

# Bribie Island Breakthrough Action Plan

## Pre-planning for Imminent Coastal Changes

Brad Wilson

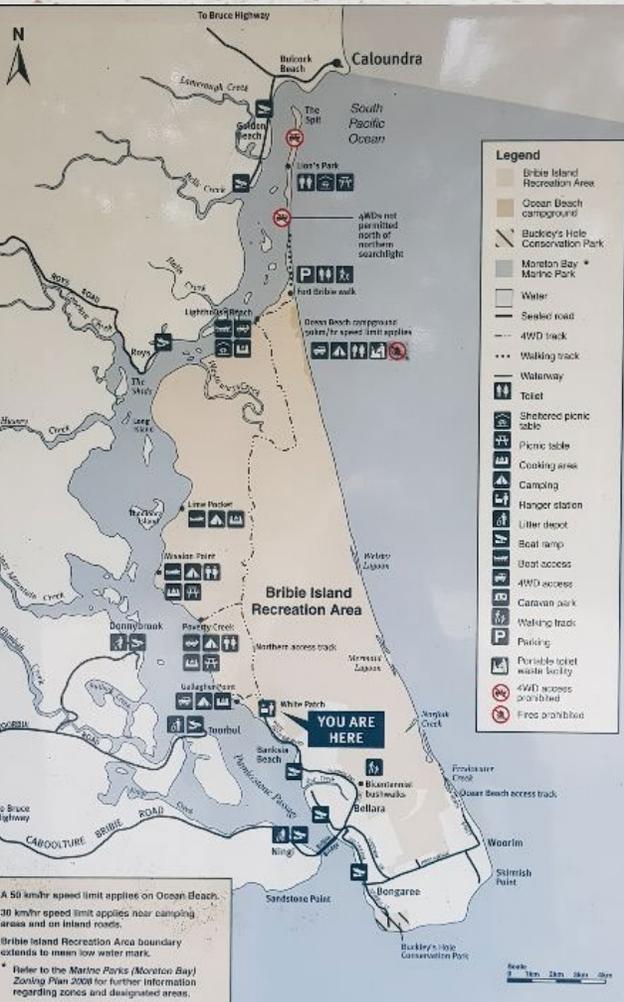
Coastal, Constructed Waterbodies and Planning Manager

Sunshine Coast Council

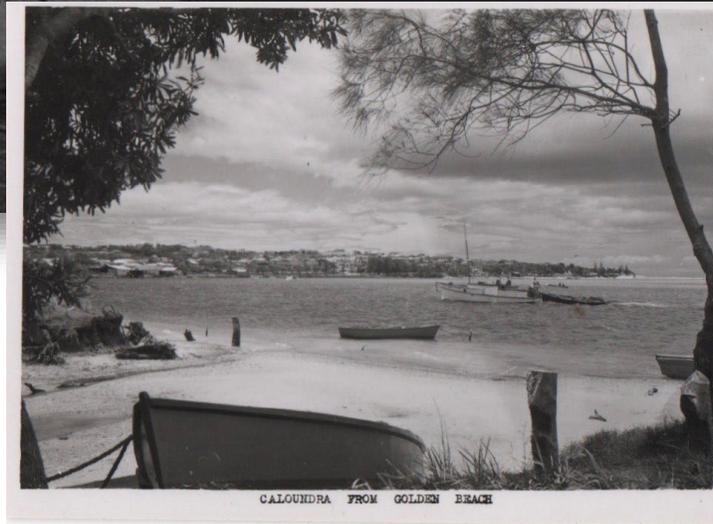
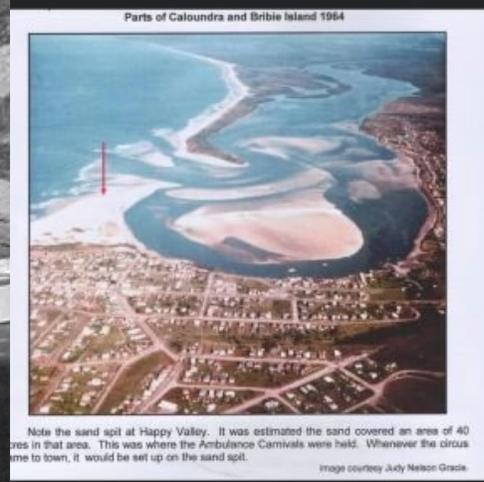
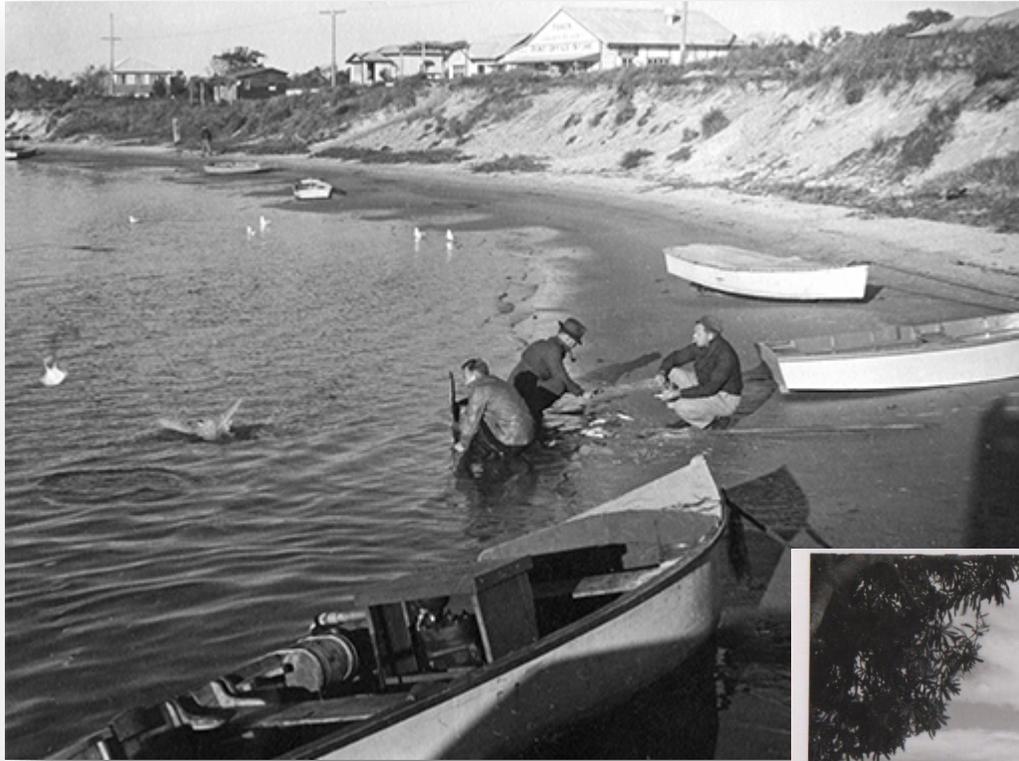
# Sunshine Coast LGA



