COASTAL CONVERSATIONS

Summary

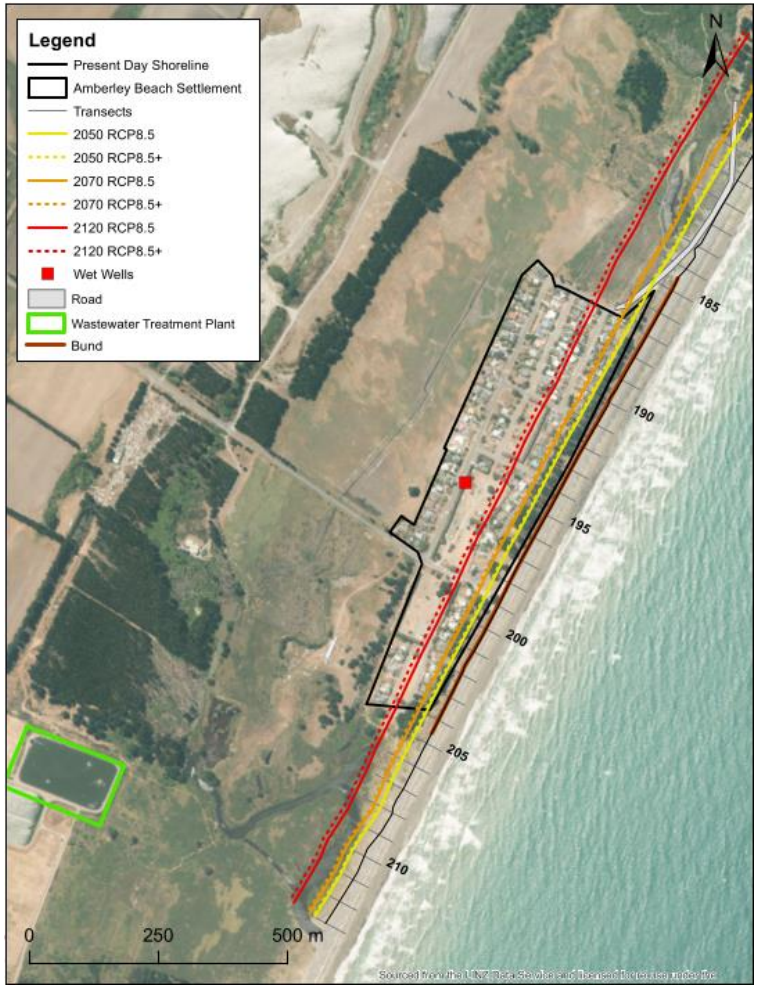
Phase 1
- **WHAT IS HAPPENING?**

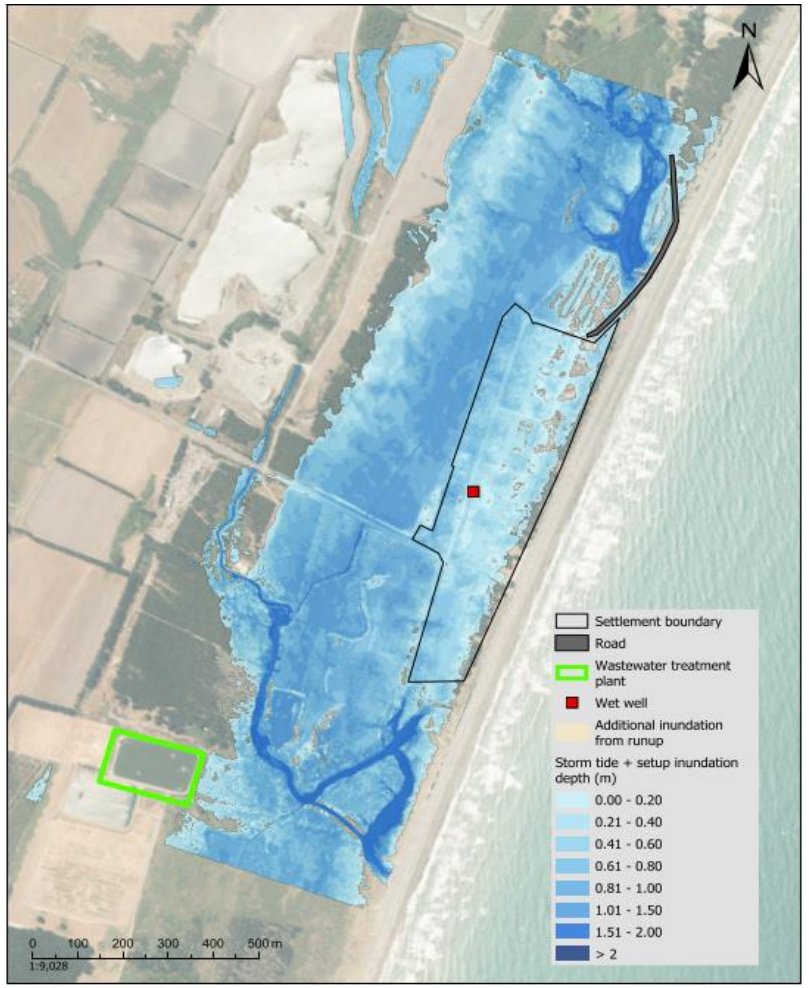
Phase 2
- **WHAT MATTERS MOST?**

