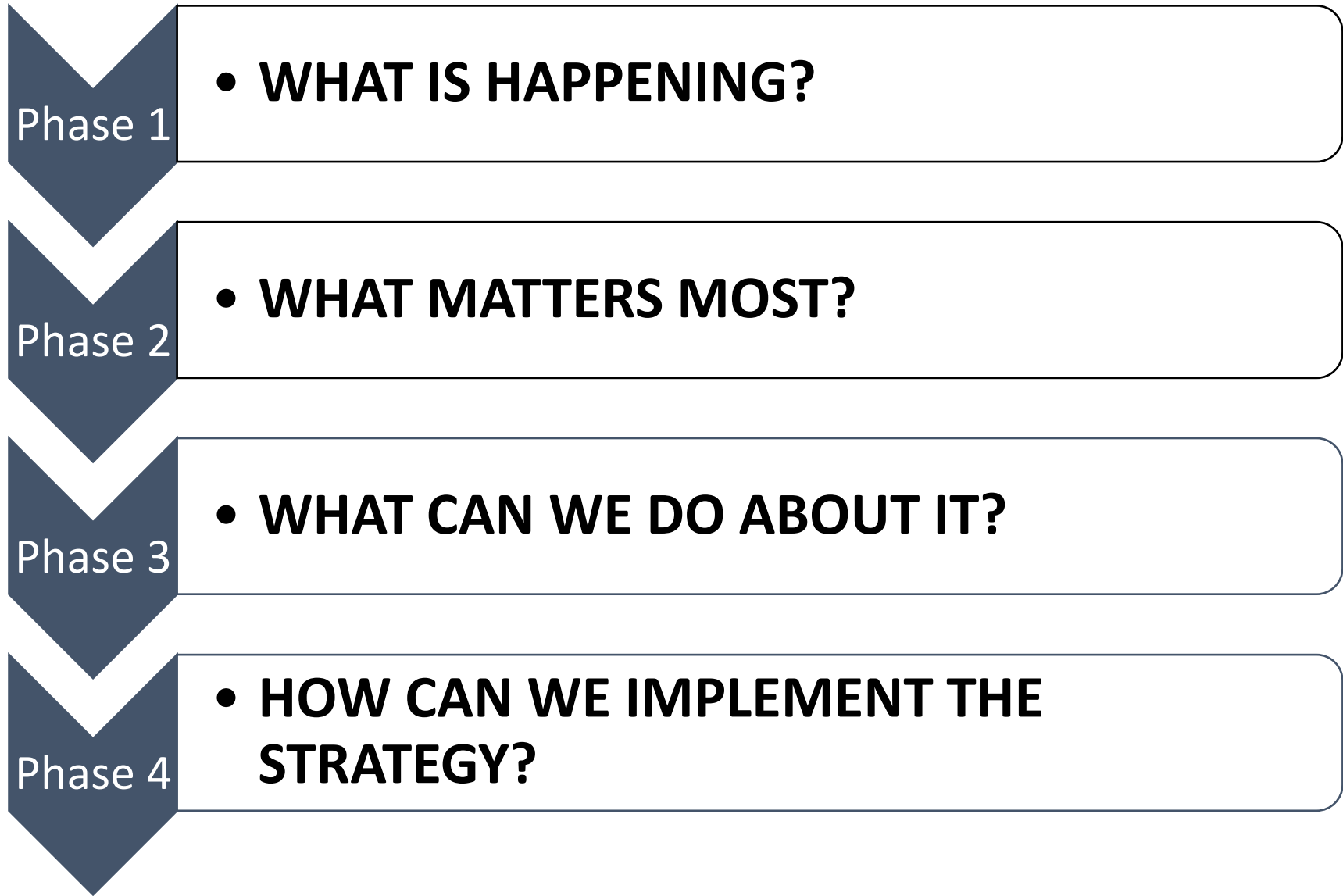




# COASTAL CONVERSATIONS

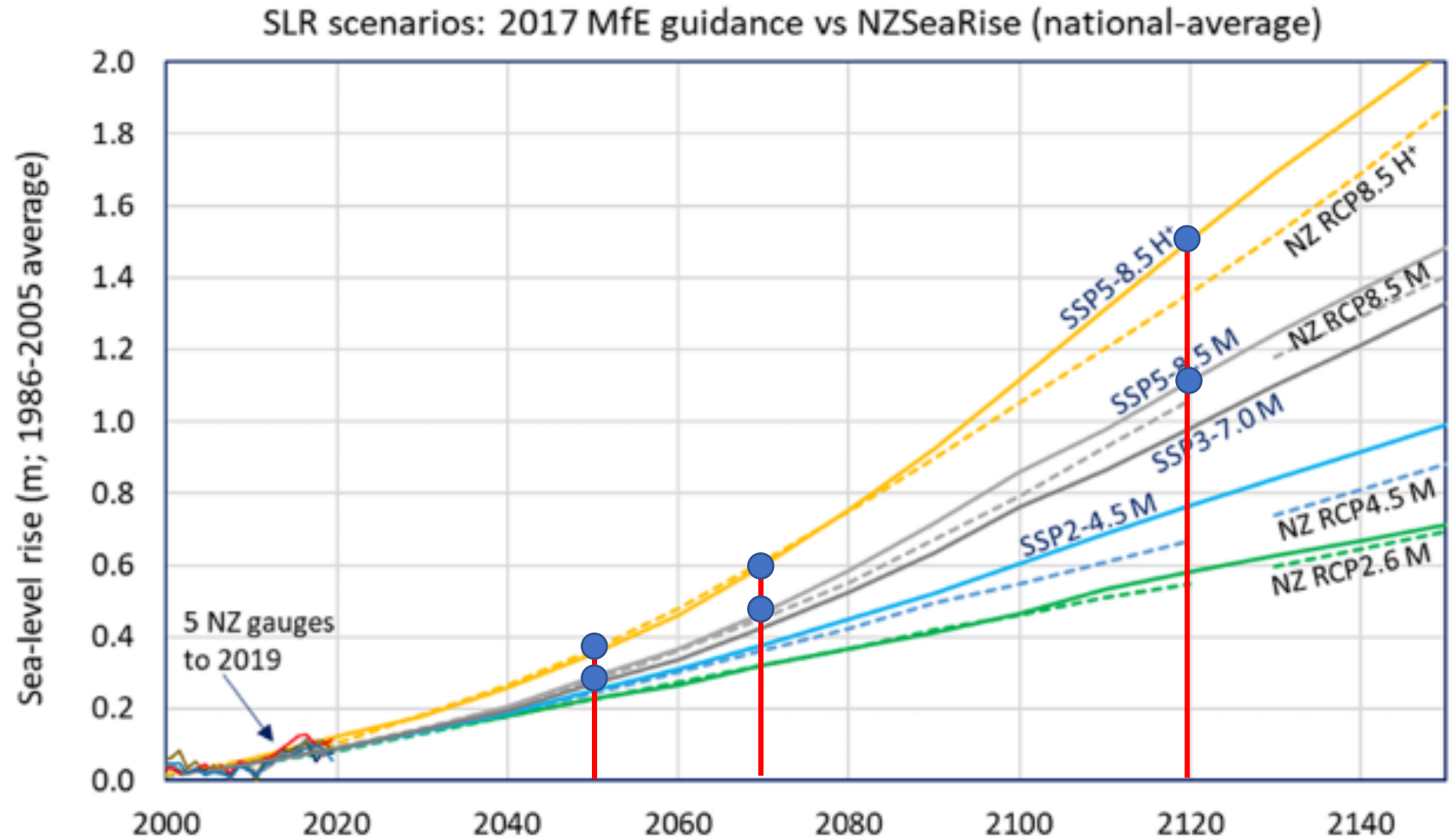
Leithfield Beach  
5 October 2022