# Bribie Island



# Bribie Island and Golden Beach



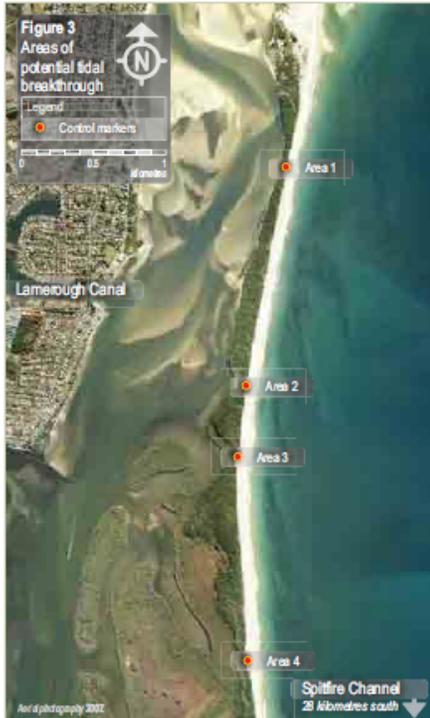
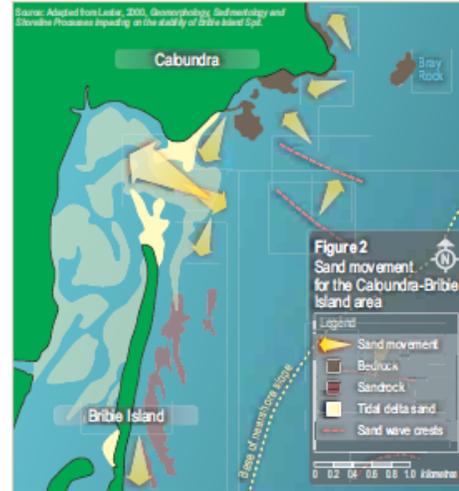


**Queensland Government**

Sand eroded on the ocean side is lost by wave and tide action to the south, the north and into the Passage (refer Figure 2).

As there is no present day supply of sand from Moreton Bay or elsewhere to the shoreline of Bribie Island, inevitably – Bribie Island is eroding.

It is the erosion on the ocean side that is of most concern to a potential tidal breakthrough of northern Bribie Island, and this risk is amplified where the island is narrow and the dunes are low and subject to wave washover.



*Is sand dredging from Moreton Bay increasing the rate of erosion?*

No.

Sand dredging of the Spitfire Channel is occurring some 28 kilometres to the south.

An independent scientific investigation of the impacts of this sand dredging operation clearly indicated that there is no impact on the beaches of northern Bribie Island.

*What will happen if this erosion continues?*

There are four narrow sections of Bribie Island where the dunes are also low (refer Figure 3). It is anticipated that in these areas, waves from the ocean side of Bribie Island will wash over the foredune and lower the sand surface level. The tides will then scour out a tidal channel in these lower lying areas.

Over time, a new tidal channel may widen, become the dominant channel and form a new entrance, and the existing inlet may close over. As the Bribie Island Spit continues to narrow, multiple entrances may form in the long term.

This scenario may be many years away, but it is dependent on the weather and particularly the intensity and frequency of severe storm events.

*How will a new entrance south of the Caloundra bar affect Golden Beach?*

If a new entrance were to form north of Lamerough Canal there would probably be very little impact on Golden Beach. The entrance has been well south of its existing position before (refer Figure 4).

If a new entrance were to form south of Lamerough Canal, it is not clear what the impact would be, but a risk assessment is currently in progress to provide further information.

*Some have claimed that there will be big waves crashing on Golden Beach and we will need massive rock walls – is this true?*

As is evident, there is little wave penetration through the existing entrance now and it would be the same for a new entrance. Similar to the existing entrance, a new entrance will also form sand bars which would limit waves entering the Pumicestone Passage. The existing wide shallow sand banks in the Passage will further protect Golden Beach and rock walls are not likely to be needed.

Sections of Golden Beach currently experience erosion and are maintained with groynes and sand renourishment.

Groynes and sand renourishment would continue to be preferred to the use of rock walls, so that a sandy beach environment is maintained.