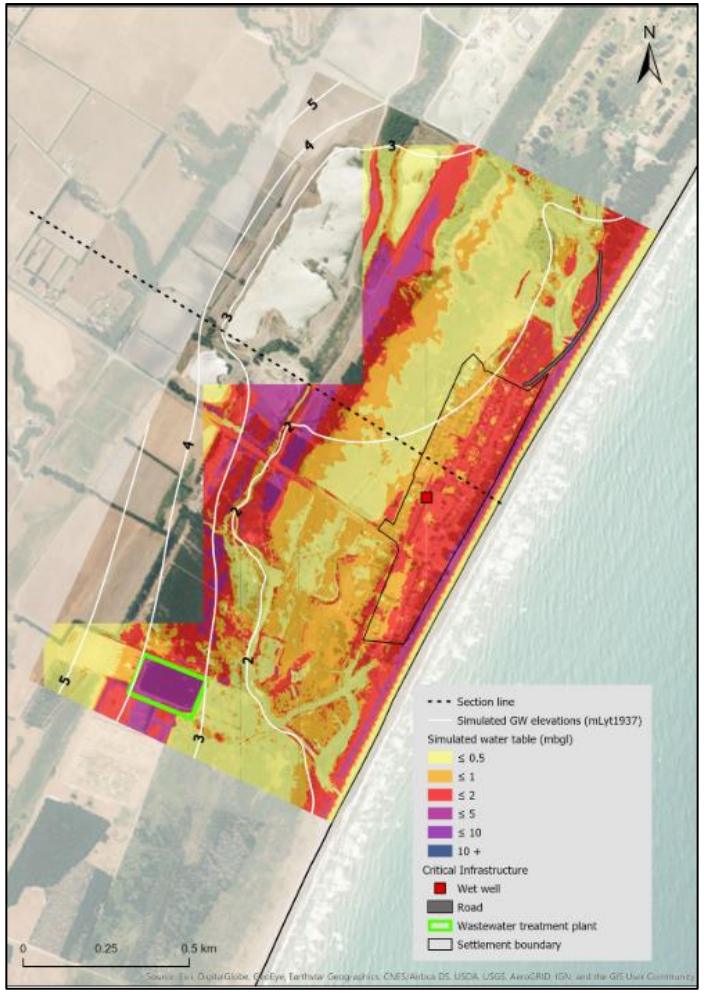
Phase 3
- **WHAT CAN WE DO ABOUT IT?**

Phase 4
- **HOW CAN WE IMPLEMENT THE STRATEGY?**

Phase one:
What is happening?





