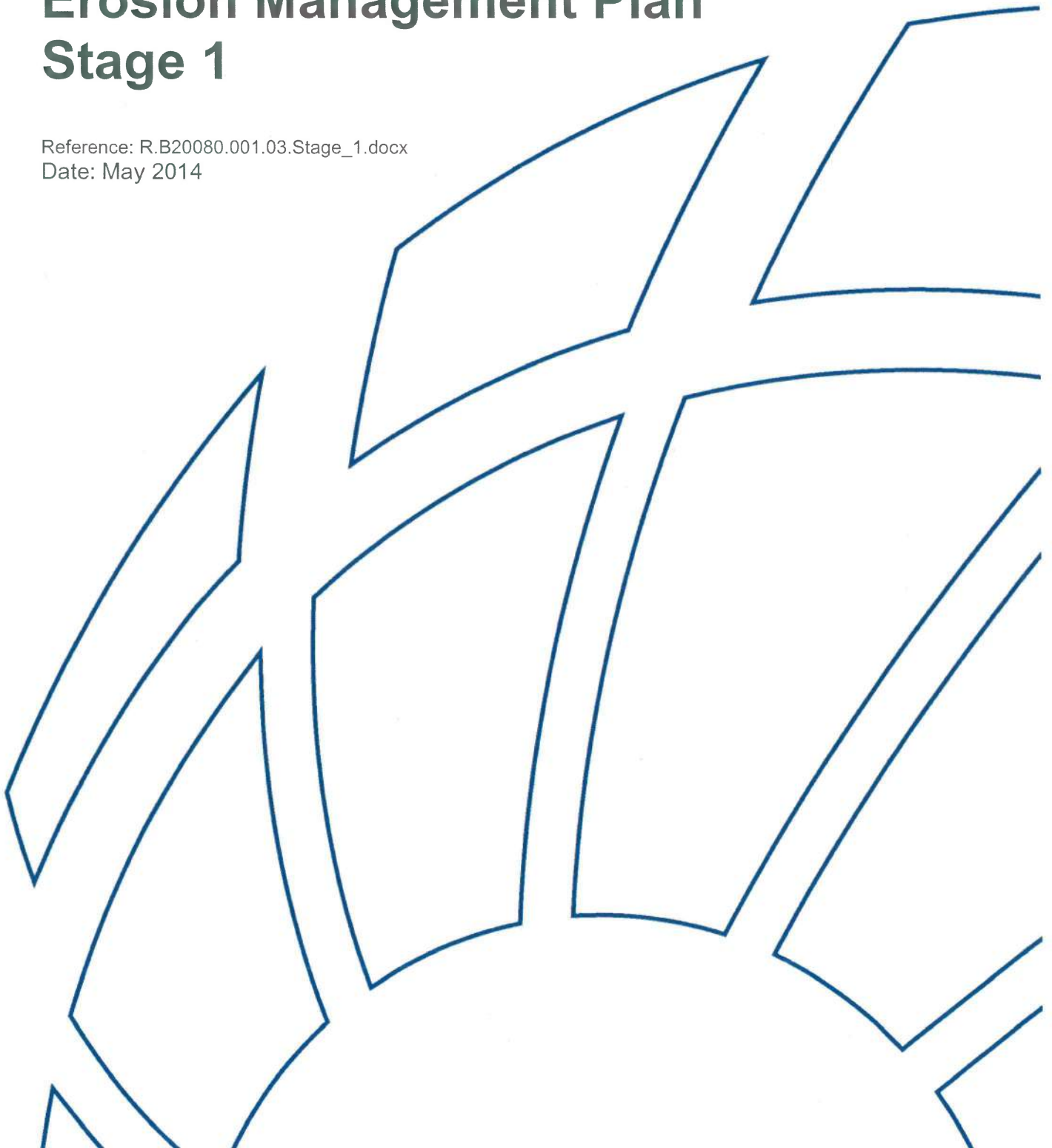




Northern Moreton Bay Shoreline Erosion Management Plan Stage 1

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Northern Moreton Bay Shoreline Erosion Management Plan Stage 1