# Summary

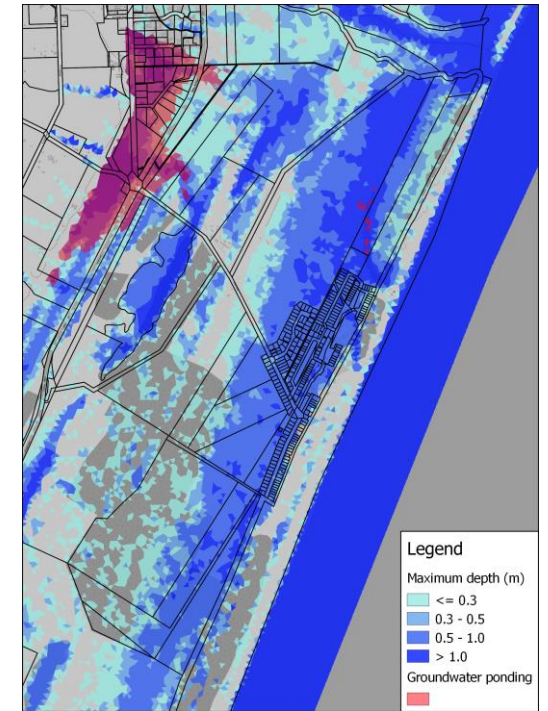
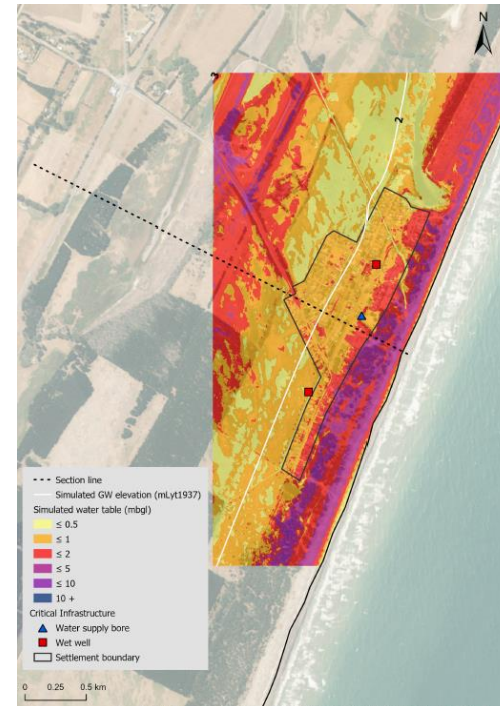
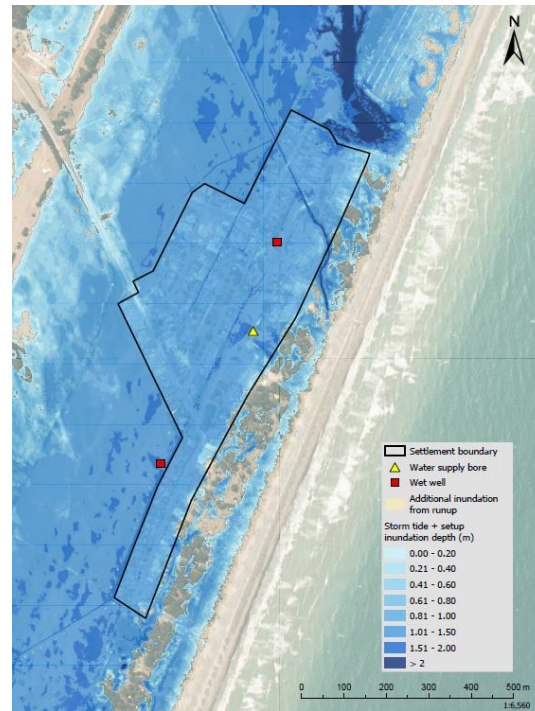
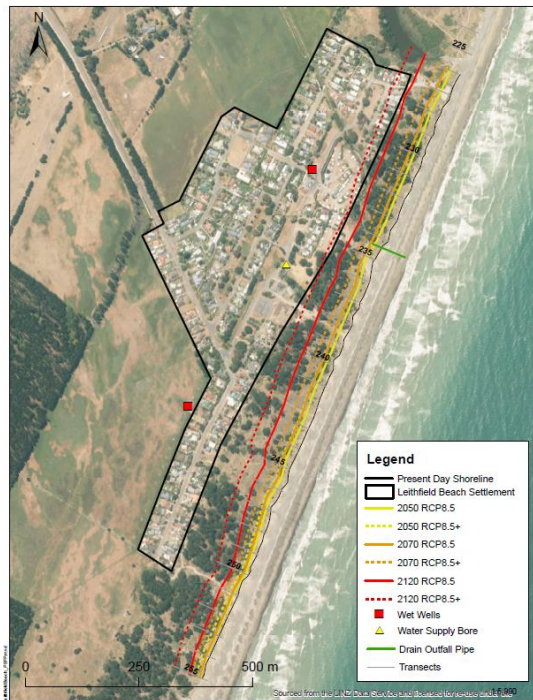


# Phase one: What is happening?

Figure 1: Comparison of new NZSeaRise projections with 2017 coastal hazards guidance projections from 2000 to 2150