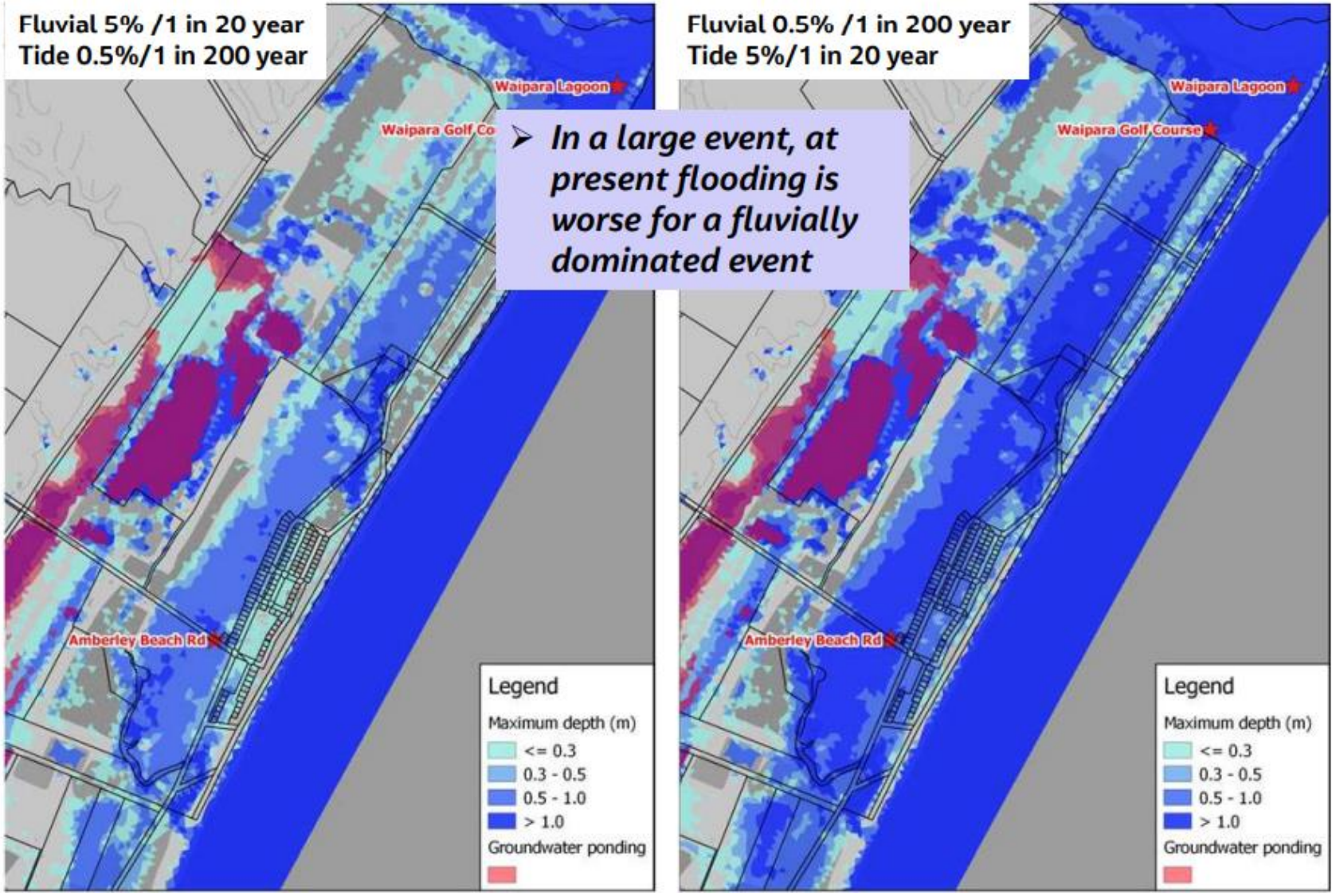


HURUNUI District Council

COASTAL CONVERSATIONS

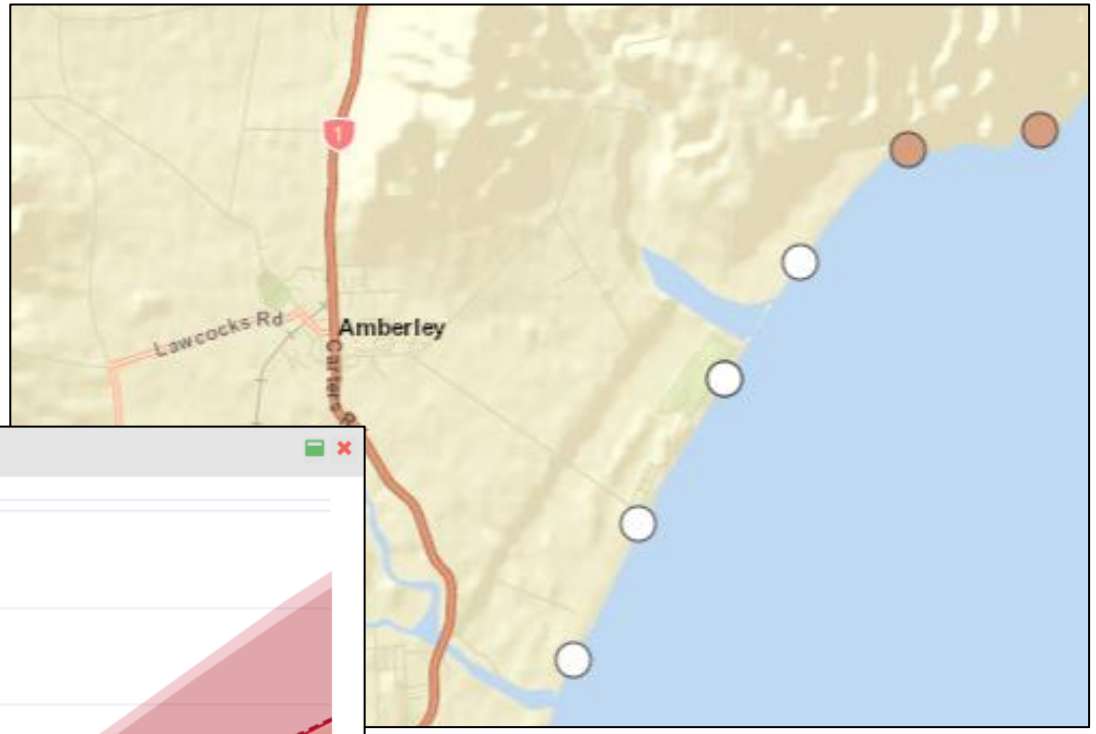