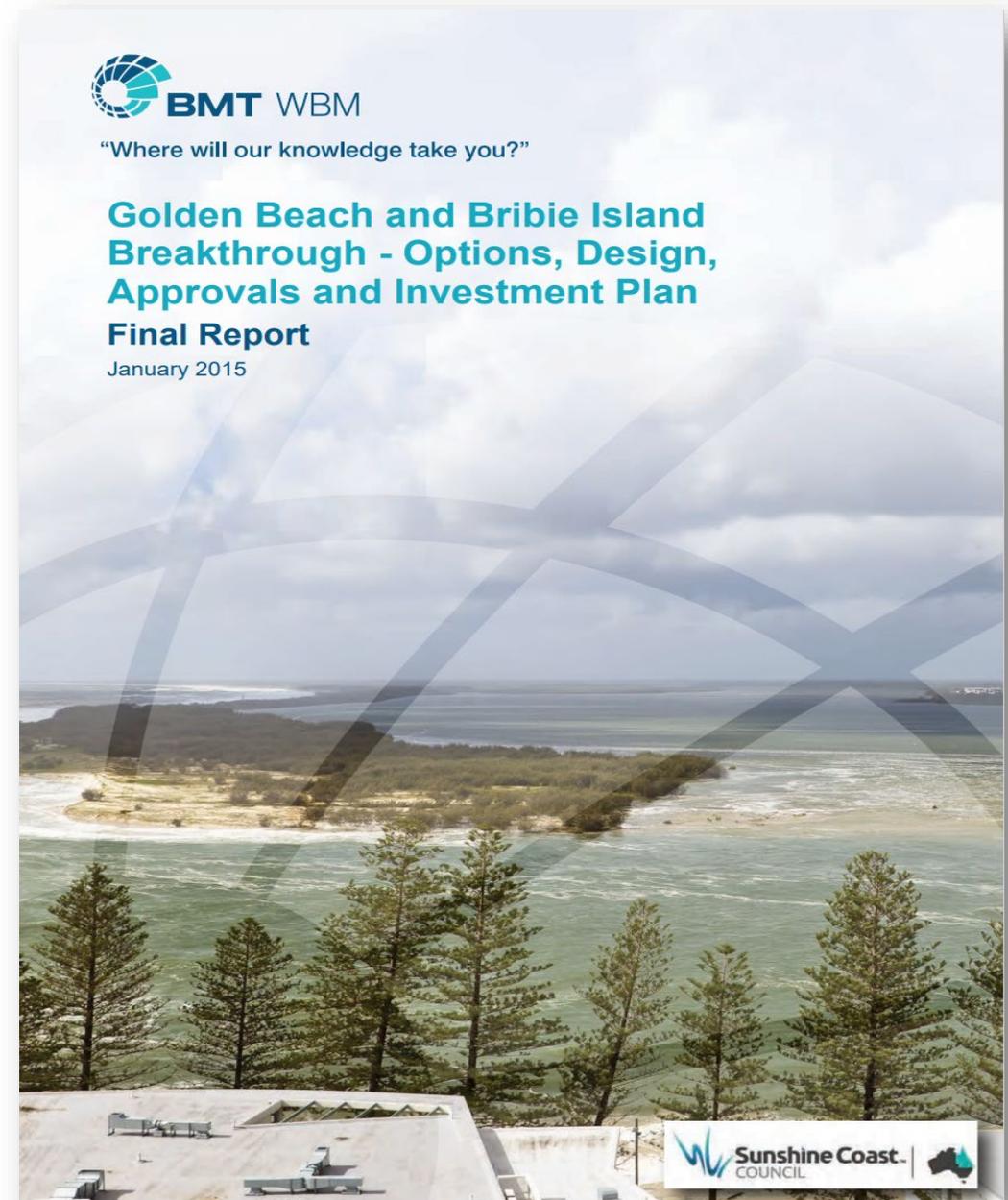


# Bribie Island Breakthrough Plan

The Bribie Island breakthrough action plan has been in place since 2014.

It lists the threats to the Golden Beach foreshore in the event of a breakthrough at Bribie Island.

It includes the actions to help council reduce these impacts.

