



Northern Moreton Bay Shoreline Erosion Management Plan

Summary Report

Northern Moreton Bay Study Area

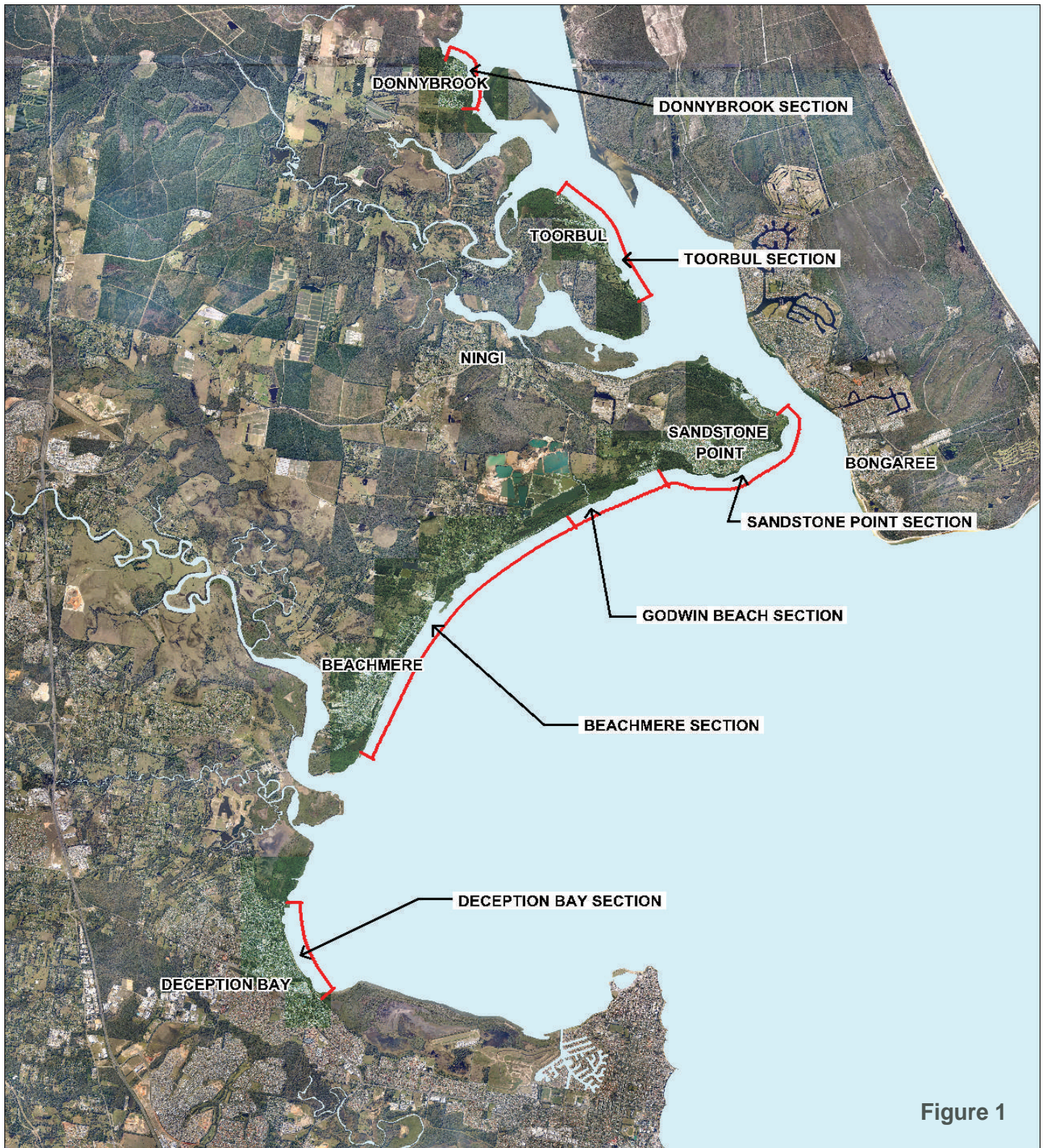


Figure 1

Northern Moreton Bay Shoreline Erosion Management Plan Summary Report

The Northern Moreton Bay Shoreline Erosion Management Plan (NMBSEMP) has been undertaken in two distinct stages:

Stage 1 - The legislative framework, generic shoreline management considerations and coastal processes

Stage 2 – Promoted shoreline management strategies

The 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 coastline and includes shoreline communities at:

- Deception Bay

- Beachmere
- Godwin Beach
- Sandstone Point
- Toorbul and
- Donnybrook.