Prepared for: Moreton Bay Regional Council

Prepared by: BMT WBM Pty Ltd (Member of the BMT group of companies)

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| <p>Synopsis: This report details the legislative framework, generic shoreline management options and dominant shoreline erosion processes for the Northern Moreton Bay SEMP study area.</p> | | |

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Executive Summary

Executive Summary

Moreton Bay Regional Council is committed to managing its waterways, increasing the health and resilience of waterways and coastal areas. Considered management is required to ensure social, ecological and economic values are protected, maintained and where possible enhanced. Sections 1 and 2 of this report provide details of the legislative framework that underpins coastal management decisions and offers advice and direction on shoreline erosion management relevant to the Northern Moreton Bay Shoreline Erosion Management Plan (NMBSEMP) study area.

The legislative review identified the following framework to be considered in the context of coastal shoreline management planning:

- Relevant State Legislation
 - *Coastal Protection and Management Act 1995*
- Coastal State Planning Instruments
 - State Policy for Coastal Management
 - Draft Coastal Protection State Planning Regulatory Provision
- Other Relevant State Legislation
 - *Sustainable Planning Act 2009*
 - *Environmental Protection Act 1994*
 - *Vegetation Management Act 1999*
 - *Fisheries Act 1994*
 - *Nature Conservation Act 1992*
 - *Marine Parks Act 2004*
 - *Land Act 1994 2-37*
 - *Queensland Heritage Act 2002*
 - *Aboriginal Cultural Heritage Act 2003*
- Local Government Plans
 - *Caboolture Shire Plan 2005*
- Relevant Commonwealth Legislation
 - *Native Title Act 1993*
 - *Environment Protection and Biodiversity Conservation Act 2009*

The legislation, regulations and policies included in this framework are current as at the time of writing. Further consideration will need to be given to planning and legislative requirements when implementing options promoted in this study. The content of this report is not considered a comprehensive list of all applicable statutory instruments but rather a starting point for determining considerations at the time of approval and implementation of a preferred management strategy.

Executive Summary

The report also reviews typical shoreline erosion management options to be considered when developing shoreline management strategies. There are two basic strategic approaches for dealing with shoreline erosion problems, namely:

- Undertake works to hold or improve the present shoreline alignment, thereby preventing future recession of the beach; or
- Allow the shoreline to recede in such a way that the natural processes would maintain the beach characteristics and amenity, but at the expense of existing land and infrastructure.

The report presents numerous alternative shoreline erosion management options within these two categories, including:

- Do nothing/maintain status quo;
- Planned retreat;
- Upper beach reprofiling and dune management;
- Beach nourishment;
- Seawalls;
- Groynes;
- Offshore breakwaters;
- Submerged artificial reefs; and
- Channel relocation.

General materials sourcing/cost and environmental issues associated with each option are introduced and discussed, noting that specific environment assessments for a given shoreline may be required as part of an option approval process. In practice, the most appropriate management strategy typically combines a suite of options.

Sections 4, 5, 6 and 7 address coastal processes, causes of erosion, and methodologies for calculating current and future erosion risks relevant to the study area. A range of coastal processes assessments is provided and is intended to guide Council's shoreline management decisions. The assessment methods include:

- Consideration of the northern Moreton Bay geological framework.
- A review of previous relevant studies.
- Analysis of historical photography.
- Analysis of historical data including:
 - Upper beach and nearshore surveys;
 - Offshore bathymetry surveys;
 - Recorded prevailing and extreme wave conditions; and
 - Recorded tide and storm tide events.

Executive Summary

- Numerical modelling of contemporary coastal processes, including:
 - Prevailing wave conditions;
 - Design wave conditions;
 - Tidal hydrodynamics;
 - Total sediment transport potentials; and
 - Storm erosion potentials.
- Climate change and sea level rise considerations.