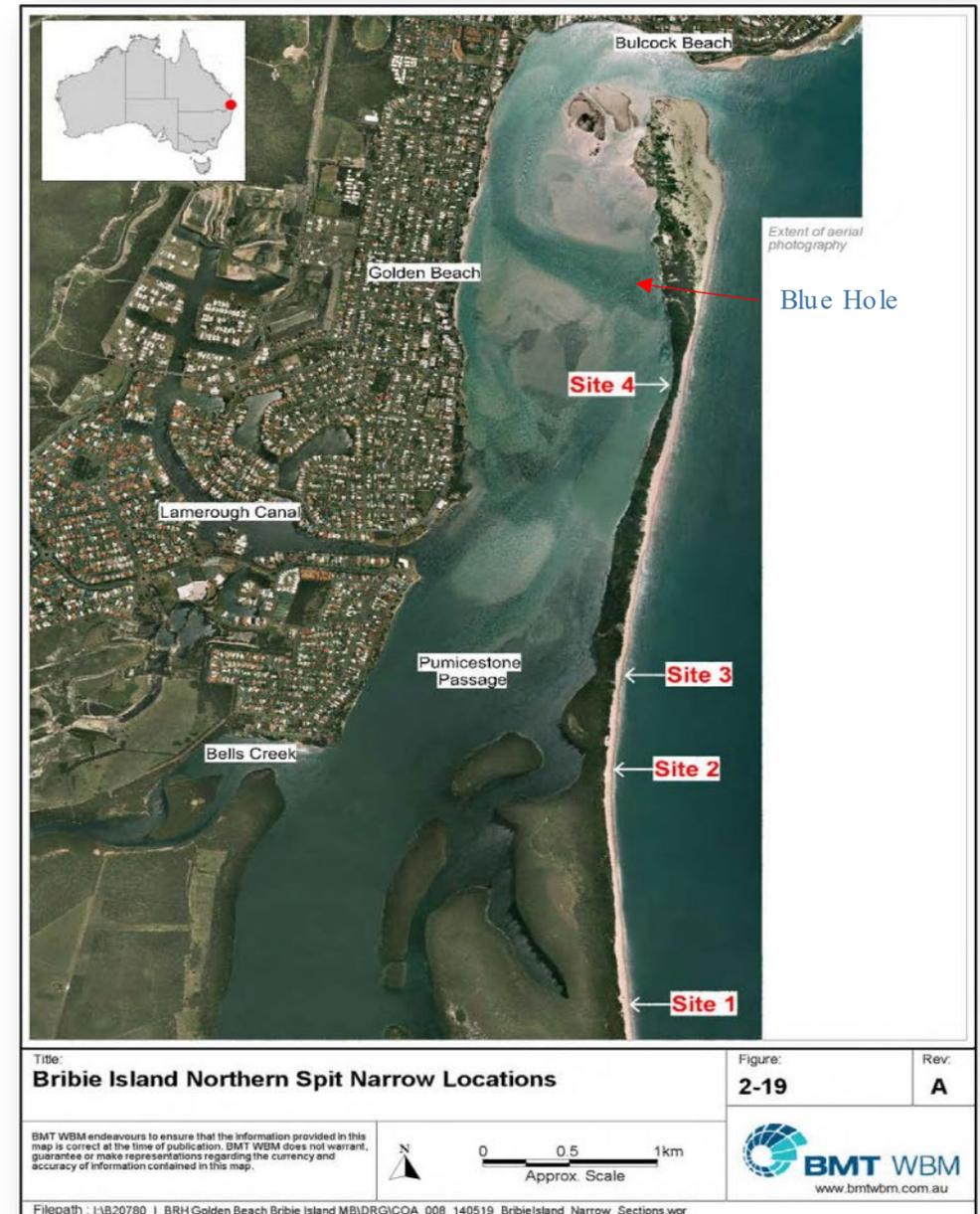




# Bribie Island Breakthrough Plan

1. A breakthrough and new permanent entrance immediately south of Blue Hole.
2. A breakthrough and new permanent entrance opposite or to the south of the Lamerough Canal entrance.

The likelihood of a new entrance forming at location 2 is considered low; however, the consequences would be significantly greater than a new entrance immediately south of Blue Hole.



# Coastal Hazard Adaptation Strategy

**Our Resilient Coast.  
Our Future.**



**Our Resilient Coast.  
Our Future.**

# CHAS Adaptation Responses

## Monitor, maintain and prepare

Monitor the risk of coastal hazards. Monitor until local trigger levels are reached to initiate mitigation.

+  
Maintain existing arrangements and prepare for future actions.

## Mitigate

Actively mitigate the risk of coastal hazards through a range of adaptation options.

Mitigate until local trigger levels are reached to initiate transition.

## Transition

A strategic decision to transition to an alternative land use in some areas.

Mitigation may be part of the transition process.

Table 39: Nelson Street to Lamerough Canal adaptation pathway.

Nelson Street to Lamerough Canal	Present day	By 2041	By 2070	By 2100
	Mitigate	Mitigate	Mitigate	Mitigate



# Nelson Street to Lamerough Canal



Nelson Street to Lamerough Canal	Present day	By 2041	By 2070	By 2100
	Mitigate	Mitigate	Mitigate	Mitigate
Enhance adaptive capacity	As per region-wide actions as applicable, including: <ul style="list-style-type: none"> <li>- Implement stewardship program/initiatives.</li> <li>- Encourage mangrove protection and enhancement, controlled access, monitoring.</li> <li>- Raise community awareness and enhance social adaptive capacity for inundation hazards.</li> </ul>			
Planning	As per region-wide actions as applicable, including: <ul style="list-style-type: none"> <li>Review planning provisions to enable an option for long-term raising of lot levels in inundation prone coastal urban areas.</li> <li>Review supplementary drainage options.</li> </ul>	As per region-wide actions as applicable, including: <ul style="list-style-type: none"> <li>Establish a timeline for raising lot/floor levels in inundation prone areas, and subsequent services (including road) raising.</li> </ul>	As per region-wide actions as applicable.	
Modifying infrastructure	As per region-wide actions as applicable, including: <ul style="list-style-type: none"> <li>- Resilient homes.</li> <li>- Ensure new development is equipped with pump systems that appropriately manage the quality and quantity of groundwater discharge.</li> <li>- Ensure adequate flood storage/detention.</li> </ul>		As per region-wide actions as applicable, including: <ul style="list-style-type: none"> <li>Implement drainage upgrades (as per drainage strategy) and road/services raising.</li> </ul>	As per region-wide actions as applicable, including: <ul style="list-style-type: none"> <li>Implement drainage upgrades (as per drainage strategy).</li> </ul>
Coastal management and engineering	Develop and implement updated shoreline erosion management planning. Maintain and upgrade coastal engineering works (as planned, with design and approvals already in place). Implement ongoing mangrove protection and enhancement.			
Triggers and other considerations	CHAS review triggers apply (Section 7). If Bribie Island breakthrough occurs, accelerate implementation of actions listed for 2041.	CHAS review triggers apply (Section 7).		

