Coastal Hazard Adaptation on Moreton Island

Presenter: Glen Dare, Senior Environmental Planner – Brisbane City Council
Issues, Outcomes and Learnings

• Moreton Island community at risk from coastal hazards

• Stakeholder relationships to transition the community to become resilient and empower them to help themselves

• Adaptation cannot be measured in built responses but rather the resilience of the community to understand and manage the risk

• Coastal erosion at Cowan a case study on community led adaptation that is financially sustainable for local governments
Moreton Island Erosion
Cowan Cowan Erosion

JUNE 2016 STORM
Phase 1: Understanding Council’s role

June 2016
CCRA seek Council to undertake erosion protection works

August 2016
CCRA meet with Brisbane Lord Mayor seeking temporary solution

November 2016
Council advises location of proposed works is not Council land

June 2016
Weather Event

August 2016
Council response

October 2016
CCRA pre-lodgement meeting with State Government

November 2016
CCRA seek Council advice and assistance to prepare Development Application

December 2016
Council advises CCRA that it will not provide financial support for works on State land
Phase 2: Building Partnerships

**March 2017**
Council provide advice on specific permits and expertise required

**June 2017**
CCRA ask Council to prepare Development Application

**November 2017**
Council meets with State Government to clarify roles and protection of WWII structures

**February 2017**
CCRA request further Council assistance

**May 2017**
Council offers free Pre-lodgement meeting

**July 2017**
Council clarifies its role as assessment manager of Development Application

**October 2017**
CCRA meet Committee Chairman seeking Council to deliver a seawall

**December 2017**
Council advises CCRA of State Government advice to pursue beach nourishment options
Project Timeline 2016 to 2019

Phase 3: Resilient community, adaptation implementation

January 2018
Council seek State Government advice on short term erosion management

February 2018
Council on-site meeting with CCRA, commence erosion monitoring program

May 2018
Council commences monitoring of sand scraping

July - December 2018
Data collection and erosion monitoring

January 2018
Council and CCRA scope short and long term options

February 2018
Council commences SEMP Gap Analysis, consult with other coastal Councils

May 2018
CCRA carryout soft erosion management – sand scraping

August 2018
Council commences Management Options report

February 2019
Council meet with CCRA, findings & education material
Cowan Cowan Sand Scraping

February 2018 - Sand dune prior to beach re-profiling

May 2018 – Wave action has had an impact on the lower dune

June 2018 – Dune has slumped covering the lower portion of the monitoring pole

July 2018 – Active erosion as the lower dune has receded from the lower portion of the monitoring pole

September 2018 – Continued active erosion of the dune

Dedicated to a better Brisbane
Cowan Cowan Self Assessable Notification to State Government

Appendix 1: Pre-work notification to EHP

Accepted development that is tidal works, or work completely or partly in a coastal management district.

- Details of project:
  - Description of work:
  - Location of work:
  - Value of work:
  - Start date:

- Attach the following (please tick):
  - A site plan (A4 size) showing:
    - real property description and boundaries;
    - street names;
    - existing structures; and
    - extent of the structure footprint and proposed work area for the development.

- A clear photo showing the extent of the site prior to commencement of the work.

**Endorsement**

1. Permission and direction has been obtained from the owner, lessee, trustee, or manager of the land on which the work is to be located (as per Part A, AO3).
2. Advice has been sought from the local government (for work within a local government area), the relevant Regional Natural Resource Management Rural (including Gold Coast) regions, or the Chief Executive Officer, Gold Coast Waterways Authority (for work proposed within Gold Coast waters) (as per Part A, AO1).
3. Work on any State land is consistent with the purpose for which the State land is dedicated or granted (as per Part A, AO3).

**Print name:**

**Position title:**

**Signature:**

Please return your completed notification to psam@ehp.qld.gov.au or mail to:

Permit and License Management
Department of Environment and Heritage Protection
GPO Box 2054
Brisbane Queensland 4001

Office use:

Extract reference number:

Appendix 2: Post-work notification to EHP

Accepted development that is tidal works, or work completely or partly in a coastal management district.

- Details of project:
  - Description of work:
  - Location of work:
  - Completion date:

- Attach the following (please tick):
  - A clear photo showing the extent of the site after completion of the work. The post-work photo is to be taken at the same orientation as the pre-work photo.
  - As constructed plans for the project.
  - Permission from the owner, lessee, trustee, or manager of the land on which the work is located (as per Part A, AO3).
  - Copy of the advice from the local government, relevant Regional Natural Resource Management Office, or the Chief Executive Officer, Gold Coast Waterways Authority (as appropriate) (as per Part A, AO2).
  - Statement that the work on any State land is consistent with the purpose for which the State land is dedicated or granted (as per Part A, AO3).
  - For minor public marine development located on a road under the Land Act 1994, written authorisation from the local government department, Government of Queensland; and / or the Department of Transport and Main Roads (where relevant) (as per Part A, AO4).
  - For minor public marine development on State land, written consent of the State Land Officer to calculate the work on the site (as per Part A, AO1).

**Endorsement of authorised person for the construction authority:**

I confirm that the proposed work complies with the code for accepted development for operational work under the Coastal Protection and Management Regulation 2017.

**Print name:**

**Position title:**

**Signature:**

Please return your completed notification form and any supporting documents to psam@ehp.qld.gov.au or mail to:

Permit and License Management
Department of Environment and Heritage Protection
GPO Box 2054
Brisbane Queensland 4001

Office use:

Extract reference number:
**Education Materials**

**Coastal Processes**

Why doesn’t and erosion protection structure prevent beach erosion?

Erosion protection structures protect property, infrastructure and the natural environment as the landward side of the structure from erosion, but do not protect the beach from erosion. A natural beach moves both landward and seaward under the influence of wave action and tidal currents. An erosion protection structure interferes with this movement, which generally results in the lowering of the beach in front of the structure to the point where no beach exists, as can be seen in the series diagrams below.

**BEACH PROFILE - SEAWALL INSTALLED**

1. **STORM EROSION - SEAWALL INSTALLED**

2. Sand moves offshore and forms an offshore bar.

3. The beach cannot recover as wave energy is reflected off the seawall. Resulting in a lowering of the beach profile over time.

4. **NO RECOVERY**

**STORM EROSION**

2. Sand moves offshore temporarily and adopts a stable profile under storm conditions.

**RECOVERY**

3. Sand moves onshore with ambient waves and lower water level. Some loss of sand may occur if offshore bar forms in too deep water.

**FINAL STAGES**

4. Sand moves from the tidal area of the beach to the frontal dune with prevailing winds. Dune plants re-establish on fresh sand to stabilise the dune from wind erosion. Some sand loss may occur onshore if dune plants are not present.

**Natural Beach Evolution**

A natural beach moves both landward and seaward under the influence of wave action and tidal currents. Coastal erosion is a natural part of coastal processes. Any sand ‘lost’ through erosion on the visible beach remains in the active beach system and is available to be moved onshore through natural processes. This process can be seen in the series of Natural Beach Evolution diagrams below.

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Cowan Cowan Tropical Cyclone Oma (February 2019)

24th February 2019 7.00am – low tide
Moreton Island Coastal Hazard Adaptation

• Stage 1 – Gap Analysis for Moreton Island Western Shoreline Coastal Risk Management Study

• Stage 2 – Cowan Cowan Shoreline Erosion Management Options and Recommendations Report

• Stage 3 – Moreton Island Western Shoreline Coastal Risk Management Study (QCOAST_{2100} – Coastal Hazard Adaptation Strategy Phases 3 – 6)