The environment is changing, how will you?

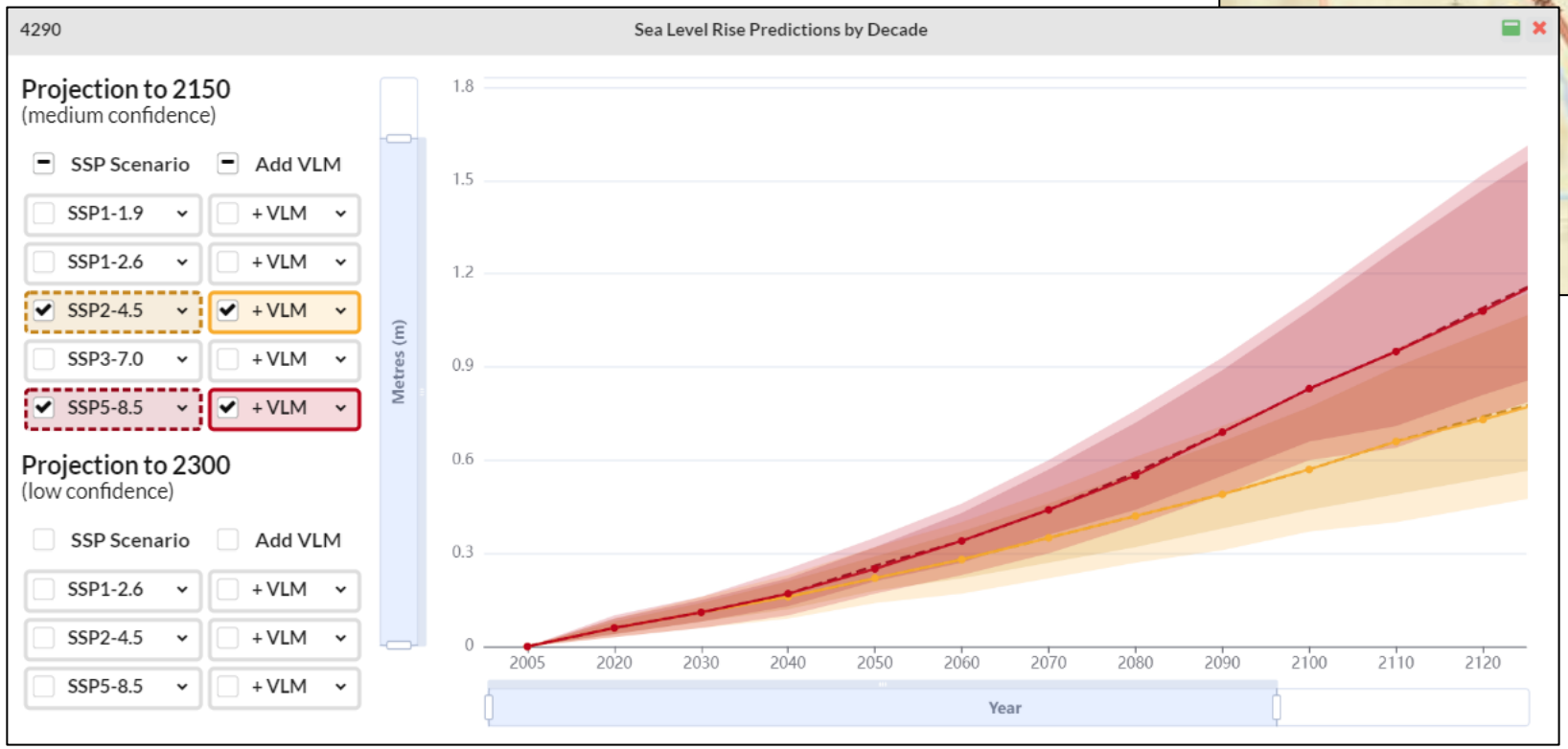
Phase one:
What is happening?