These shoreline communities are indicated in Figure 1.

The study generally looks to a planning timeframe of 50 years with a review recommended every 5-10 years. Key aspects of the study 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, an understanding of the legislative framework and the impacts of protection strategies contribute to the management options promoted in the NMBSEMP.



Undeveloped shoreline



Developed shoreline with rock seawall

Shoreline Processes and Storm Erosion

Storm erosion occurs when increased wave heights and water levels result in the erosion of material from the upper shoreline.

On undeveloped open coasts, the eroded material is taken offshore where it is deposited as a sand bar located in the vicinity of the wave break area. After the storm event the sediment is slowly transported onshore, often over many months or several years, rebuilding the beach.



Shoreline lowering caused by storm erosion

Shorelines with hard structures, such as seawalls, resist landward recession and therefore the erosion pressure is re-directed downwards. This often causes the shoreline in front of the structure to lower.

Assessment of shoreline processes, causes of erosion, and future erosion risks completed as part of the NMBSEMP suggest a number of existing private and public assets are presently well within the calculated erosion prone area.

Many of these areas are currently protected by hard structures, however, in some cases the design life of the structure remains uncertain. Ongoing protection of these land assets will require strategic management and adaptation to potentially changing environments. Situating new infrastructure within the identified erosion prone area should be avoided where possible.



Legislative Framework and Technical Working Group

Proposed management options recommended within the NMBSEMP must be consistent with the local government planning scheme and comply with all relevant legislation (Commonwealth, State and local) and coastal and environmental planning instruments and policies.

Legislation and policies considered in the NMBSEMP require consideration of issues including, but not limited to:

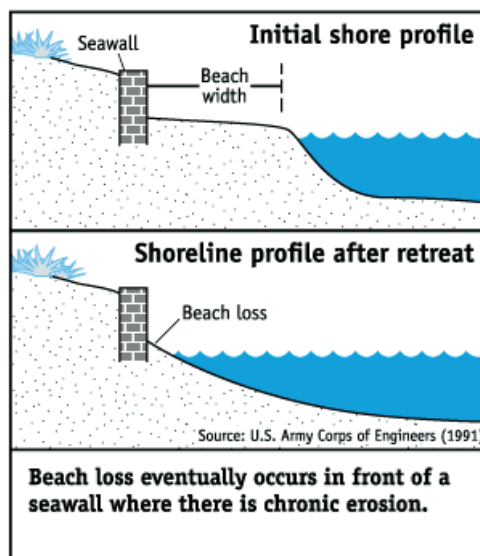
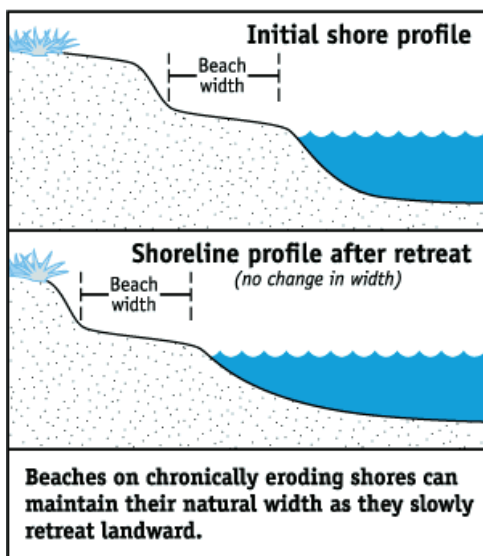
- The use of coastal structures for property protection;
- Protection of species listed under State and Commonwealth legislation and conservation of their habitat;
- Management of shoreline erosion in a manner that is not detrimental to the adjacent Moreton Bay Marine Park and Ramsar site; and
- The maintenance of local biodiversity.