With consideration to shoreline erosion management, the assessments show that:

- Existing private and public assets are presently well within an estimated calculated erosion prone area. Many of these areas are currently protected by terminal structures and therefore the predicted erosion potential is not likely to be realised. Ongoing protection of these assets throughout the planning period will require strategic management and adaptation to potentially changing environments. Consideration should be given to situating new infrastructure within the identified erosion prone area.
- The erosion threat associated with sea level rise represents the most significant component in establishing the erosion prone areas. Any change to the recommended sea level rise projections adopted for shoreline erosion risk assessments will influence the predicted erosion prone area widths. The Queensland Government is likely to revise their accepted sea level rise projections in line with future IPCC projections (Queensland Government, 2013).
- Shoreline erosion associated short term storm events presents and immediate risk to a number of public and private lots throughout the study area. This will be addressed as part of Stage 2 of the NMBSEMP and management options will be developed for Council's consideration.
- The threat of short term erosion associated with storms is greatest at Beachmere where a number of private and public lots are situated at the shoreline. It is expected that unprotected sections of shoreline and existing shoreline structures will experience increasing erosion pressure throughout the 50-year planning period.
- Short term erosion pressure is also relatively high at Toorbul and Donnybrook however these areas typically have a buffer (foreshore and road) between private assets and the shoreline. This buffer means the risk to existing assets is relatively low and allows some time to develop an appropriate long term management approach.

The summary of the fundamental shoreline processes affecting the study area provided in this report should be used as a starting point for coastal management decision making. More detailed assessments of, for example, shoreline response to a preferred management strategy may be required as part of an approvals processes.

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1 Introduction

The Northern Moreton Bay Shoreline Erosion Management Plan (NMBSEMP) is being 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 coastline and includes shoreline 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 shown in Figure 1-1 and details of each beach unit in Figure 1-2 through to Figure 1-7.

This report details the legislative framework, generic shoreline management considerations and coastal processes applicable to each beach unit. An additional report detailing specific recommendations for each beach unit will be developed as part of the Stage 2 works.

The study generally looks to a planning timeframe of 50 years with a review recommended every 5-10 years, taking into account natural processes and community expectations for the coastal zone. As a guide, potential erosion distances (widths) have been calculated along the coast. These estimates are intended to guide and inform Council's coastal management activities with the aim of protecting and enhancing the shoreline and associated assets. Ultimately, aspects of the study will include:

- Identification of short- and long-term erosion hazards (including climate change impacts);
- Identification of values where relevant (environmental, social and economic);
- Definition of areas of development to be protected and areas with sufficient buffer to be left unprotected;
- Specific protection structures, or upgrades of existing structures, in vulnerable areas;
- Recommended shoreline erosion management options for the study area; and
- Prioritisation of the implementation actions.

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 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 through coastal management works.