# BIB Strategy

1. Identifying Triggers for Enhanced Management Action
  1. Shoreline Erosion
  2. Tides and Water Levels (Coastal Inundation Risk)
2. Discussion of Options
  1. Stage 1
  2. Stage 2
  3. Stage 3
3. Identify Priority Areas

e.g. TS Onslow Naval Cadet Base (State Government leased land)

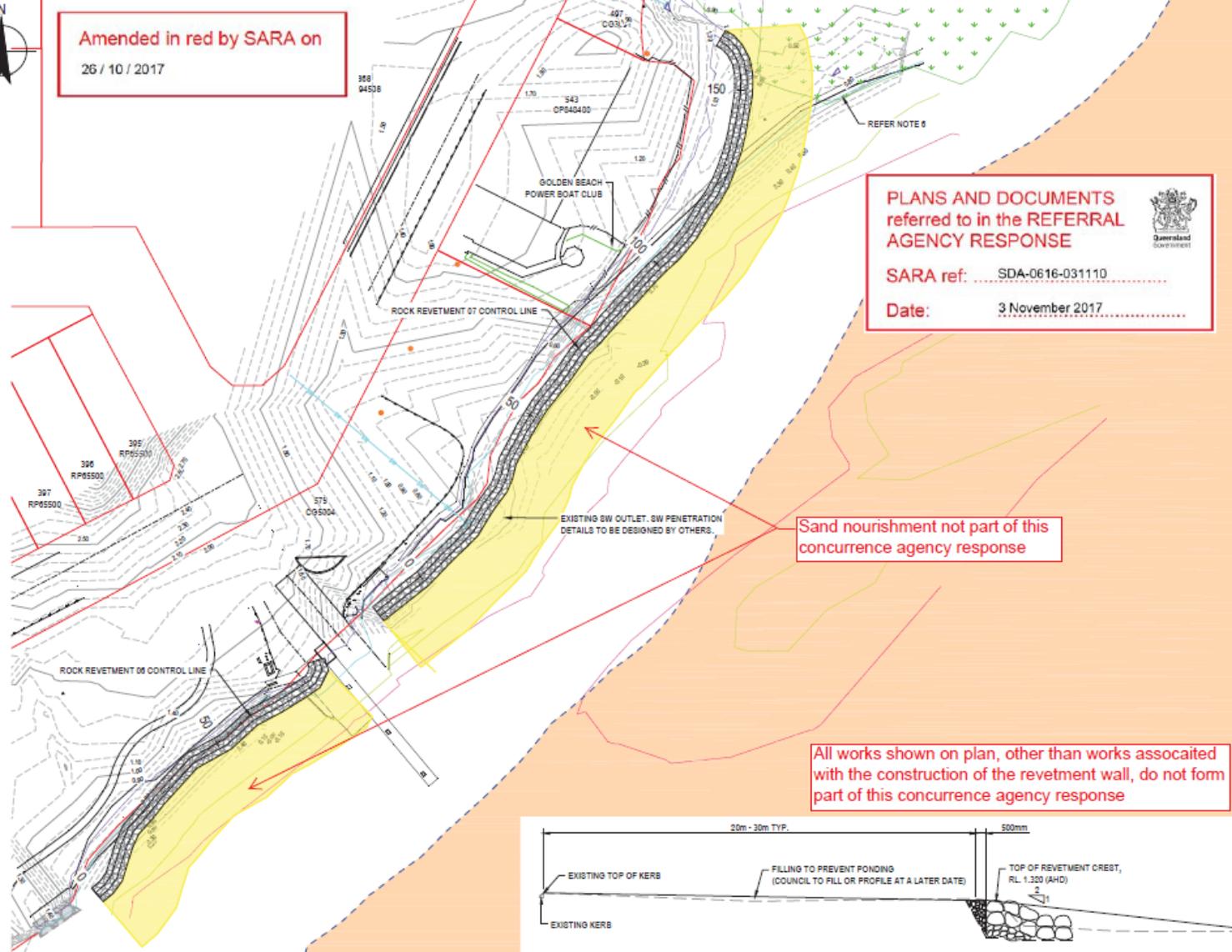


# Proposed expanded nourishment operations





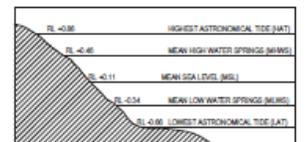
Amended in red by SARA on  
26 / 10 / 2017



**PLANS AND DOCUMENTS referred to in the REFERRAL AGENCY RESPONSE**

SARA ref: SDA-0616-031110

Date: 3 November 2017

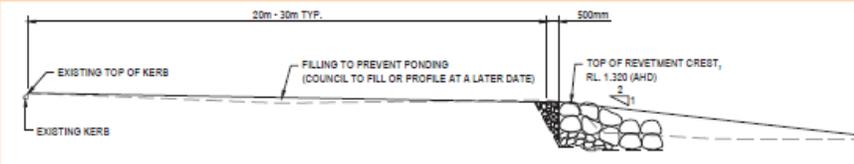


**TIDAL NOTE:**  
LEVELS OF TIDAL PLANES ARE IN METRES TO AUSTRALIAN HEIGHT DATUM (AHD) & DETERMINED FROM PREDICTIONS FOR FUMICESTONE PASSAGE / BRISBANE ISLAND - GOLDEN BEACH (CALOUNDRA) PUBLISHED BY QUEENSLAND TIDE TABLES 2016.

- LEGEND:**
- HIGHEST ASTRONOMICAL TIDE (HAT)
  - MEAN HIGH WATER SPRINGS (MHWS)
  - MEAN LOW WATER SPRINGS (MLWS)
  - LOWEST ASTRONOMICAL TIDE (LAT)
  - PLAN SHEET OVERLAP
  - FENCE LOCATIONS
  - PROPERTY BOUNDARIES
  - STORMWATER LOCATIONS
  - DREDGE EXTENTS
  - APPROVED DREDGE AREA (SEE DRG C004 FOR DETAILS)
  - 15m ZONE OF INFLUENCE (SAND NOURISHMENT)
  - EXISTING VEGETATION, REFER TO NOTE 9
  - TREE LINE
  - EXISTING MAJOR CONTOUR (0.5m INTERVAL)
  - EXISTING MINOR CONTOUR (0.1m INTERVAL)
  - PROPOSED ROCK REVETMENT
  - BLOCK TERRACE (REFER TO DRG FIG1 FOR DETAILS)
  - AREAS WHERE TOP OF KERBS LEVEL < TOP OF REVETMENT WALL LEVEL
  - EXISTING ROCK

