

3 Beachmere

3.1 Council Controlled Areas and Current Condition

Council controlled land and shoreline types within the Beachmere study area are indicated in Figure 3-1. 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 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 declared Marine National Park Zone (refer Stage 1 report, Figure 2-4).

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 (refer Figure 3-2a and Figure 3-2b). 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 (refer Stage 1 report, Section 5.5.2).

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

Construction of a rubble seawall at the Beachmere Activity Centre was completed in 2013 and is shown in Figure 3-3. Shoreline works at Albert and Myrtle Lehman Park were completed in early 2014 with a revetment seawall constructed following the necessary upgrade of the stormwater culverts (refer Figure 3-3b). At both locations the upgraded structures are intended to enhance social values and public safety, protect Council assets and reduce ongoing maintenance requirements.

Conditional approval for seawall rehabilitation works at the southern extent of Biggs Avenue (previously Huntley Street) has been granted. The existing seawall (stone pitched with shotcrete repair, refer Figure 3-2a) is in poor condition and the impermeable structure enhances seawater overtopping associated with extreme storm events. Storm surge and wave conditions generated by ex-TC Oswald (January 2013) caused geotechnical failure (sink hole damage) behind the crest of the existing structure and contributed to flooding of the adjacent areas. The approved seawall design is a permeable structure intended to cause greater wave and current energy dissipation during extreme events and therefore reduce seawater overtopping.

North of Albert and Myrtle Lehman Park the narrow sandy beach buffer gradually widens. Public beach access is available at the seaward end of road reserves between Albert and Myrtle Lehman Park and the Beachmere Conservation Park. These locations represent small sections (approximately 20m width) of Council controlled shoreline between private lots. Compared to the southern shoreline, the erosion threat to both public and private assets appears relatively low and no formal shoreline erosion management strategies have been implemented. Stormwater culverts

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(refer Figure 3-2c) located at Prince Street and Phillip Street do not appear to be significantly influencing the adjacent shoreline alignment.