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

- Queensland Department of Environment and Heritage Protection;
- Queensland Department of Natural Resources and Mines;
- Queensland Department of National Parks, Recreation, Sport and Racing;
- Queensland Department of Agriculture, Fisheries and Forestry;
- Queensland Department of Transport and Main Roads; and
- Moreton Bay Regional Council.



Shoreline Hardening and Beach Loss



Deception Bay Shoreline Types and Management Strategy

Shoreline types within the Deception Bay study area are indicated in Figure 2. The beach unit is characterised by open public areas protected by seawalls. The area has significant social and recreational value associated with coastal pathways, landscaped foreshore areas, picnic facilities and Council controlled boat ramps. Environmental values are also evident, with small mangrove communities within the beach unit and the offshore areas a declared Habitat Protection Zone. Established mangrove habitats are

located to the immediate north and south of the beach unit and form part of a declared Fish Habitat Area. Significant shorebird habitats are also located to the north and south of the study area.

The existing management strategy throughout the Deception Bay study area is maintaining a valuable open public space. Most shoreline structures are in good condition and do not require significant upgrade at this time. Preservation of mangroves

and foreshore vegetation is considered an important aspect of ongoing shoreline management. The mangrove communities throughout the study area act to dissipate wave energy offshore before reaching the shoreline, helping to minimise undesirable erosion at the shoreline and damage to structures.



Stepped seawall



Stepped seawall with mangrove buffer



Vegetated shoreline

General Strategy

- Maintain status quo including ongoing foreshore and vegetation management
- Inspect seawall and foreshore condition following severe storm events
- Perform maintenance as required

Specific Management Actions

- Upgrade Section 4 seawall and setback/realign with existing stepped seawall to the north
- Explore options to intercept and reuse sand that accumulates at the Wallin Ave storm water outlet



Figure 2

Beachmere Shoreline Types and Management Strategy

Council controlled land and shoreline types within the Beachmere study area are indicated in Figure 3. South of the Beachmere Conservation Park, private lots extend to the shoreline with public access generally restricted to the seaward end of road reserves. Small pockets of additional Council controlled shoreline are located at the Beachmere Activity Centre and the Albert and Myrtle Lehman Park. Road reserve and wide tidal flats along the shoreline to the north of the Beachmere Conservation Park buffers the adjacent private lots from direct exposure to coastal processes. The

immediate offshore area is a declared Habitat Protection Zone, with the waters further offshore a designated Marine National Park Zone.

Moving south from the Albert and Myrtle Lehman Park to the Caboolture River entrance, the beach progressively narrows and the shoreline is armoured with seawalls. The south-westerly directed longshore sediment transport along this section has gradually lowered the beach which now becomes completely submerged at high tide. Over time, the sediment eroded from this location has been deposited in a

series of sand spits adjacent to the north bank of the Caboolture River.

Due to ongoing erosion pressure and maintenance issues associated with existing structures in poor condition, Council has recently upgraded seawalls at the Beachmere Activity Centre and Albert and Myrtle Lehman Park. Conditional approval for seawall rehabilitation works at southern extent of Biggs Ave has also been gained.



Tidal flats and vegetated Shoreline (Section 2)



Rock seawall construction at Beachmere Activity Centre



Concrete seawall in poor condition (Section 10)

General Strategy

- Maintain and/or enhance existing foreshore and shoreline vegetation
- Formalise Council policy and obligation regarding shoreline management in areas adjacent to private assets

Specific Management Actions

- Upgrade Section 10 seawall with a rock seawall design that better dissipates wave energy during severe storm conditions
- Community awareness program providing information on the maintenance of dune and shoreline vegetation on private land

- Distribute information to land owners regarding appropriate shoreline erosion management on private land, including the preferred conceptual design and alignment of shoreline structures



Figure 3

Godwin Beach Shoreline Types and Management Strategy

Council controlled land and shoreline types within the Godwin Beach study area are indicated in Figure 4. The beach unit is within a declared Conservation Park Zone and the waters offshore are part of a National Marine Park Zone with significant seagrass beds. A small section of Council controlled road reserve is located at the southern extent of the study area (north of the Bayside Drive community). At present, there is limited access to this location and no significant built assets.