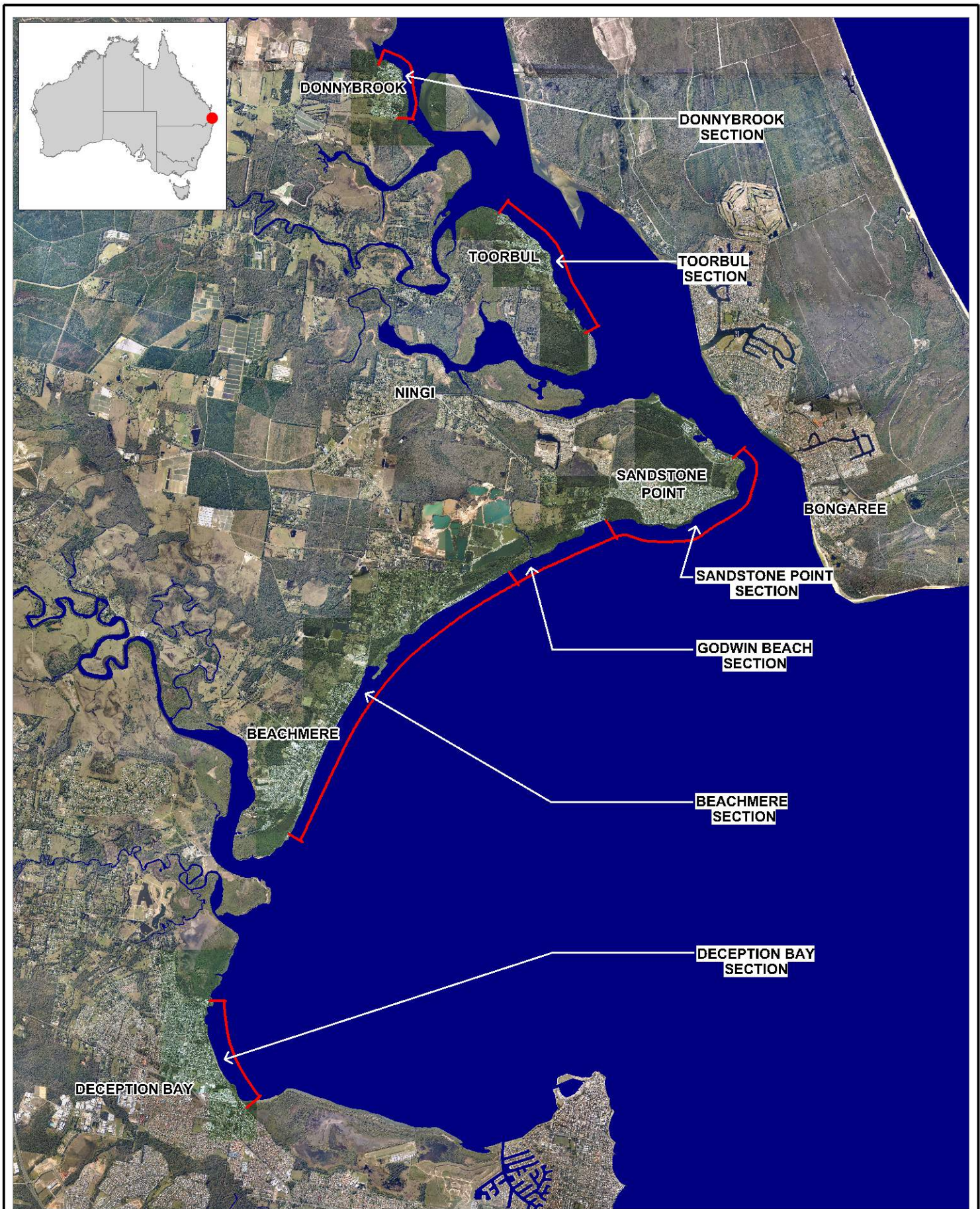
Introduction

1.1 Technical Working Group

A Technical Working Group (TWG) was established to assist in the development of the NMBSEMP. The TWG meets 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);
- Maritime Safety Queensland (MSQ); and
- Moreton Bay Regional Council (MBRC).

An inaugural meeting was held at the MBRC Administration Building on Wednesday, 13 March 2013 with subsequent meeting to be held approximately quarterly.