Sand nourishment not part of this concurrence agency response

All works shown on plan, other than works associated with the construction of the revetment wall, do not form part of this concurrence agency response



TYPICAL SECTION  
SCALE 1:100



- NOTES:**
1. SURVEY INFORMATION SUPPLIED BY COUNCIL DRG NO. 25472 DATED 16/03/2016.
  2. HORIZONTAL DATUM IS MQ44 ZONE 56.
  3. ALL LEVELS ARE IN METRES TO AUSTRALIAN HEIGHT DATUM.
  4. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE (U.N.O.).
  5. REFER TO RELEVANT STATE AND NATIONAL STATUTORY APPROVALS FOR SPECIFICATIONS AND CONDITIONS RELATING TO DREDGING WORKS.
  6. SEAGRASS EXTENTS ARE BASED ON SURVEYING UNDERTAKEN BY BMT WBM PTY LTD IN JULY 2017. SEAGRASS EXTENTS MAY HAVE CHANGED SINCE THIS SURVEY.
  7. SEAGRASS IS ONLY SHOWN WITHIN AND AROUND THE APPROVED DREDGE AREA.

Registered Professional  
Registration  
RPEQ  
Registration Discipline  
CIVIL  
Signature  
P.O'KEEFE\* No. 04616  
Date 15.05.17

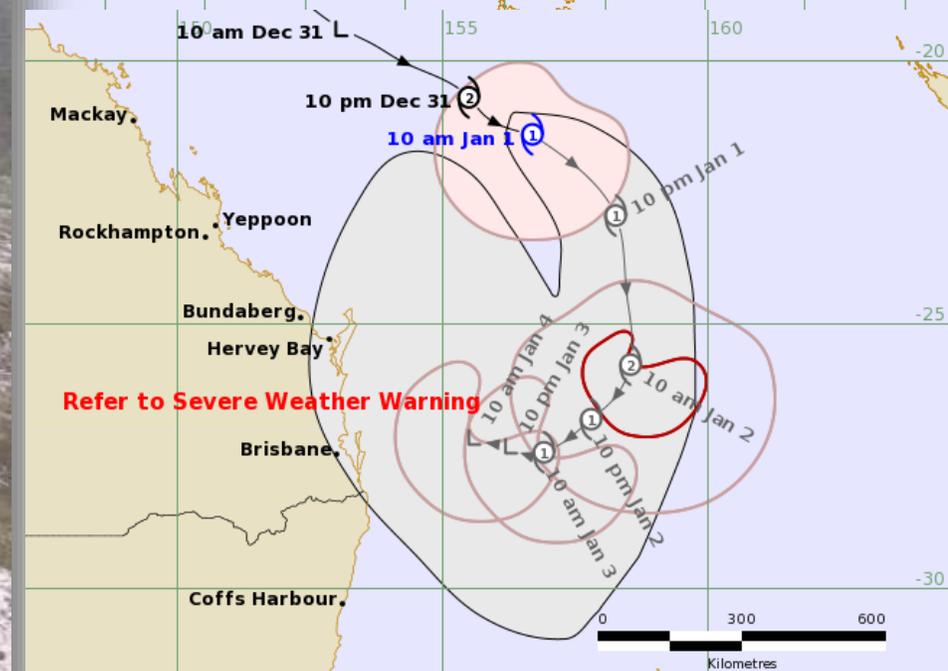
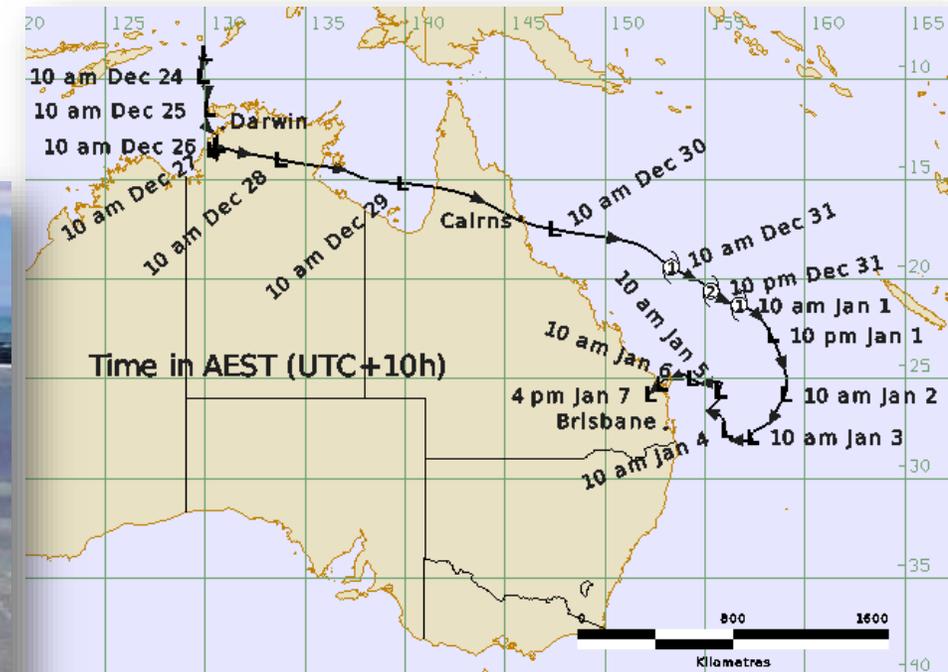
E	15/05/17	REVIEMENT REALIGNED	AF	16*	SV*	Surveyed	SUNSHINE COAST COUNCIL	Date: 15.05.16
D	11/05/17	REVISED ISSUE	AF	DW*	DW*	Designer	A.FOLAN	
C	28/04/16	ALIGNMENT AMENDED	AF	SC*	DW*	Drawn	A.FICHERA	
B	07/04/16	REVISED ISSUE	CF	SC*	DW*	Design Check	P.O'KEEFE*	
A	17/03/16	PRELIMINARY ISSUE	AF	SC*	DW*	Drafting Check	C.FURLER*	
Rv	DATE	REVISIONS	Drawn	Job Mgr	Proj Dir	Approver	P.O'KEEFE*	Date: 15.05.17