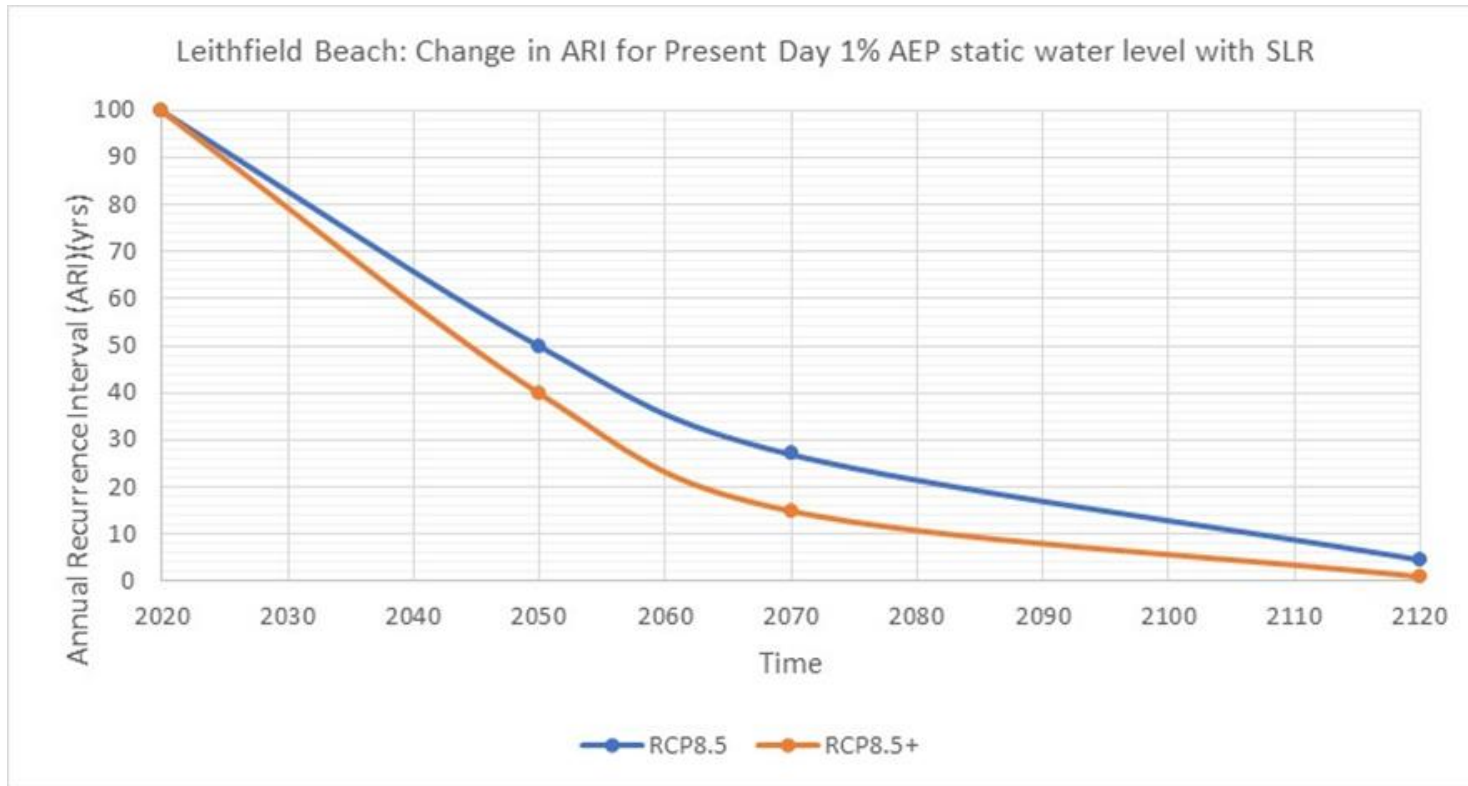


# Phase one: What is happening?



# Phase one: What is happening?

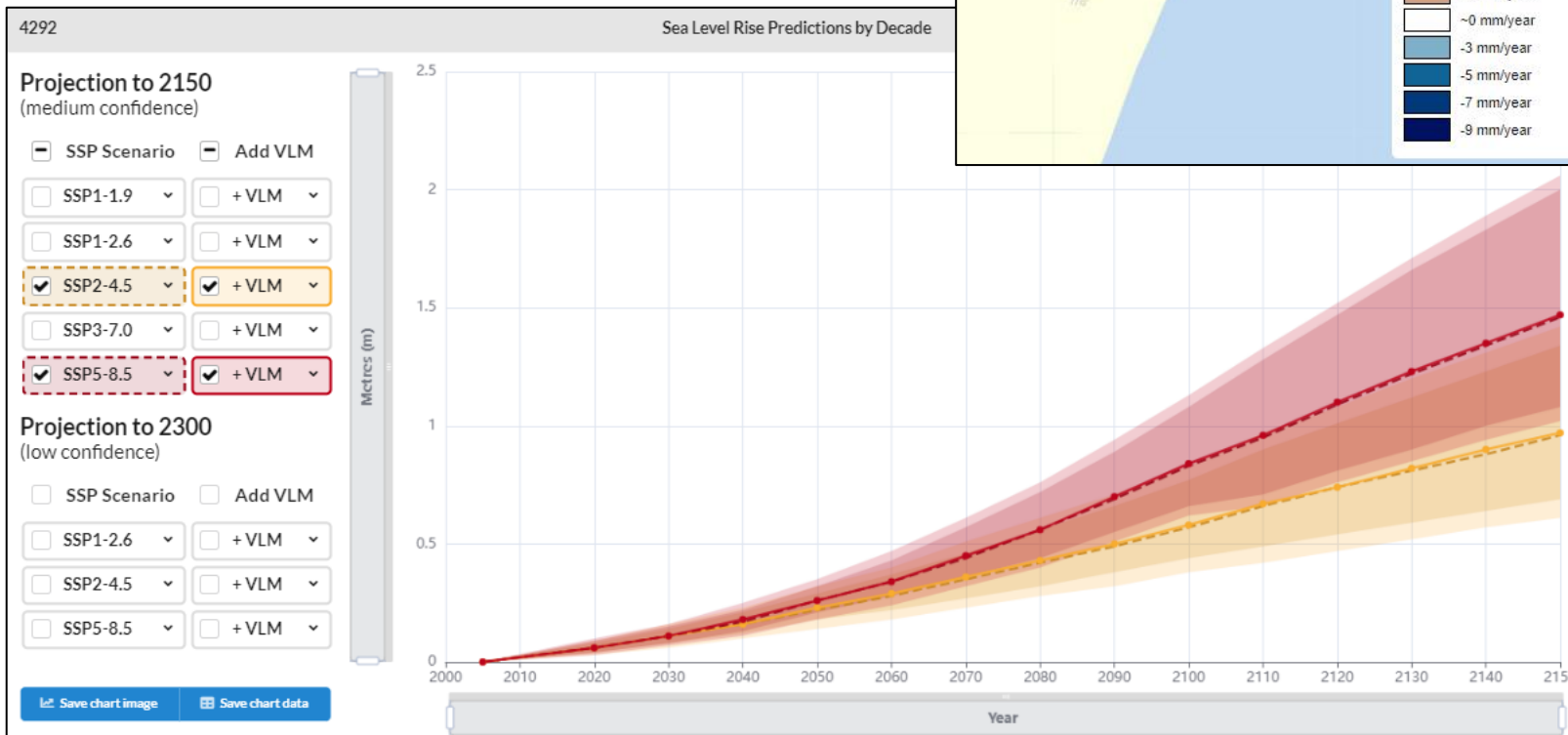
## Increase in Frequency of 1 in 100 Year Events with SLR