The Godwin Beach community is located at the northern extent of the

beach unit. The foreshore area stretching along The Esplanade is protected by a sloped concrete seawall with signs of previous repair works. A number of stormwater outlets that extend across the beach are having a minor “groyne-like” effect with sand accumulation on their up drift (northern) side. A small pocket of identified shorebird habitat is located within the intertidal zone toward the western end of the foreshore.

The sloping seawall that protects the Godwin Beach community foreshore is in a fair condition. While no major

assets or values appear to be under immediate threat, this seawall may require upgrade within a 10 year period (to be confirmed through a structural integrity assessment). In the interim, vegetation and landscaping of the foreshore area could be undertaken to enhance social and environmental values. Long term opportunities for the Godwin Beach open space could be explored through an Open Space Master Plan.



Sloping concrete seawall and narrow beach (Section 1)



Stormwater outlet with minor sand accumulation on northern side



Dense mangrove community (Section 2)

General Strategy

- Maintain healthy mangrove communities where this vegetation type is currently established (Section 2)
- Open Space Master Plan to identify opportunities to enhance social and environmental values

Specific Management Actions

- Structural integrity assessment of Section 1 sloping concrete seawall and drainage infrastructure

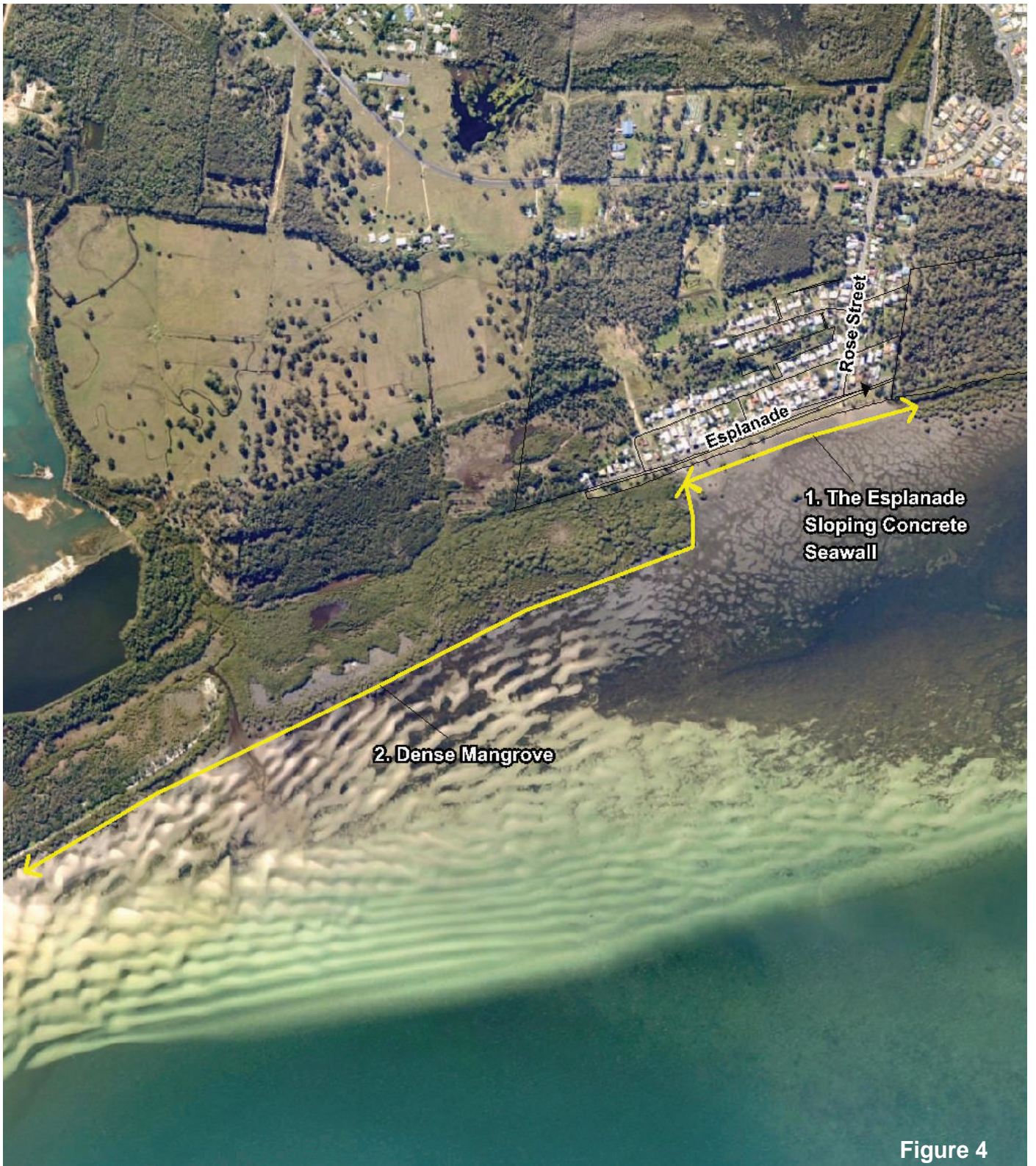


Figure 4

Sandstone Point Shoreline Types and Management Strategy

Council controlled land and shoreline types within the Sandstone Point study area are indicated in Figure 5. The beach unit is within a declared Conservation Park Zone with significant seagrass beds located offshore and identified shorebird habitat within the intertidal areas. The majority of the shoreline is characterised as open space with management of the public areas outlined in the Sandstone Point Foreshore Parkland Land Management. Public access to the shoreline is restricted in most areas due to dense mangrove, natural topography and/or privately owned