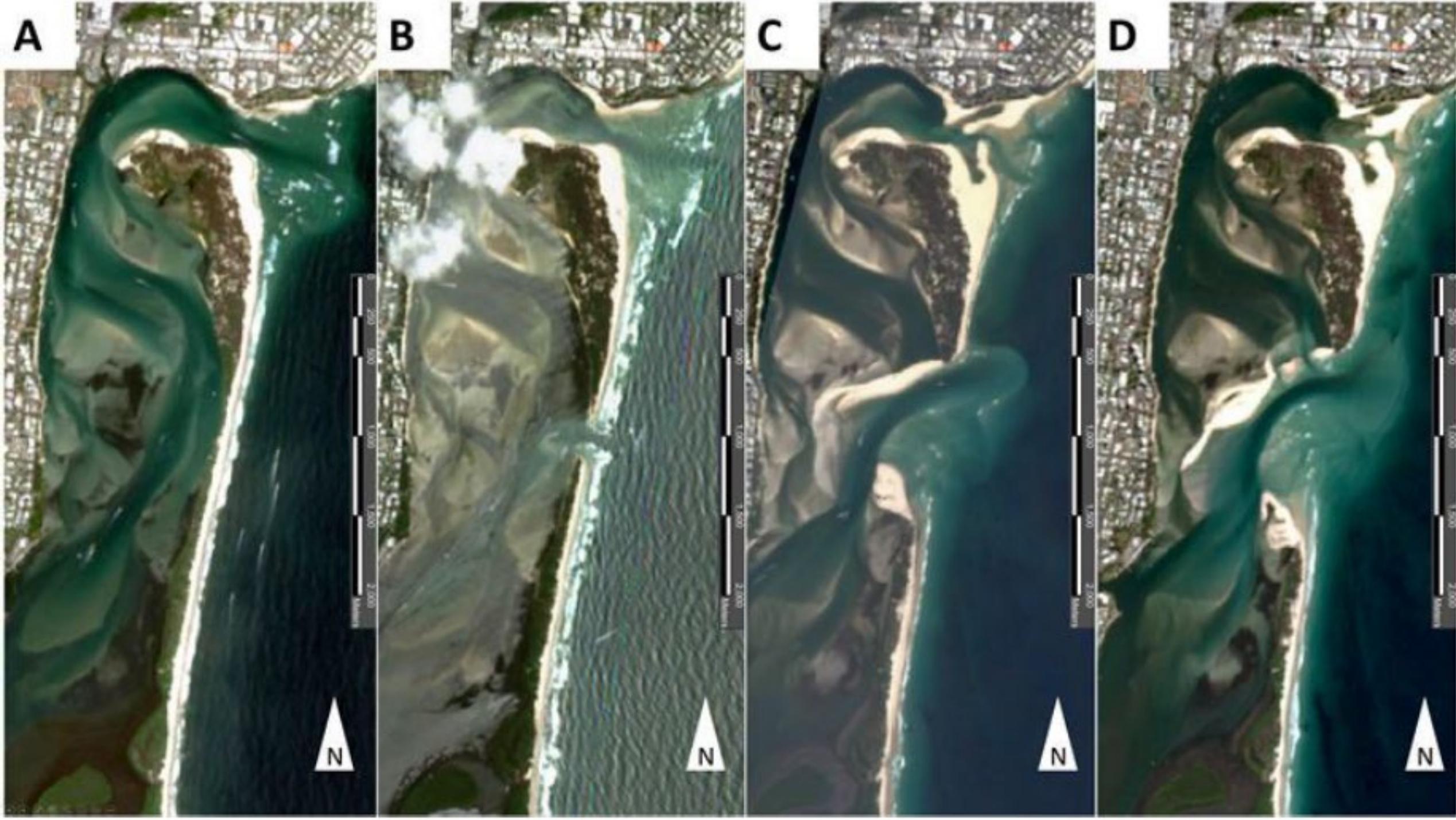
**BRISBANE ISLAND BREAKTHROUGH PREPAREDNESS**  
ROCK REVETMENT  
PLAN SHEET 1 OF 7

Project Number  
**29469**  
Sheet No. - Revision No.  
**C006 E**

# Ex-TC Seth – Jan 2022









# 2.5 yrs on..

Planning horizon	Vertical sea level rise	Default horizontal area*
Present day	0 m	10 m
2041	0.2 m	20 m
2070	0.5 m	30 m
2100	0.8 m	40 m

\*State Government defined horizontal distance applied from the extent of present-day Highest Astronomical Tide in applicable scenarios.