**1 in 100 year event could occur every:**

- 40-50 Years by 2050
- 15-30 Years by 2070
- 1-5 Years by 2120

# Phase one: What is happening?



# Phase two: What matters most?

**What I value most**

1 – the most important to you.  
2 – the nice to have but not essential to you.  
X – the things that aren't that important.

Visual appearance of my settlement

Cultural or historical significance

Feeling of being on holiday

No flooding on access roads

Family connection with the area

Existing trees and vegetation

Recreation trails

Fishing opportunities

No flood water in my house

No flood water on my property

Ability to get insurance for my house

I also value...

Who I live next to

Smell or sound of the ocean

Birdlife

Drinking water security

Community feel

Physical access to beach

Uninhibited vehicle access to my property

Easy walking distance to beach

Ability to dispose of wastewater

Space on beach to play and enjoy

**COASTAL CONVERSATIONS**  
The environment is changing, how will you?

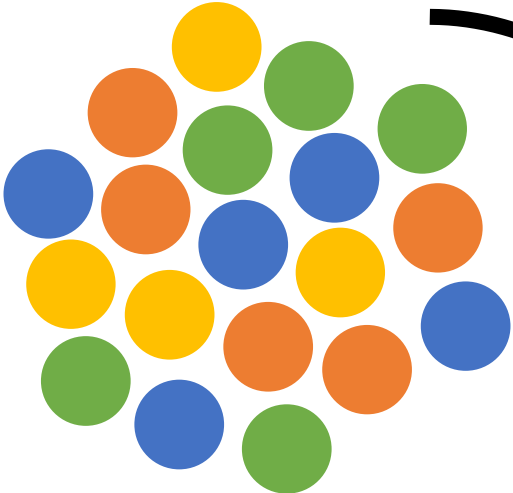
**HURUNUI**  
District Council

## Draft objectives:

- Ensure houses are kept free from water and remain insurable and serviceable.
- Retain the authentic and original feel of Leithfield Beach.
- Maintain a well-functioning coastal dune system and continue to promote biodiversity.