- *In a large event, at present flooding is worse for a fluvially dominated event*

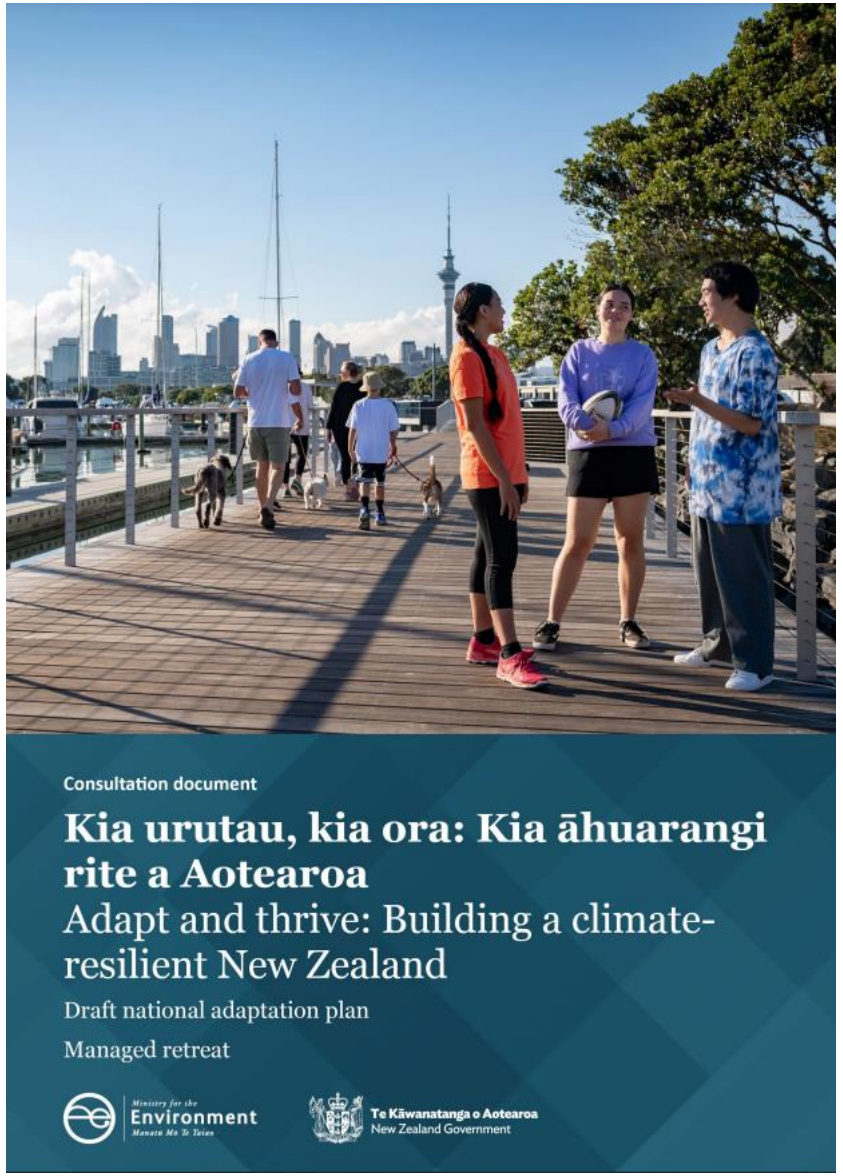
Phase one:
What is happening?