Title:
Northern Moreton Bay SEMP Overall Study Area

Figure:
1-1

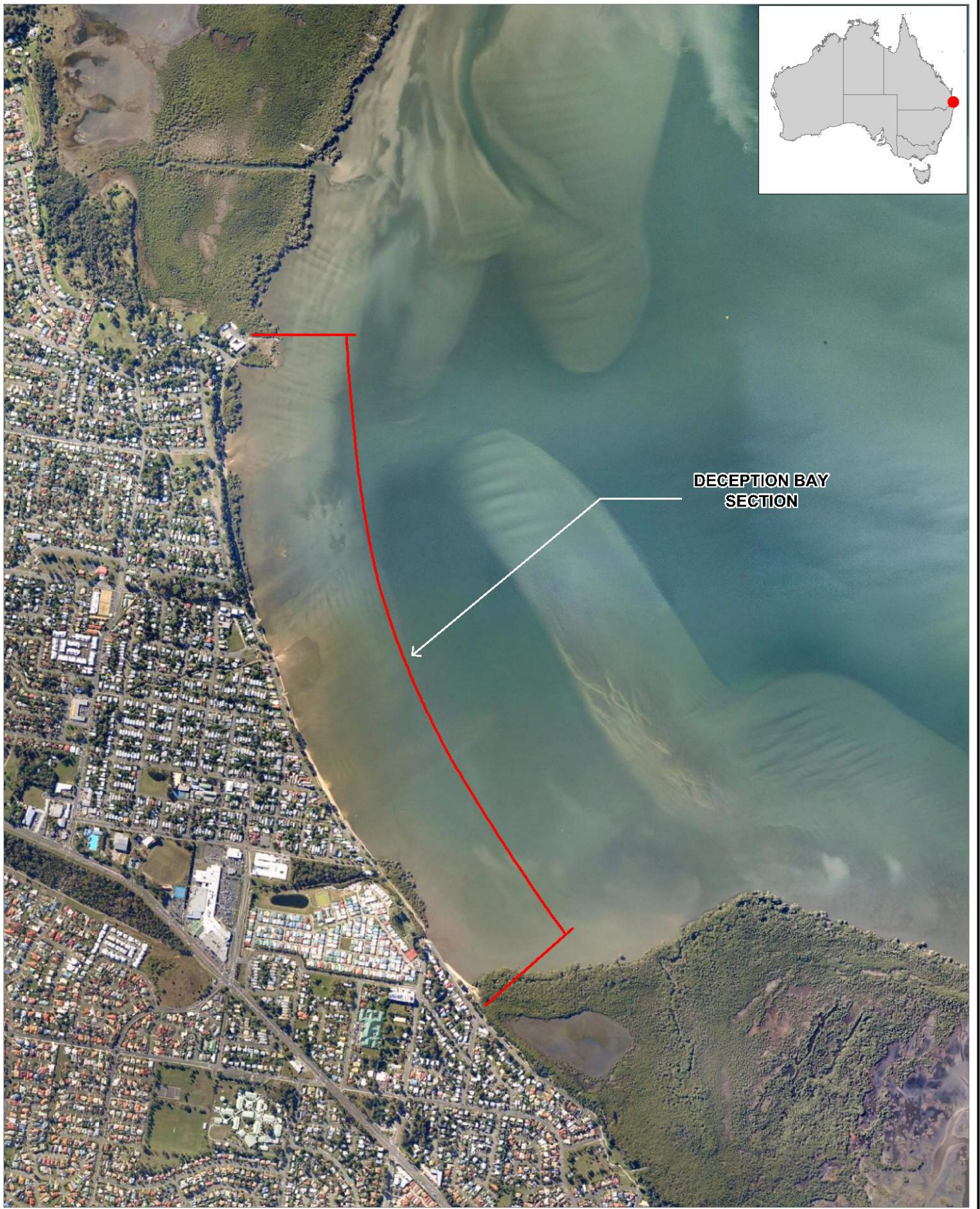
Rev:
A

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0km 2.5 5
 Approx. Scale



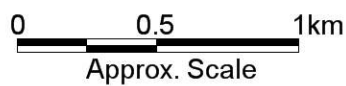


Title:
Deception Bay Beach Unit

Figure:
1-2

Rev:
A

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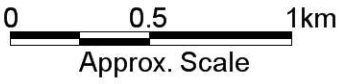