# Phase three: What can we do about it?

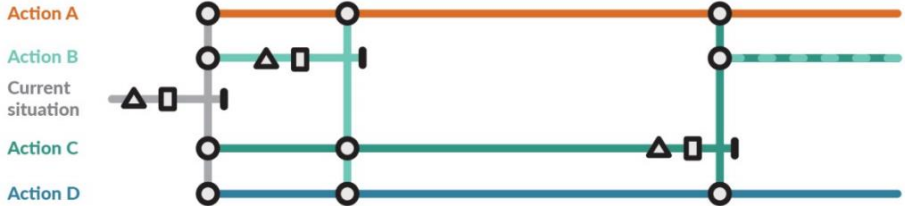
Long list of options



Short list of options

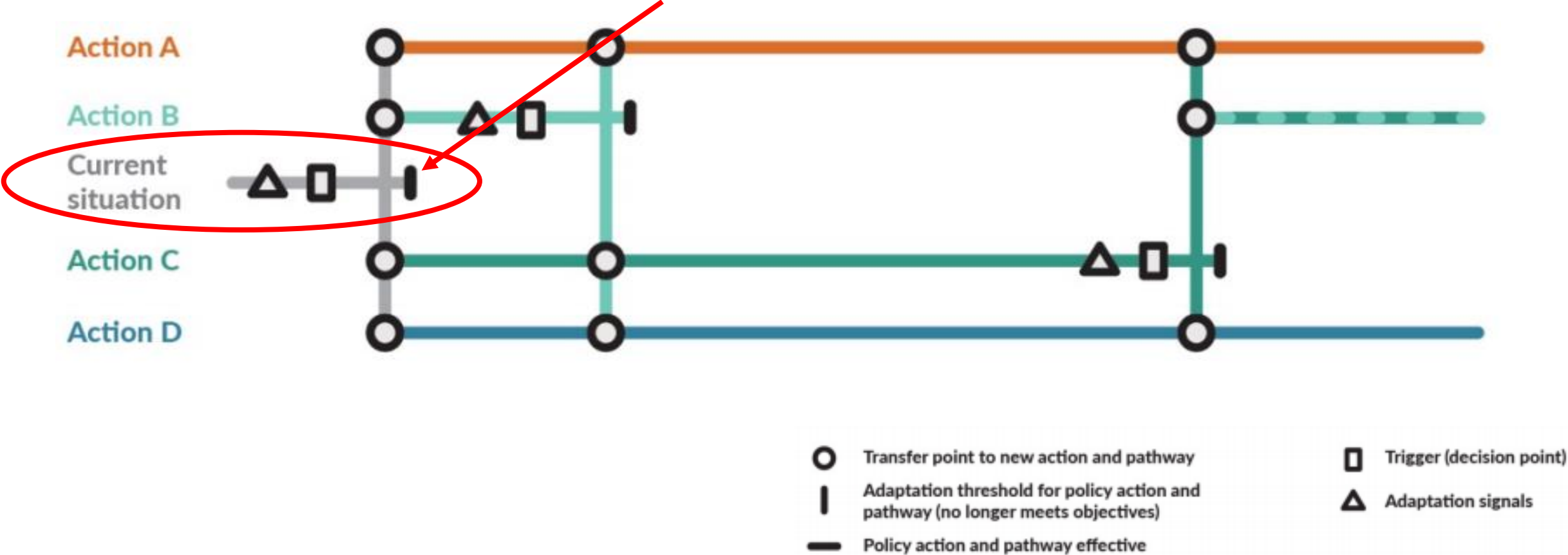


Proposed adaptive plan





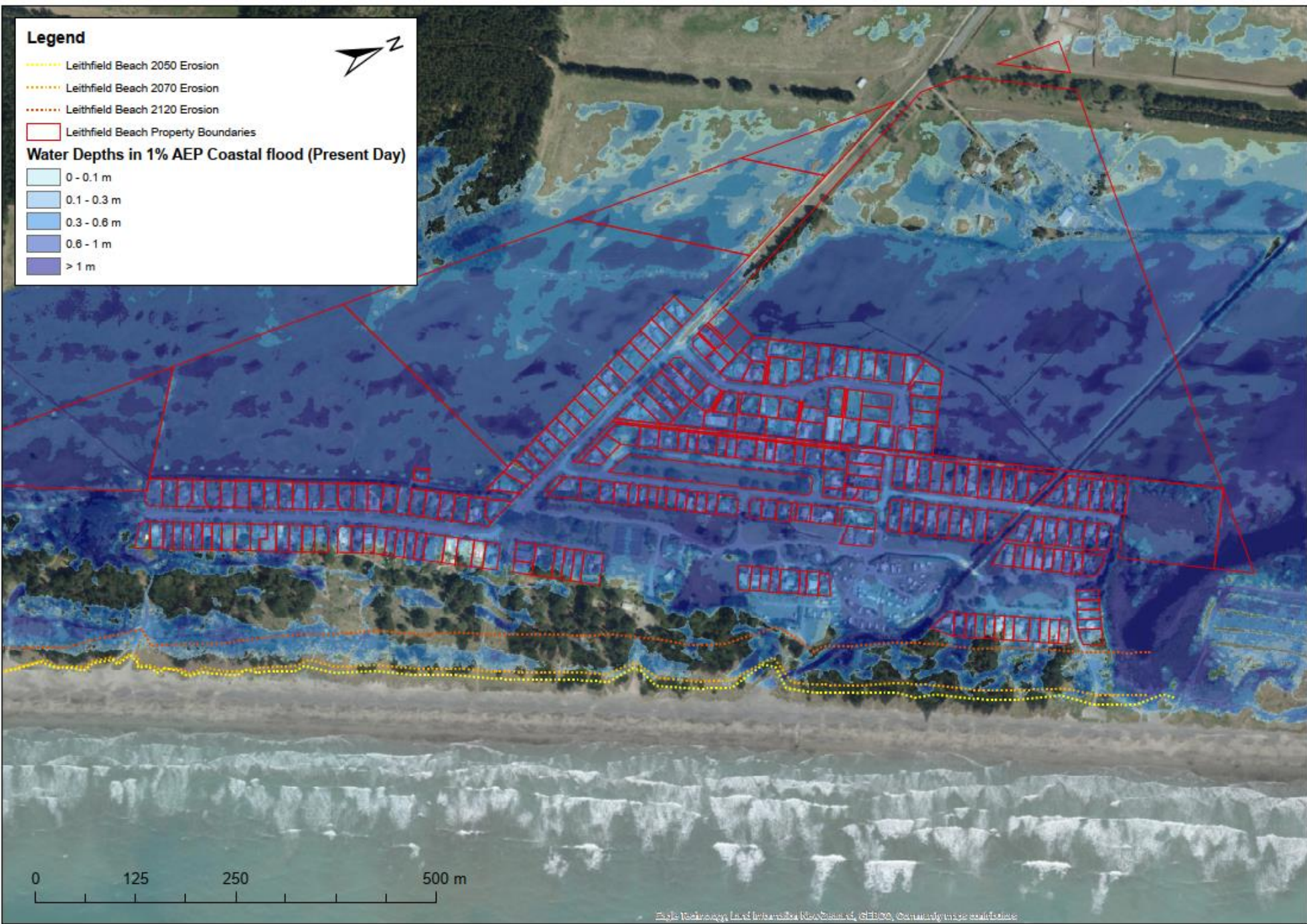
# Phase three: What can we do about it?



