserve and enhance coastal vegetation and mangrove communities that act to stabilise foreshore areas and reduce erosion potential throughout the NMBSEMP study area. Ongoing management of these areas will help to maintain environmental values and minimise future shoreline maintenance requirements. The capital and maintenance costs associated with re-establishing vegetated shoreline are often significantly less than the implementation of hard structures. Natural shorelines are also expected to better adapt to future climatic pressures such as sea level rise.

The community and State agencies provided feedback on the content of the draft NMBSEMP which was considered and incorporated to the final report. The review comments are summarised in Appendix E and Appendix D.

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1 Introduction

The Northern Moreton Bay Shoreline Erosion Management Plan (NMBSEMP) has been developed to provide advice and direction for the future protection and management of the shoreline from coastal erosion within the study area. The entire study area covers approximately 21.5km of shoreline and includes communities at Deception Bay (2.5km), Beachmere (7.0km), Godwin Beach (2.5km), Sandstone Point (4.0km), Toorbul (3.5km) and Donnybrook (2.0km). The study area was divided into these beach units which are generally separated by undeveloped natural areas. An overview of the entire study area is show in Figure 1-1.

This report represents the second stage of the study and details the recommended shoreline management strategies applicable to each beach unit. A preceding report detailing the legislative framework, generic shoreline management considerations and coastal processes relevant to the NMBSEMP was developed as part of the Stage 1 works. Knowledge of coastal processes, environmental values for the wider study area (e.g. water quality, fisheries, conservation values and landscape features), an understanding of the legislative framework and the impacts of protection strategies contribute to the management options promoted in the NMBSEMP.

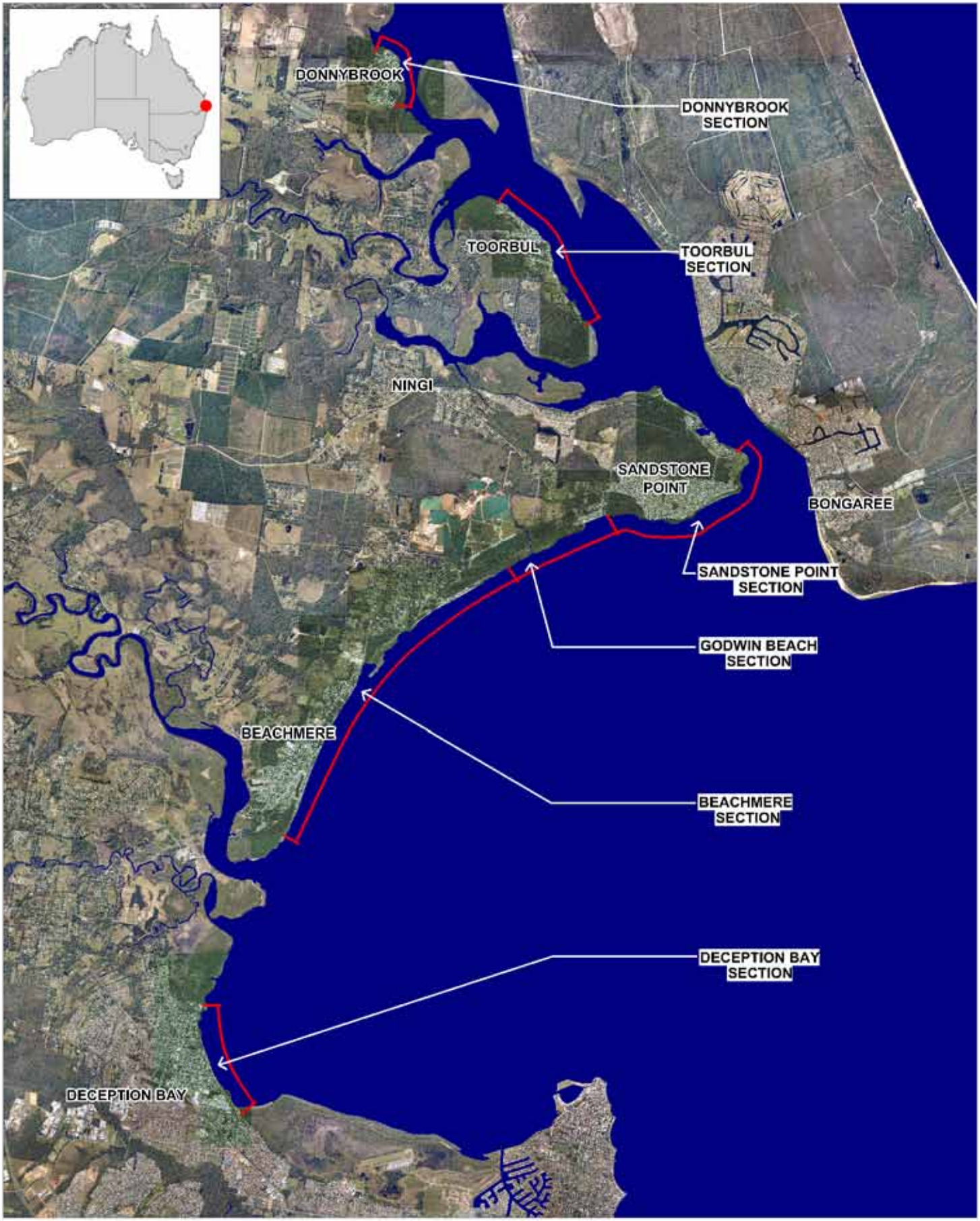
The need for and nature of options to deal with coastal erosion and eventually inundation in some areas is dependent on the level of threat and associated consequences. There are sections of the study area where there is no immediate or long-term erosion threat to existing assets, and areas where there are substantial assets that may become threatened within a given planning period. Management options for these areas vary accordingly. The study, in broad terms, considers two basic approaches to dealing with erosion. The first is to retreat from the area prone to erosion and allow the natural erosion processes to occur. In this manner the character and amenity of the beach can be retained as the shoreline recedes. The second approach is to hold or improve the present coastal alignment and protect land based assets through shoreline management actions.

