



# Kia ora

## We'd like to update you on the investigations for erosion management along the estuary edge as part of the Earthquake Legacy Issues Project.

In August 2019 Council asked staff to investigate immediate and longer-term erosion options in Southshore (including options for the privately owned edge structures). A collaborative Working Group was established to develop a suitable erosion mitigation plan.

Jacobs, an engineering consultancy, has been contracted to provide the independent technical expertise and the Southshore Residents' Association confirmed Gary Teear as the community-nominated technical expert. Council staff form the third party in the Working Group.

All members have approved each step of the work as it has progressed. According to Gary, things have been progressing well. "We're all very much in line with what's being proposed."



*Gary Teear*

## Update on progress—identifying the options

Jacobs has carried out a high level assessment of various erosion management options for the estuary edge from Godwit Street to about 150 metres south of Tern Street.

The Working Group assessed the list of options to consider performance and durability, environmental impact, scale and visual impact, cost, accessibility, and adaptability.

To help with this assessment, Jacobs has developed two strategies for how and where the options could be applied.

- A 'structure by structure' strategy (Strategy 1) would individually assess each existing erosion/flood structure and the estuary edge next to it. The condition of these structures varies a lot – some are relatively undamaged and provide some erosion protection, while others have been reduced to rubble.
- An 'estuary edge unit' strategy (Strategy 2) would divide the estuary edge into four 'units' based on similar characteristics. These characteristics are a combination of the natural environment and the type of structures found there. The four units are:
  - Unit 1: Godwit Street to Heron Street (mainly rubble revetments)
  - Unit 2: Heron Street to Penguin Street (mainly salt marsh environment)
  - Unit 3: Penguin Street to Tern Street (mainly walls)
  - Unit 4: South of Tern Street (mainly rubble revetments)

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## Drop-in: 24 June 2020

We're keen to talk to you more about the strategies and options outlined in this newsletter, and answer any questions you might have. The Working Group is going to be at the South New Brighton Community Centre on Beatty Street.

**Date:** Wednesday 24 June

**Time:** 4:00pm—6.30pm. Drop in any time.

If you can't make the drop-in, or if you have any questions in the meantime, please get in touch: [engagement@ccc.govt.nz](mailto:engagement@ccc.govt.nz) or call Katy McRae on 03 941 8037.

From this assessment, the Working Group can now make recommendations on which options could work for what strategies. All options are designed to function for up to 20 years, but there is always the chance of extreme events or a series of events that might reduce their effectiveness. Final decisions about which strategy will be used will be made by Council based on a recommendation of the Working Group.

### **Option: Leave the structures as they are**

The existing structures generally provide some erosion and flood protection and are likely to do so for up to about 20 years. This option includes minor physical work to make the structures safer – for example, removing exposed rebar, stabilising any large pieces of concrete/masonry and lowering any unstable walls.

#### **How and where this option could be applied**

This option is limited to Strategy 1 and applies to walls with no erosion at the base, where the material (mostly rock, broken concrete or masonry) that we'd need to remove to make the structure safe would not reduce the erosion protection that the structure currently provides. This could include some walls between Godwit and Penguin Streets, and south of Tern Street.

Planting on the landward side of the structures would help screen them from view.

### **Option: Repair the existing structures**

This includes minor works to help ensure the structures will continue to provide their current level of erosion protection for about the next 20 years. Minor works include filling in gaps in revetments, revetment toe protection filling, and covering-up (encasing) some of the structures where over-topping is occurring during high tide events.

#### **How and where this option could be applied**

This option is limited to Strategy 1 where the revetments need to be topped-up. This could include some revetments between Godwit and Penguin Streets, and immediately south of Tern Street. Planting on the landward side of the structures would help screen them from view.



*Rubble revetment*

### **Option: Off-shore energy reduction structures**

These include offshore breakwaters which moderate wave energy, reducing the potential for erosion and allowing sediment to be deposited. Breakwaters are most commonly constructed from concrete, rock, or sand contained within permeable fabric.

#### **How and where this option could be applied**

Breakwaters are an appropriate option under Strategy 2 at locations of existing salt marsh and where there is currently a natural estuary edge (for example, Unit 2). Rock is the most appropriate material for construction in the estuary environment.



*Salt marsh and breakwater*

## Option: Build hard-engineered structures

Seawalls are an example of a hard-engineering solution. Hard-engineering materials include steel piling, rock, concrete, timber, and gabions and reno-mattresses.

### How and where this option could be applied

Hard-engineering could be used on Strategy 1 at locations where the existing structure is in poor condition, and on Strategy 2 along Unit 1, 3 and 4 of the estuary edge.

The two hard-engineering solutions being considered are gabion walls, and revetments made from reno-mattresses and/or loose cobbles.

Depending on their design, the materials used, and the environmental conditions, gabion walls and reno-mattresses can last for up to 40 years, and can also be modified in the future to accommodate sea-level rise and other climate change related impacts, such as more frequent and larger storms.

Where possible the existing structures would remain and be covered with gabion walls or rock revetments. This would reduce the volume of new fill material required and reduce costs.

The top of the new structures would be designed to reduce the risk of back-scour – erosion behind the structure which can occur when waves break over the top of the structure.

Planting on the landward side of the structures would help screen them from view and would also reduce the risk of back-scour.



*Gabion wall*



*Reno-mattress*



*An example of reno-mattress extension where another layer of reno-mattress has been added.*

## Option: Enhance the natural shore

Beach re-nourishment using sand, pebbles and cobbles, and establishing vegetation are the two most common methods of shore enhancement.

### How and where this option could be applied

These options would not be appropriate for Strategy 1 as they require a significant length of estuary edge to be enhanced in order to be successful.

Under Strategy 2 cobble and/or pebble beach re-nourishment would be suitable for some or all of Units 2, 3 and 4. Additional planting where salt marsh is currently established, for example, in Unit 2, would be appropriate. However, salt marsh enhancement is only likely to be successful in the longer term if breakwaters are also built. The breakwaters, with maintenance, will last indefinitely and will allow the salt marsh to spread inland as the sea level rises.



*Salt marsh*

## Where to from here?

The Working Group is now working on concept designs and indicative costings for four options:

- Gabion walls that may include reno-mattresses at the toe of the sea wall.
- Rock revetments that would include covering and containing existing rubble and seawall foundations.
- Cobble beach re-nourishment that includes covering and containing existing rubble and seawall foundations.
- Rock breakwaters combined with salt marsh enhancement.

Concept designs aren't needed for the 'leave as they are/ minor works' and salt marsh enhancement options, but indicative costs will be determined.

A final Erosion Options Report will be prepared in late July 2020 and presented to the Southshore Residents' Association and the Coastal Burwood Community Board in August. It will then go to Council who will decide whether to approve funding for the work.