# Phase three: What can we do about it?

# Leithfield Beach Short-listed Protection Options

Engineering and Planning Options



# Short-listed Options for Leithfield Beach

## Engineering (hard/soft) Options for whole settlement:

1. Dune and behind beach vegetation enhancement
2. Beach scraping on seaward side of beach
3. Inundation Bund

## Individual Property basis:

4. Raising floor levels
5. Waterproofing buildings

## Planning Options

6. Maintaining District Plan
7. Avoid future development
8. Relocatable buildings
9. Managed retreat (incremental)

# Dune management and planting over total 1.5 km frontage



- Dune planting and access way management – including board walks through/over the dune, signage around vehicle access, sand trap fencing.
- Cost to do total area with signage, fencing and boardwalks could be \$160,000

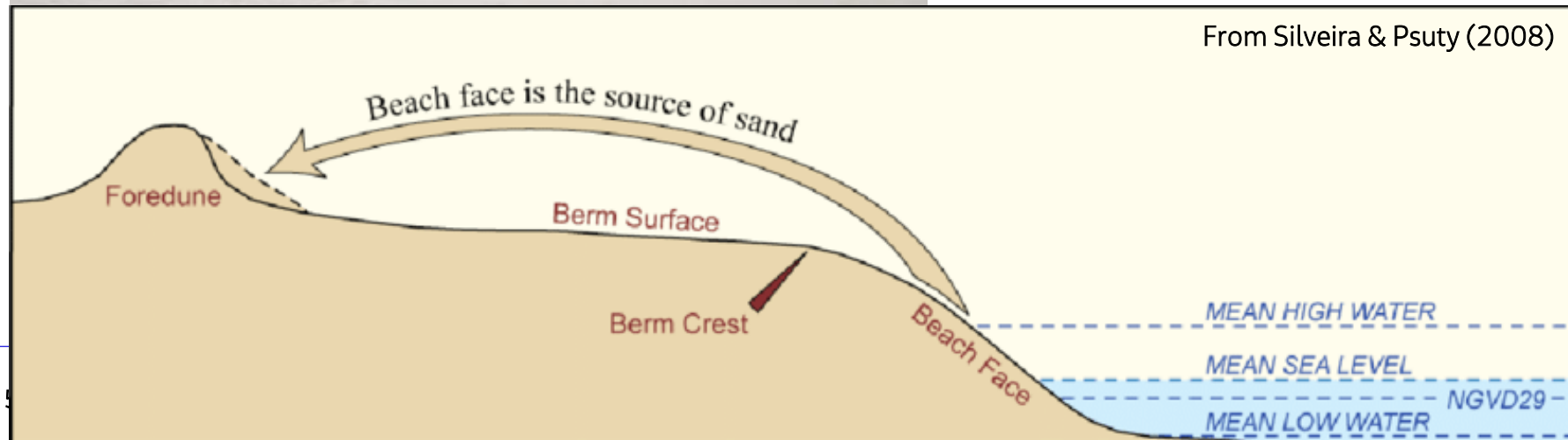


# Beach scraping on seaward side of beach (whole 1.3 km of settlement frontage)



From Voice of Byron (2017)

- A soft engineering approach of periodic beach scraping by bulldozer involving relocating beach sediment to the crest to build up the crest elevation and volume to provide better storm protection.
- Could be applied to whole beach frontage of the settlement (1.5 km) on an as required basis post storm events.
- Cost could be in the order of \$100,000 per scraping. Likely to need doing every 5-10 years.