1.1 Technical Working Group

A Technical Working Group (TWG) was established to assist in the development of the NMBSEMP. The TWG met to discuss and provide feedback on the project and includes representatives from:

- Queensland Department of Environment and Heritage Protection (DEHP);
- Queensland Department of Natural Resources and Mines (DNRM);
- Queensland Department of National Parks, Recreation, Sport and Racing (DNPRSR);
- Queensland Department of Agriculture, Fisheries and Forestry (DAFF);
- Queensland Department of Transport and Main Roads (DTMR); and
- Moreton Bay Regional Council (MBRC).

An inaugural meeting was held at the MBRC Administration Building on Wednesday, 13 March 2013 with additional meetings held approximately quarterly during the subsequent 12 month period.



Title:

Northern Moreton Bay SEMP Overall Study Area

Figure: 1-1

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0km 2.5 5

Approx. Scale

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1.2 Moreton Bay Regional Council Values

Moreton Bay Regional Council's (MBRC's) mission statement is outlined in the Moreton Bay Regional Council Corporate Plan 2012-2017:

> *"Our mission: We will serve the community to create a region of opportunity and a vibrant lifestyle, while focusing on excellence and sustainability."*

The community outcomes and targets listed in the Moreton Bay Region Community Plan 2011-2021 aim to guide Council's future strategic direction and approach to the delivery of services, achieving the overarching mission statement.

MBRC are committed to managing its waterways, increasing the health and resilience of waterways and coastal areas:

> *"Waterways are important, not only because of the intrinsic values of their diverse aquatic ecosystems, but also for their role in providing water as a commodity.*
>
> *Waterways also provide many recreational uses. In order to maintain these values and uses, we need to protect our streams and to maintain or enhance them to the best possible condition (or best possible ecological health).*
>
> *Moreton Bay Regional Council is committed to improve the region's environment, including streams, foreshores and coastal areas. As the region continues to experience high population growth, the pressure on our waterways will also increase.*
>
> *Past and future landuse activities, including residential, industrial, commercial and agricultural landuse, adversely affect water quality and waterway health.*
>
> *Concerted management and action by government, community and industry can prevent, reduce or reverse the decline in waterway health." (MBRC website, 1/6/2013).*

The NMBSEMP will form an important information source, assisting Council to meet their defined waterway health/resilience targets.

1.3 Broad Shoreline Management Considerations

All shoreline management options described in the NMBSEMP Stage 1 report have been considered in developing management strategies for the study area. The report herein describes the options that have been short-listed based on the specific environmental, social and economic values of each beach unit. The broad shoreline management considerations are summarised below and a more integrated description is given in the individual beach unit summaries in subsequent sections:

- Multiple management options are typically required to develop an appropriate management strategy for a beach unit. Ongoing maintenance and monitoring of the shoreline condition is an essential component of all promoted strategies.
- The public open space throughout the study area supports passive recreational activities including walking, swimming, cycling, picnicking, canoeing and boating. These aspects create the lifestyle and opportunities that attract residents and visitors to the area and maintenance of these values is essential.

- Throughout the study area there are examples of public open space adjoining private land at the shoreline. Coordinated management at these locations is required to ensure that any implemented shoreline erosion control strategy does not cause undesirable impact to neighbouring properties.
- On open coasts, shoreline nourishment is often the preferred management option for beach units showing signs of erosion. This option is currently restricted for the NMBSEMP due to the limited availability of suitable nourishment material and legislative constraints such as declared Fish Habitat Areas and Marine Parks that are applicable to possible sand sourcing and placement locations.
- There is significant opportunity to preserve and enhance coastal vegetation and mangrove communities that act to stabilise foreshore areas and reduce erosion potential. Ongoing management of these areas will help to maintain environmental values and minimise future shoreline maintenance requirements. The capital and maintenance costs associated with re-establishing vegetated shoreline are often significantly less than the implementation of hard structures. The proposed inspection of mangrove habitat in order to detect signs of degrading health may be undertaken by Council or community groups, ideally in conjunction with a coordinated mangrove monitoring program such as Mangrove Watch (information provided in Appendix A).
- Cost estimates for proposed capital works are provided and, where possible, have been based on Council's experience with similar works completed within the local government area in 2012/13, namely:
    - Bongaree precast concrete stepped seawall;
    - Albert and Myrtle Park (Beachmere) tightly packed rock revetment seawall; and
    - Beachmere Activity Centre loosely placed rock revetment seawall.

Examples of the above seawall types are shown in Figure 1-2 and Figure 1-3. The cost estimates are provided for planning purposes only and may not be representative of the actual costs incurred if and when the promoted strategy is implemented.

- For many shoreline sections the existing management strategy is maintaining values and protecting assets. For these areas, the promoted shoreline management strategy is to "maintain status quo" and the ongoing costs are typically assumed to be included in Council's routine maintenance budget.

Figure 1-2 Precast Concrete Stepped Seawall at Bongaree (Auzcon, 2014)

Figure 1-3 Rock Revetment Seawalls at Beachmere: Tightly Packed (left) and Loosely Placed (right)