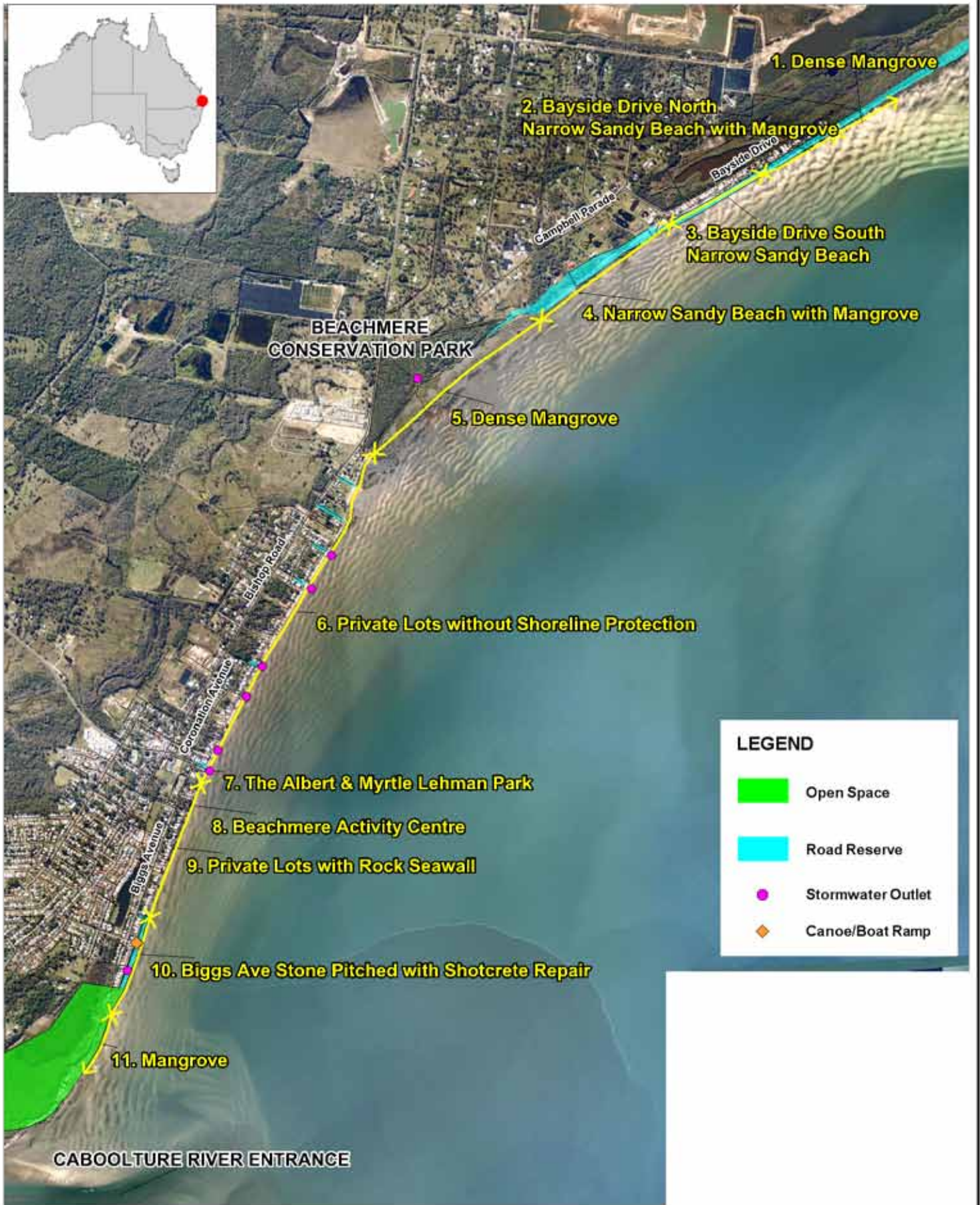
North of the Beachmere Conservation Park a road reserve is located between the shoreline and private lots. The nearshore area is characterised by widening tidal flats which to act to dissipate wave energy offshore and therefore reduce energy and sediment transport potential at the shoreline. Private lots along the southern half of Bayside Drive have exposed shorelines however the erosion threat appears relatively low. A significant vegetation buffer, on both public and private land (refer Figure 3-2d), is presently providing adequate protection to privates lots toward the northern extent of Bayside Drive.

3.1.1 Shoreline Vegetation

Where natural foreshore vegetation occurs within the Beachmere study area, it is comprised of either:

- Mixed coastal dune vegetation on sandy dune areas, with varying degrees of degradation; and
- Mangroves dominated by *Avicennia marina* in the vicinity of the Caboolture River mouth, Beachmere Conservation Park, and towards Godwin Beach.

For much of the shoreline directly fronted by private property, the shoreline consists of varying types on constructed seawalls and foreshore vegetation is limited to mown grass and some trees (e.g. *Casuarina* species). Private gardens are also present close to the shoreline on some properties.



Title:
Beachmere Beach Unit - Council Controlled Shoreline Areas and Current Condition

Figure:
3-1

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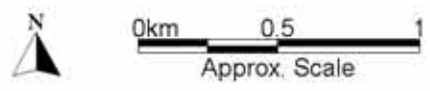




Figure 3-2 Example Shoreline Condition throughout Beachmere Study Area: a) Stone Pitched Seawall with Shotcrete Repair; b) Loosely Placed (foreground) and Tightly Packed (background) Rock Seawalls; c) Storm Water Culvert and Low Vegetation Shoreline (background); d) Beach with Dense Coastal Vegetation



Figure 3-3 Recent Upgrades to Council Controlled Areas: a) Beachmere Activity Centre Rubble Seawall and Beach Access; b) Albert and Myrtle Lehman Park Culvert Upgrade

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3.2 Shoreline Management Approaches Considered

All generic management options described in the Stage 1 report (refer Chapter 3) have been considered for the Beachmere shoreline and are summarised in Table 3-1. Through assessment of existing assets and the values associated with the Beachmere study area the following options were shortlisted:

- Maintain Status Quo;
- Shoreline Nourishment;
- Seawall; and
- Mangrove and Coastal Vegetation Management.