# Stop banking/earth bund on the west side of the settlement



- A medium-term protection option involving the construction of an engineered earth bund
- Allows water to flood the low laying land to the west, but not enter the properties in the settlement.
- The total bund length required would be approximately 1.9 km in length, and an average of 1.2 m high.
- Due to 'dam' like nature of the structure – unlikely to be easily consented, potential to be over designed in order to meet dam specification requirements, and therefore price estimate may be lower than actual cost.
- Indicative costing of \$740,000





# Raising Floor Levels



- Raising the floor levels of the house to protect the interior and its contents from damage in a flood event.
- It was estimated that the cost of raising a house may be up to the ratings cost of the house (Capital RV of the house)

# Waterproofing Buildings



- localized bunds or walls, modification to stormwater networks, using waterproof materials (e.g. membranes), or providing on site storage around individual buildings.
- Approx \$50,000 per household



# Planning Options

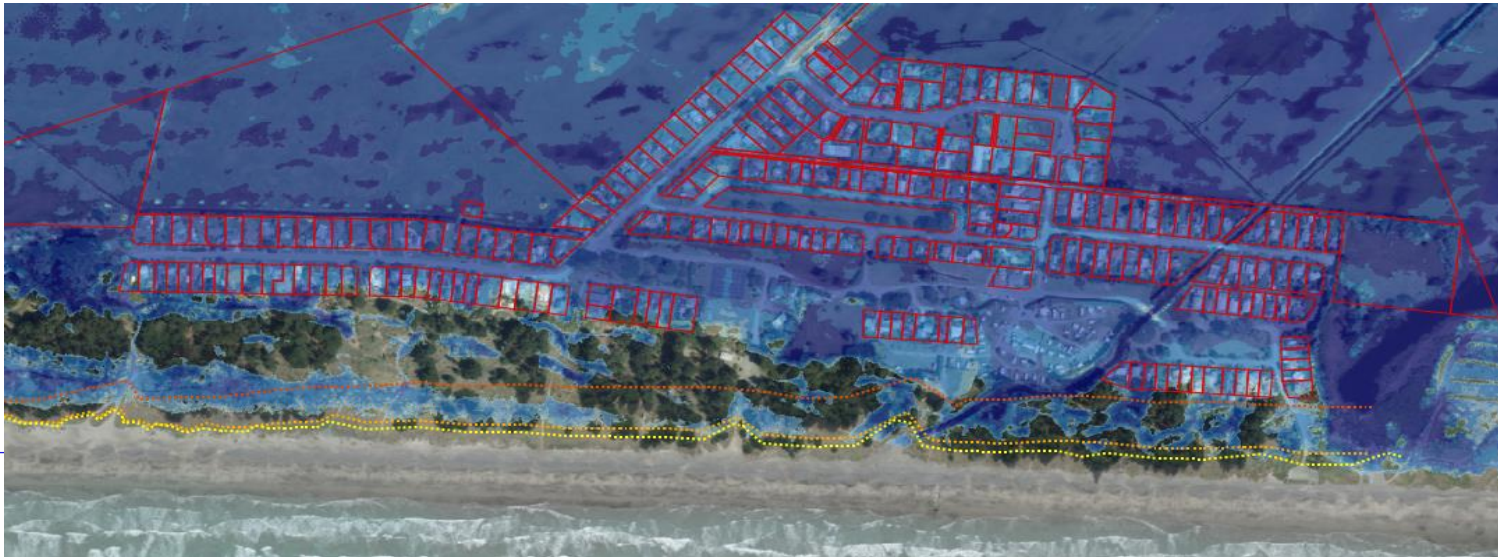
- **Maintaining District Plan**
  - Based on the natural turnover of houses being rebuilt to district plan flood levels
  - Low cost
- **Avoid future development**
  - Does not protect existing development, but prevents an increase in assets within the hazard areas.
  - Low cost
- **Relocatable buildings**
  - All new development must be built to be relocated in the future
  - Low cost
- **Managed retreat**
  - All community is retreated together once threshold is reached.

# Coastal Hazard Adaptation Simulation

Leithfield Beach adaptation pathways

## Aims of the simulation exercise for Leithfield Beach

- Arrange hazard response options over time to address changing coastal hazards at Leithfield Beach
- Explore different pathways of responses to achieve objectives
- Feedback on performance, cost, benefits and other impacts of options
- Promote discussion on how Council and community will develop adaption pathways
- Not intended that a preferred pathway of adaptation for Leithfield Beach be developed today



# Objectives for Leithfield Beach coastal hazard management

Council/community objectives for Leithfield Beach	Adaption simulation measurable objective
Ensure houses remain insurable and serviceable	Number of properties (land parcels) at risk of flooding in a 100yr flood
Maintain a well-functioning coastal dune system and continue to promote biodiversity.	<p>'Erosion buffer distance to properties' to indicate future dune width.</p> <p>Promoting biodiversity is discussed through other criteria.</p>
Retain the authentic and original feel of Leithfield Beach	Not measured in simulation as more intangible – discuss through other criteria



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Reinventing tomorrow.



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