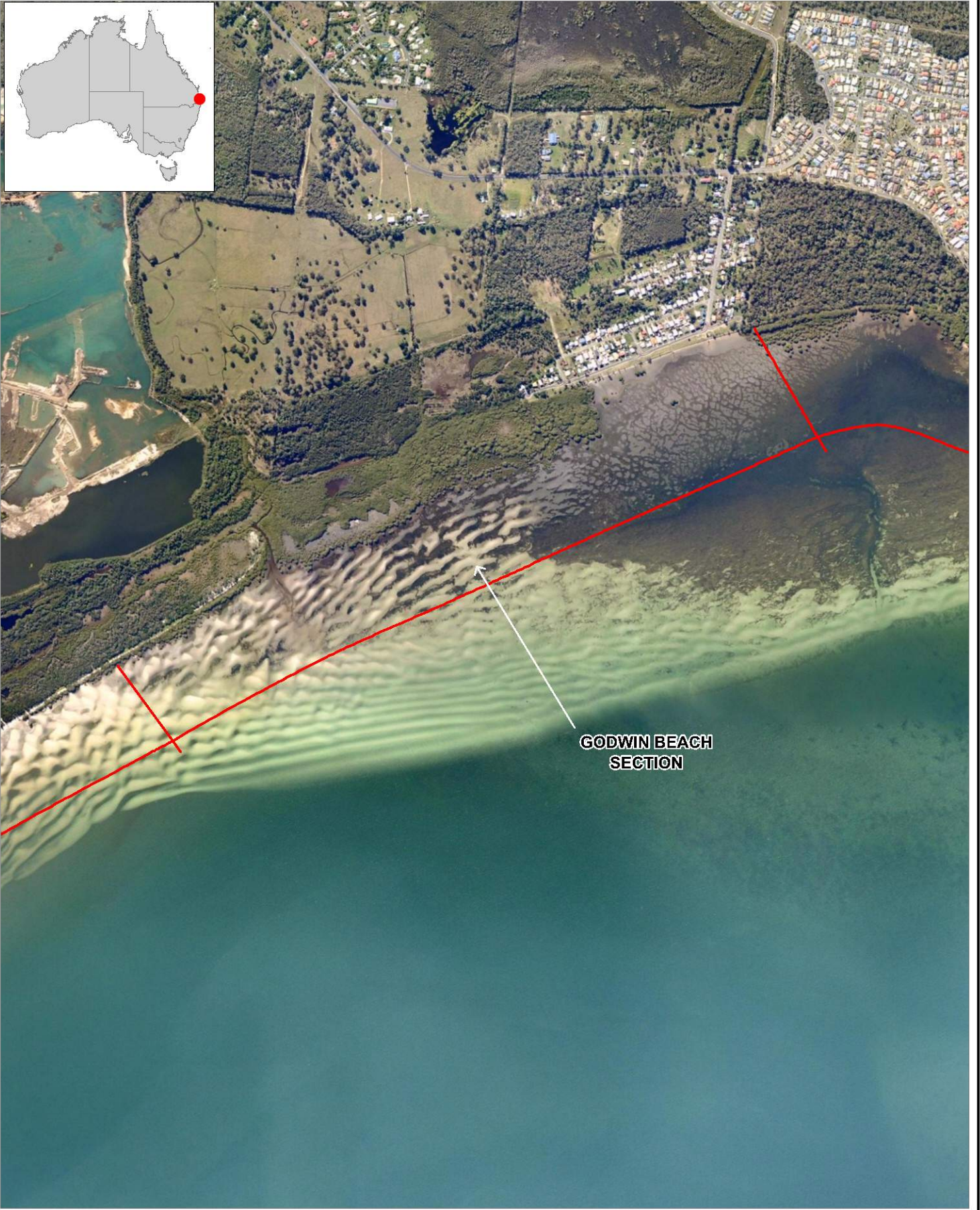
Title:
Beachmere Beach Unit

Figure:
1-3

Rev:
A

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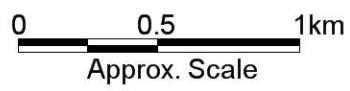


Title:
Godwin Beach Beach Unit

Figure:
1-4

Rev:
A

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Title:
Sandstone Point Beach Unit

| | |
|-----------------------|-------------------|
| Figure: 1-5 | Rev.: A |
|-----------------------|-------------------|

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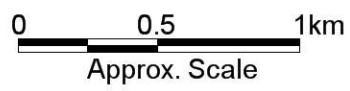