Table 3-1 Beachmere Shoreline Management Options Assessment

Generic Options	Advantages	Disadvantages	Comments
1. Maintain Status Quo	(a) No additional capital cost (part of routine maintenance)	a) Potential loss of foreshore amenity and risk to public safety b) Ongoing maintenance commitment	Not suitable for locations under immediate erosion threat (e.g. Biggs Ave)
2. Planned Retreat	a) Mitigates the immediate shoreline erosion problem b) Shoreline can respond naturally to erosion events	a) Loss of public and private land with significant value b) Requires commitment from all land owners	Difficult to implement in locations with combined public and private assets at the shoreline
3. Shoreline Nourishment	a) Maintains beach amenity	a) High capital and maintenance costs, requires ongoing commitment	Material potentially available within the lower Caboolture River navigation channels; Unlikely to significantly mitigate erosion pressure or overtopping during storm events
4. Seawall	a) Provide effective erosion control b) Provide direct property protection	a) Decreased beach amenity and beach lowering during extreme events b) High capital and maintenance cost	Proposed upgrade of existing seawall with greater energy dissipating design (Biggs Ave)

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Generic Options	Advantages	Disadvantages	Comments
5. Groyne	a) Maintains local shoreline by increasing width of beach	a) Reduces sediment supply to downdrift locations b) High visual impact	Interruption to littoral drift needs to be mitigated by beach nourishment to avoid undesirable impacts at downdrift locations
6. Offshore Breakwaters or Submerged Reef	a) Dissipate wave energy during severe events	a) High capital and maintenance cost b) Significant design challenges and uncertainty	Not likely to be effective due to existing wide tidal flats
7. Mangrove and Coastal Vegetation Management	a) Maintains natural buffer to shoreline erosion; critical to dune stabilisation along sandy shores b) Reduces energy reaching the shoreline during storm events	a) Ongoing commitment b) Difficult to establish new mangrove communities	Long term, mangrove communities unable to migrate landward in response to sea level rise may be permanently lost (Bayside Drive)

3.3 Proposed Management Strategy

Recent seawall and culvert upgrades at Albert and Myrtle Lehman Park and the Beachmere Activity Centre following damage caused by ex-TC Oswald in 2013 has addressed two immediate shoreline management issues within the study area. The shoreline and foreshore assets at these locations are now protected by rock seawalls. These structures are more consistent with seawalls at neighbouring private lots and have significantly reduced the potential for erosion of public land.

Council has also identified the need to upgrade the existing seawall protecting public land at Biggs Avenue (previously Huntley Street). This is the present priority works within the Beachmere study area and an application to upgrade the structure has received conditional approval. The geometry and rigidity of the existing structure makes it prone to wave overtopping during storms. This process contributes to inundation of the adjacent private lots on low lying land. The proposed rock revetment seawall will lead to better wave energy dissipation and therefore reduced overtopping and scour at the toe of the structure. The conceptual layout and cross sectional designs of the proposed structure are shown in Figure 3-4 and Figure 3-5.

The mixture of public and private assets at the 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. Consistent seawall design and alignment will typically achieve better erosion control results and minimise ongoing maintenance requirements. Neighbouring land owners may

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wish to combine resources when considering formal erosion control measures. The proposed alignment for the toe of shoreline structures introduced to private or public land, referred to as the “A-Line”, is presented in Figure 3-6 and Figure 3-7.

3.3.1 Vegetation Management Considerations

The key vegetation management option for this section is to maintain and/or enhance existing shoreline vegetation, particularly dune vegetation along natural shores that are on, or adjacent to, residences and vulnerable to degradation. Intact dune vegetation is critical for stabilising sand dunes and preserving their resilience to event-based disturbance. This could be encouraged through a community awareness campaign to:

- To improve or reiterate residents’ awareness of the value of vegetation for shoreline protection; and
- Advise residents of appropriate measures they can take to maintain and enhance their dune vegetation (e.g. limit pedestrian disturbance, weed control, revegetation etc.).