land. One main access point to a 600m stretch of foreshore exists at Oxley Place, with additional access available via narrow easements between privately owned lots. Most of the Sandstone Point community is elevated and therefore the erosion and inundation threat to private land due to coastal processes is considered negligible.

The priority shoreline management action is to maintain the natural sandy beach and grassy foreshore area accessed via Oxley Place. This area has significant social and recreational value and provides

ample buffer to coastal erosion processes. Shoreline management requirements should be considered as part of future development proposals to ensure any new assets remain outside the erosion prone area.

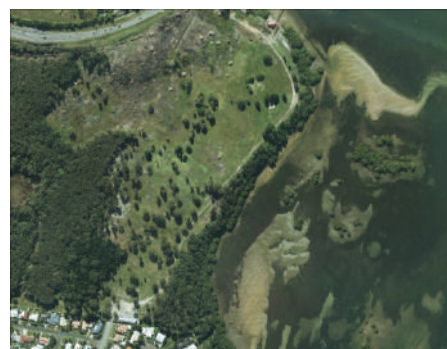
Access to the coastal trail with an identified safety hazard associated with a potential landslip should be formally closed. Site inspection of the Avoca Esplanade access point suggests this trail may still be used by some community members.



Sandy Beach with foreshore vegetation (Section 2)



Avoca Esplanade shoreline access



Undeveloped private lot (Section 1)

General Strategy

- Maintain natural sand beach and vegetated foreshore at public access locations
- Maintain healthy mangrove communities where this vegetation type is currently established (Section 3)

Specific Management Actions

- Formally close access to coastal trail where a safety hazard exists



Figure 5

Toorbul Shoreline Types and Management Strategy

Council controlled land and shoreline types within the Toorbul study area are indicated in Figure 6. A range of seawalls of varying design and condition exist along The Esplanade shoreline. The majority of the foreshore is open space and includes facilities to support recreational and social values including car parking, boat ramps, public toilets, picnic facilities and pathways. A small section of road reserve (car and boat trailer parking) forms the shoreline boundary to the immediate south of the public boat ramp. The beach unit is within a declared Conservation Park Zone and Fish Habitat Area. Three distinct shorebird habitat areas have been identified within the Toorbul study area.