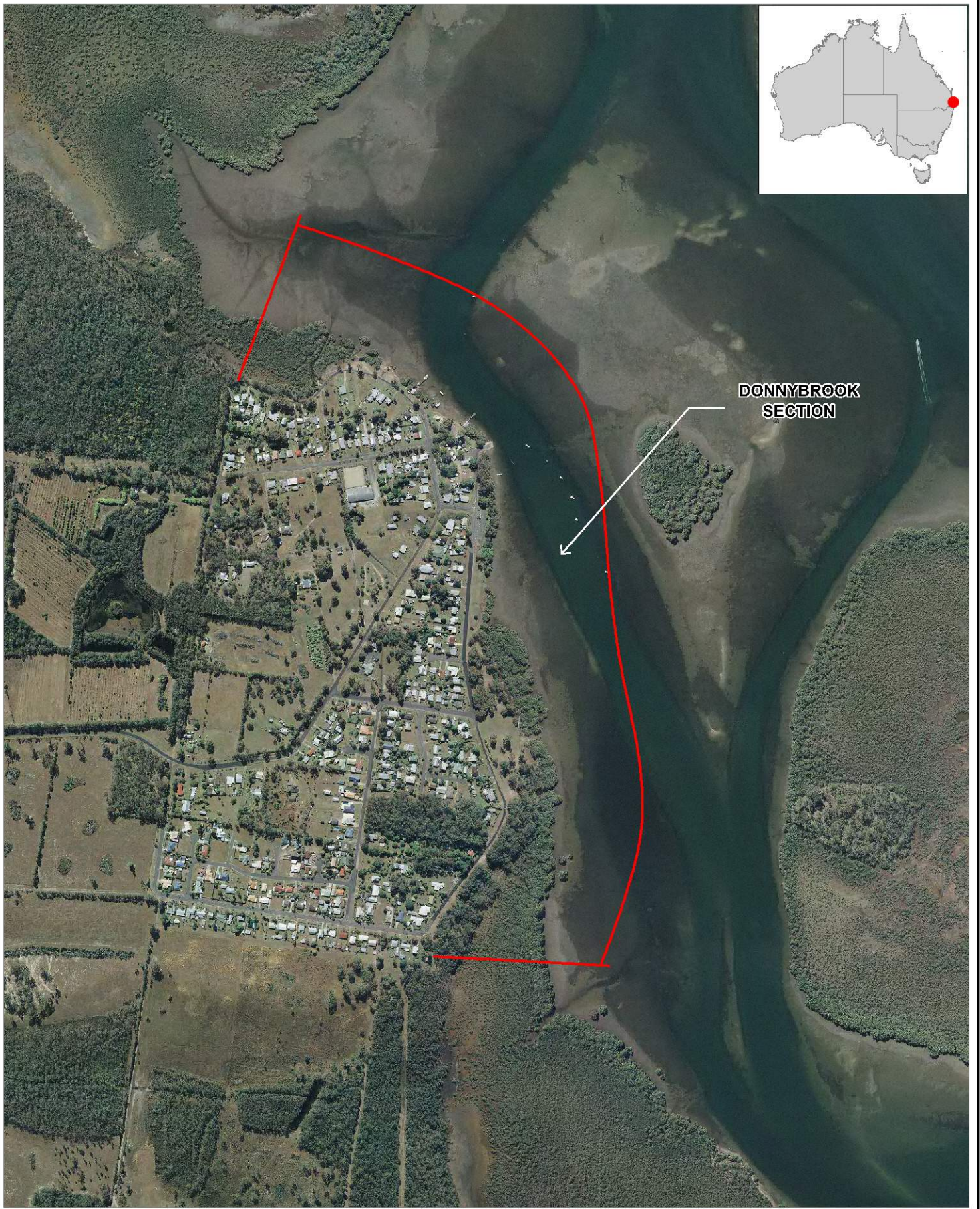


Title:
Toorbul Beach Unit

| | |
|-----------------------|------------------|
| Figure: 1-6 | Rev: A |
|-----------------------|------------------|

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Title:
Donnybrook Beach Unit

Figure:
1-7

Rev:
A

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Introduction

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.