Where appropriate, dune management efforts should be consistent with the Queensland Coastal Dune Management Guidelines (DEHP, 2013). Council may also like to investigate incentives for acting on this advice (e.g. provision of subsidised plants for use in revegetation efforts).

3.3.2 Summary

Council has limited responsibility along the Beachmere study area with the majority of shoreline privately held. The proposed management strategy for the shoreline sections defined in Figure 3-1 are summarised in Table 3-2. Council has previously identified the seawall upgrade at Biggs Ave (former Huntley St) as priority works and has commenced planning to implement this structure. The open space (road reserve) in the north of the study area is presently providing an appropriate natural buffer to most of the private lots on Bayside Drive. An enhanced shoreline erosion management strategy for this area is not considered necessary at this time. Ongoing mangrove and vegetation management will help to preserve this area.

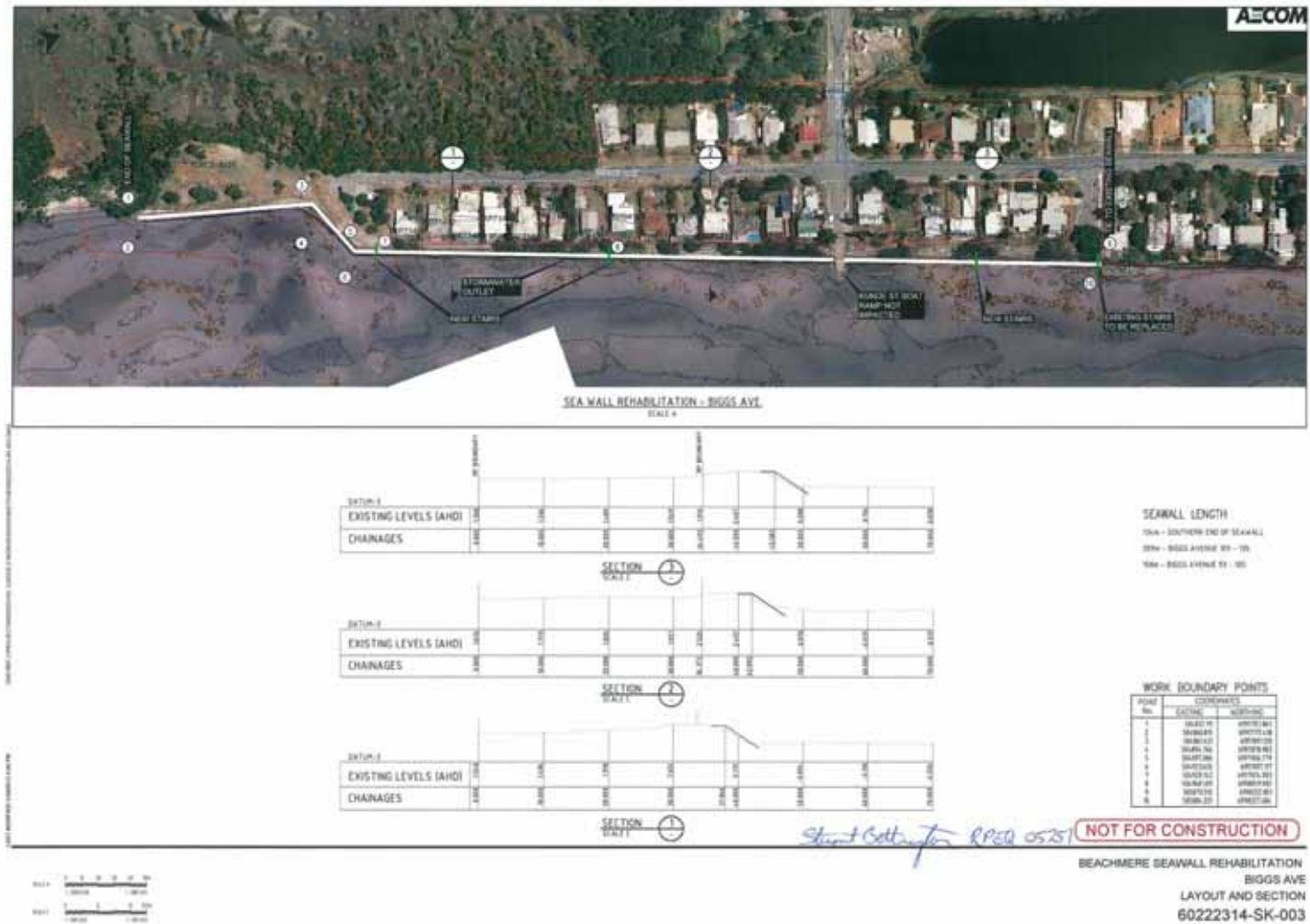


Figure 3-4 Biggs Avenue Proposed Seawall Upgrade Alignment

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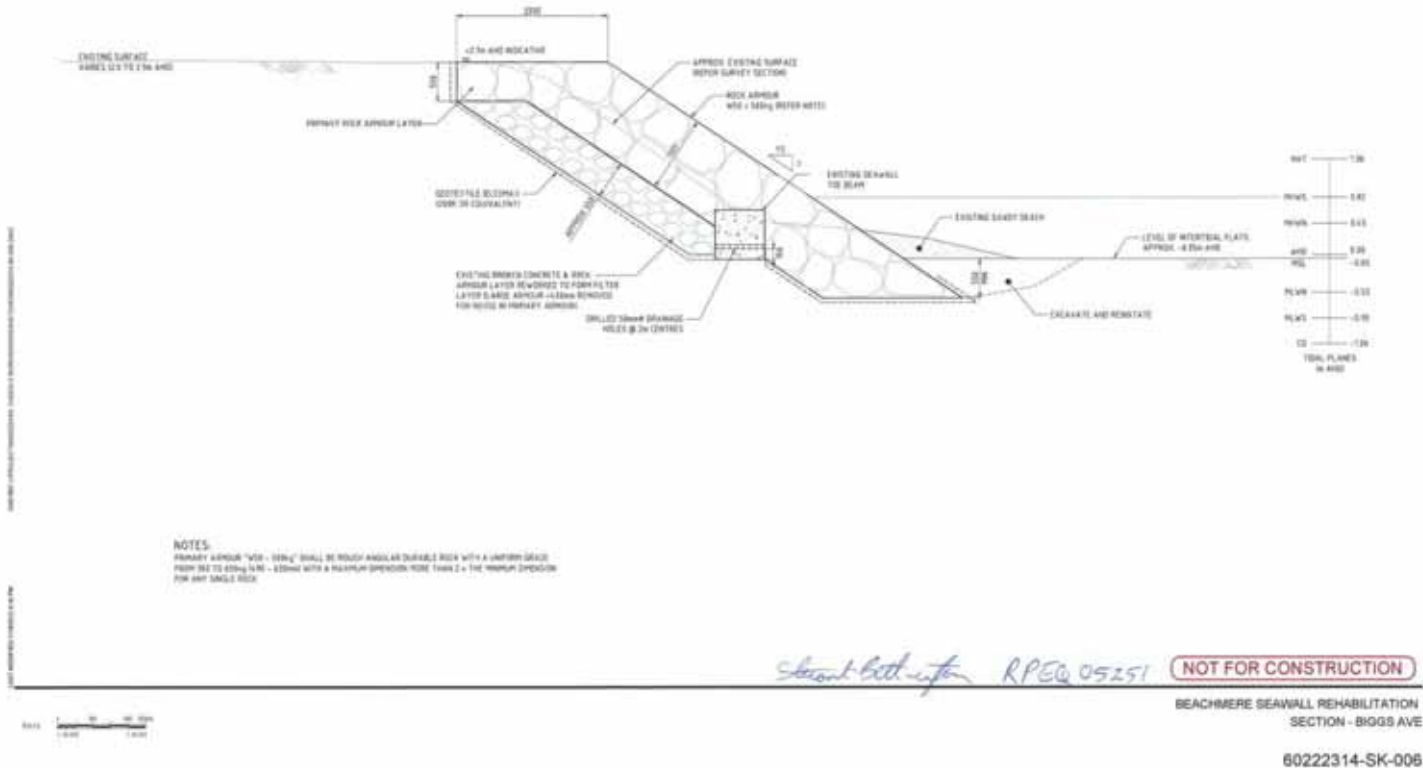
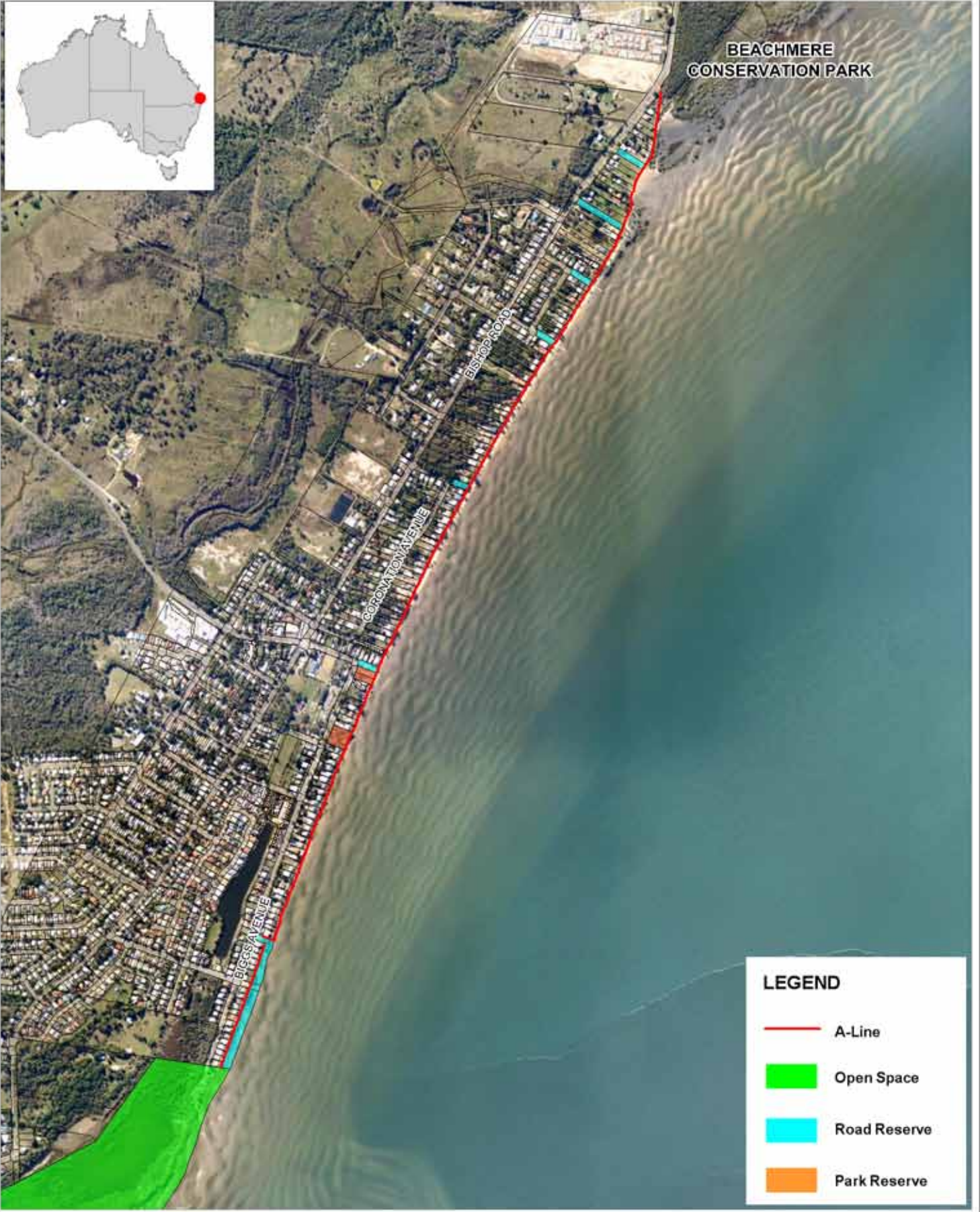