The sand spit at the northern extent of the study area and sand accumulation observed at the southern side of the public boat ramp suggest a net northerly sand transport direction.



Repaired stepped concrete seawall (Section 5)

The narrow sandy beaches at these locations present relatively safe water access.

Council has identified a need to upgrade a section of seawall 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 development application for the proposed structure was submitted in early 2014

Seawalls to the north of the main public boat ramp have either undergone recent repair or are in a relatively poor condition. There is also a general concern that the geometries of the structures present safety hazards. It is anticipated that



Stone and concrete seawall identified for upgrade (Section 9)

approximately 500m of seawall will need to be upgraded within a 10 year timeframe.

Seawalls in the vicinity of the public boat ramp show some signs of weathering but are generally in a fair condition. While the structures appear structurally sound, they should continue to be monitored and inspected following severe storm conditions.

The sloping concrete seawall south of the Second Avenue is in a poor condition in some locations. Large cracks and subsequent slumping of the structure present a trip hazard and suggest a significant loss of sediment from behind the rigid structure. While the immediate risk to assets appears low, planning to upgrade this structure should commence.



Sloping concrete seawall slumping (Section 10)

General Strategy

- Rehabilitation and vegetation of shorelines without existing structures
- Structural assessment of all existing structures to inform repair and/or upgrade prioritisation
- Commence planning for significant seawall upgrade works within a 10 year timeframe

Specific Management Actions

- Upgrade and realign Section 9 unapproved seawall



Figure 6

Donnybrook Shoreline Types and Management Strategy

Council controlled land and shoreline types within the Donnybrook study area are indicated in Figure 7. The study area is characterised by open public space with grassy foreshore and small erosion scarp in most locations. The area primarily supports recreational boating and fishing and includes a Council-owned Caravan Park. The foreshore includes playground equipment and picnic facilities. A small shorebird habitat is located at the northern extent of the study area.

The shoreline is generally free of formalised structures however rock, timber and/or concrete have been used in the northern half of the study area to resist shoreline erosion at the Caravan Park foreshore. The original placement of these materials many

years ago was unlikely to have been part of an approved shoreline management strategy. 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. The relocation (setback) of the playground equipment will ensure it remains outside of the erosion prone area.

North of the Caravan Park the foreshore buffer narrows to within 10m of the road. Mangroves provide shelter at most locations and there does not appear to be an immediate erosion threat to the sealed road or other assets. In some locations, shoreline stability could be improved though foreshore landscaping and revegetation.

Dense mangrove communities exist south of the public boat ramp and provide some buffer to shoreline erosion. Additional shoreline stabilisation with vegetation is recommended along the Esplanade South shoreline and could be undertaken in conjunction with foreshore works recommended as part of the Open Space Master Plan for Donnybrook.

There are two small jetties within the study area understood to be privately owned. Both structures are aging and will require ongoing maintenance and repair to remain safe and usable.



Grassy shoreline and playground equipment (Section 2)



Loosely placed rock and timber (Section 3)



Loose rock and erosion scarp (Section 4)

General Strategy

- Removal of inappropriate materials used for shoreline erosion control
- Rehabilitation and vegetation of shorelines without existing structures
- Shoreline re-profiling and stabilisation to be carried out in conjunction with foreshore works recommended as part of the Open Space Master Plan for Donnybrook

Specific Management Actions

- Relocation of playground equipment to a location outside of the erosion prone area



Figure 7

BMT WBM has a proven record in addressing today's engineering and environmental issues.

We aim to continue to enhance our services, capabilities and areas of application to meet the community's future development and environmental protection needs.



1 Number of BMT WBM offices in region

● BMT offices