# Sand Nourishment



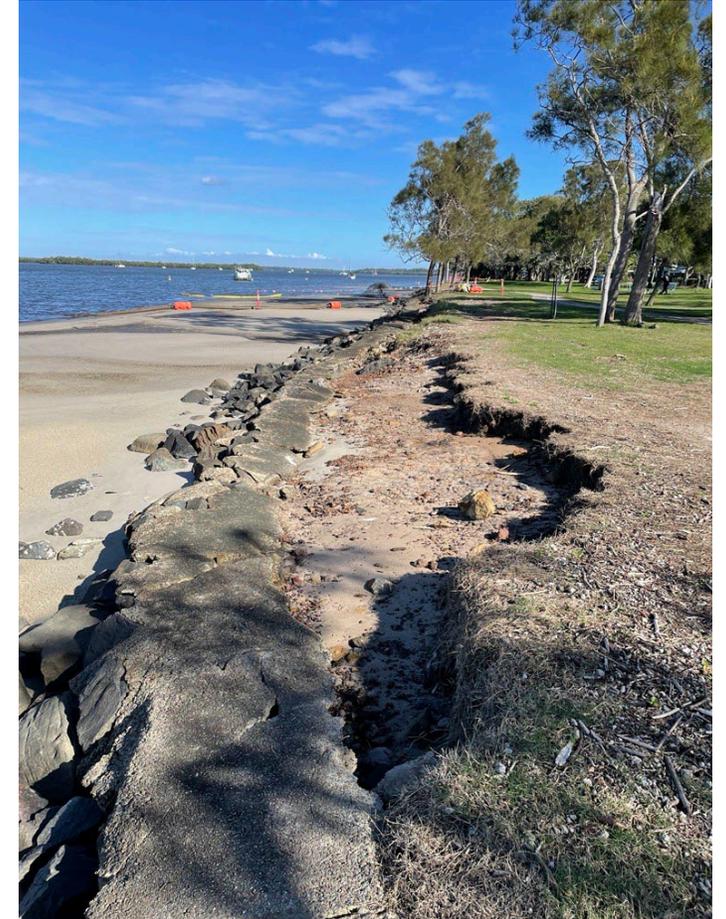
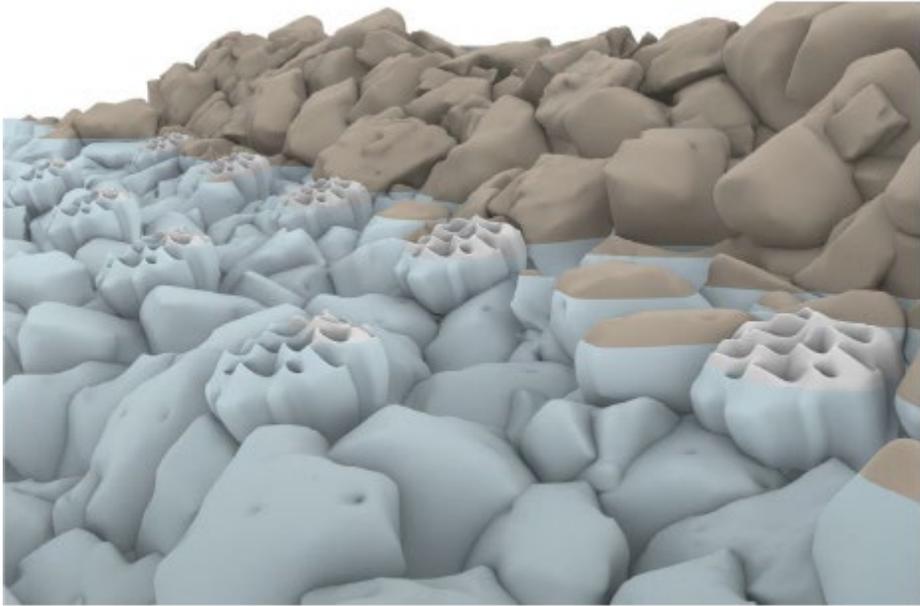
# TS Onslow Naval Cadets site



# Jellicoe Street Seawall



# Golden Beach South Seawall



# The Future..



# Current CHAI Project

## Golden Beach

- Prioritised because of 2022 Bribie Island Breakthrough
- Partly funded by National Emergency Response Fund (federal government)
- Scope: Coastal Hazard Mitigation and Drainage Options Analysis –6 phases



*Image: Golden Beach Esplanade (February 2022)*

# Coastal Protection and Open Space



Guideline: State Development Assessment Provisions  
State Code 8: Coastal development and tidal works

## State Development Assessment Provisions

**PO12 Erosion control structures** minimise interference with **coastal processes** and reduce the severity of erosion on adjacent land.

### Context

Erosion control structures can have a range of adverse impacts on the coast including interfering with sand transport along a coast and locking up sand in behind and preventing this sand from contributing to local coastal processes, such as cross shore transport during erosion events and longshore transport. These impacts may trigger erosion at nearby areas in the coastal compartment and they need to be identified and mitigated by the design and location of the works.

For revetments this is generally achieved by locating the works as far landward as practical or for most types importing sand into the system to balance accelerated erosion, e.g. on the terminal ends of a seawall, or to fill the expected sand trapping capacity of a new groyne. Design of the works can also assist, such as for revetments, by providing a slope and roughness of the works which dissipates rather than reflects wave energy.

When revetments are constructed individually over time, they may have differing alignments and designs. To avoid this type of piecemeal approach, it is desirable that adjoining erosion control structures along a coastal sector (usually owned by the individual lot owner) are constructed with a continuous crest alignment and common design standard. Where a council has endorsed a Shoreline Erosion Management Plan (SEMP) that has been supported by DES, the recommendations of that plan are the preferred approach for deciding the location and design of coastal protection works. Where a SEMP has not been prepared, the alignment of the erosion control structure should be established in pre-lodgement discussions with DSDILGP's State Assessment and Referral Agency (SARA), DES and the local government.

State Position compromises existing open space.

Does not appear to consider

- Open space network provision rate
  - 0.7 ha/1000 people (Rec Park, council wide)
- Provision rate diminishes with
  - More infill development in coastal urban areas.
  - Loss of existing coastal open space to erosion.
- Wave impacts forces on buildings are reduced when open space is seaward.

# CHAI and SEMP

Relationship



# SEMP 2.0



# Funding..?



Thanks for your time



[sunshinecoast.qld.gov.au](http://sunshinecoast.qld.gov.au)