Figure 3-5 Biggs Avenue Proposed Seawall Upgrade Cross Section





Title:
Proposed A-Line South of the Beachmere Conservation Park

Figure:
3-6

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Title:
Proposed A-Line North of the Beachmere Conservation Park

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Table 3-2 Beachmere Shoreline Management Summary

Shoreline Section Number	Existing Condition	Proposed Management Strategy
<p>1. North of Bayside Dr – approx. 400m</p> 	<ul style="list-style-type: none"> • Dense mangrove and sand shoreline • Wide tidal flat offshore • Designated road reserve 	<ul style="list-style-type: none"> • Maintain status quo including ongoing foreshore and vegetation management • Consider long term policy regarding Council’s position to protect undeveloped road reserve
<p>2. Bayside Dr north – approx. 470m</p> 	<ul style="list-style-type: none"> • Shoreline is designated road reserve • Mangrove and sand shoreline buffer to private lots • Wide tidal flat offshore 	<ul style="list-style-type: none"> • Maintain status quo including ongoing foreshore and vegetation management • Consider long term policy regarding Council’s position to protect undeveloped road reserve



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Shoreline Section Number	Existing Condition	Proposed Management Strategy
<p>3. Bayside Dr south – approx. 600m</p> 	<ul style="list-style-type: none"> • Shoreline designated road reserve • Wide tidal flat offshore 	<ul style="list-style-type: none"> • Maintain status quo including ongoing foreshore and vegetation management • Consider long term policy regarding Council’s position to protect undeveloped road reserve
<p>4. Campbell Pde – approx. 910m</p> 	<ul style="list-style-type: none"> • Sandy shoreline forming private lot boundary • Wide tidal flat offshore • No Council controlled land at shoreline 	<ul style="list-style-type: none"> • Provide residents with information regarding appropriate erosion control strategies with a focus on foreshore vegetation and mangrove management

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Shoreline Section Number	Existing Condition	Proposed Management Strategy
<p>5. Conservation Park – approx. 1200m</p> 	<ul style="list-style-type: none"> • Dense mangrove community • Wide tidal flat offshore 	<ul style="list-style-type: none"> • Maintain status quo
<p>6. Bishop Rd – approx. 2100m</p> 	<ul style="list-style-type: none"> • Sandy shoreline forming private lot boundary • Wide tidal flat offshore • Small sections of Council controlled land at seaward end of road reserves • Stormwater culverts and outlets at shoreline 	<ul style="list-style-type: none"> • Provide residents with information regarding appropriate erosion control strategies • Maintain status quo at seaward end of road reserves • Inspect shoreline following severe storm conditions

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Shoreline Section Number	Existing Condition	Proposed Management Strategy
<p>7. Albert & Myrtle Lehman Park</p> 	<ul style="list-style-type: none"> • Recently upgraded culvert and rock seawall • Wide tidal flat offshore 	<ul style="list-style-type: none"> • Maintain status quo • Inspect foreshore following severe storm events
<p>8. Beachmere Activity Centre</p> 	<ul style="list-style-type: none"> • Recently upgraded loosely placed rock rubble seawall • Wide tidal flat offshore 	<ul style="list-style-type: none"> • Maintain status quo • Inspect foreshore following severe storm events

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Shoreline Section Number	Existing Condition	Proposed Management Strategy
<p>9. Biggs Ave – approx. 810m</p> 	<ul style="list-style-type: none"> • Tightly packed rock seawall protecting private lots • Narrow sandy beach buffer with wide tidal flat offshore • Private assets within erosion prone area • No Council controlled land at shoreline 	<ul style="list-style-type: none"> • Provide residents with information regarding appropriate erosion control strategies
<p>10. Biggs Ave (Huntley St) – approx. 600m</p> 	<ul style="list-style-type: none"> • Stone pitched seawall with shotcrete repair • Sinkhole damage along foreshore observed following severe storm conditions • Overtopping associated with severe storm conditions 	<ul style="list-style-type: none"> • Upgrade seawall within 1 year • Minor beach nourishment in front of realigned seawall (if an unrestricted sand source is available) • Foreshore rehabilitation

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Shoreline Section Number	Existing Condition	Proposed Management Strategy
<p>11. Caboolture River Spit – approx. 370m</p> 	<ul style="list-style-type: none"> • Dense mangrove community • Wide tidal flat offshore 	<ul style="list-style-type: none"> • Maintain status quo

3.4 Cost Estimate

Council has limited responsibility along the Beachmere study area with the majority of shoreline privately held. Nevertheless, it is considered prudent for Council to consider its policy and obligation regarding shoreline management in areas adjacent to private assets and inform land owners of Council's expectations regarding shoreline management on private land. The provision of information to land owners regarding appropriate shoreline erosion management on private land is encouraged. Information may include the alignment, recommended material types and the general geometry of shoreline structures. It is likely these actions would be funded as part of Council's planning policy development and implementation.

The additional capital cost associated with the proposed 600m seawall upgrade at Biggs Ave (former Huntley Street, Section 10) is approximately \$3,840,000 in 2014. This estimate is based on a rock revetment seawall design, corresponding to \$6,400/meter for detailed design, approval, construction and foreshore rehabilitation costs.

3.5 Approvals Plan

The approvals plan for the Beachmere study area considers the following:

- Approvals required under *SPA* and relevant government agencies;
- Council decisions related to protecting public land; and
- Marine park permit.

Approvals required under the *Sustainable Planning Act 2009*

Approvals required for shoreline management in the Beachmere study area consist of a prescribed tidal works development approval under *SPA*. This will be assessable development and must be consistent with the prescribed tidal works IDAS code in Schedule 4A of the *CPMR*. The proposed development will also require quarry material resource allocation under the *CPMA* to support foreshore nourishment works and owners consent for work on State land.

Government agencies with an interest in these applications are:

- MBRC Planning Division;
- DSDIP, in regards to compliance with SPIs and the SDAP;
- DEHP, in regards to coastal management and quarry material allocation;
- MSQ/RHM, in regards to impacts to navigation in a coastal management district; and
- DNRM, in regards to work on State land.

Council management of public land

The remainder of the public land throughout this beach unit consists predominantly of land set aside as reserves or road reserves. In accordance with the *Land Act 1994* MBRC has no statutory obligation to protect these areas from the effects of shoreline erosion. A number of options are open, however, to formalising an intention to allow the status quo to continue at these sites.

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Foremost, MBRC should adopt a policy position within their assets strategy and/or coastal policy, or release a future coastal assets management plan to advise on Council's position. Prior to any such policy stance, however, formal advice should be sought from the DNRM SLAM team.

It may be necessary to have the purpose of the reserve changed under the *Land act 1994* to one compliant with the intended use of Council (e.g. beach protection, buffer zone, coastal management).

Moreton Bay Marine Park permit

As the Moreton Bay Marine Park covers all tidal land and waters in this beach unit, prescribed tidal works and any other activities may require a marine park permit under the *MPA*. Where works consist of a 'low impact activity not involving fishing or collecting' no permit will be required. This may include the movement of sand within tidal waters. Other activities, however, including the upgrade of capital infrastructure, will be permitted where they are consistent with the objects of the zone. These are:

- To provide for the conservation of the areas of the marine park within the zone; and
- Subject to this objective, to provide opportunities for reasonable use and enjoyment, including, for example, limited extractive use, of the areas.

An application for a marine park permit is considered by the DNPRSR.