Source: NZ Sea Rise

Phase one:
What is happening?



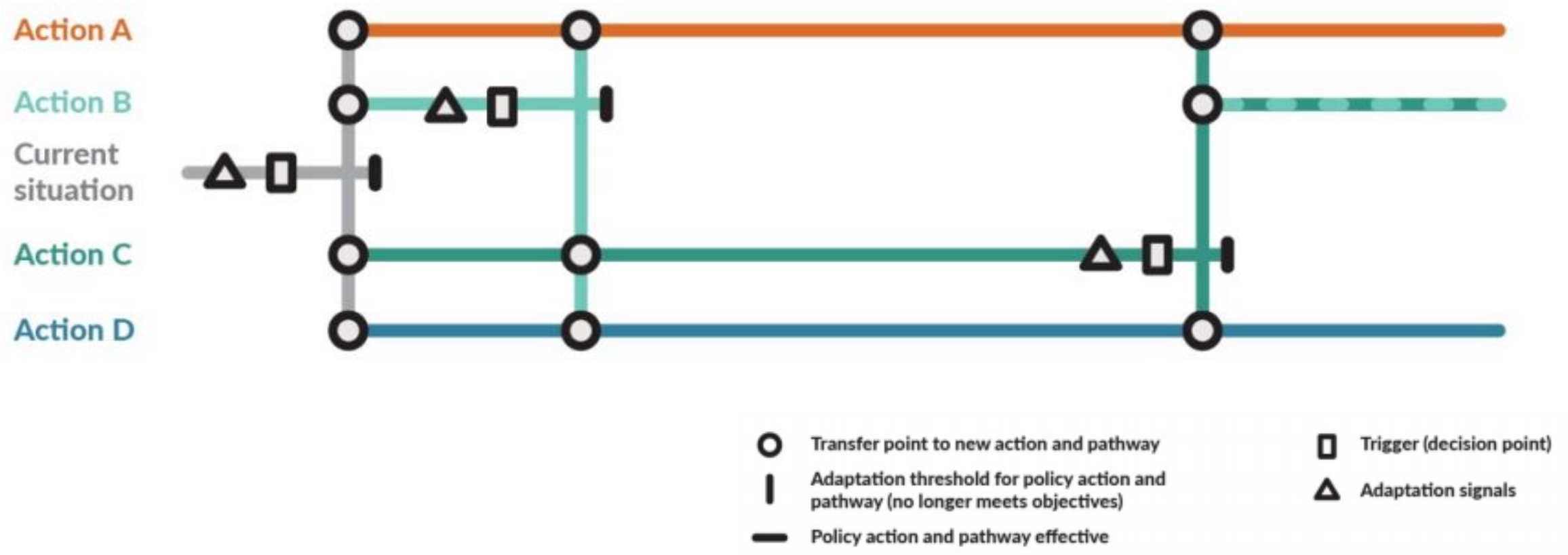
Phase two:
What matters most?

Draft objectives:

Ensure houses are kept free from water and remain insurable and serviceable.

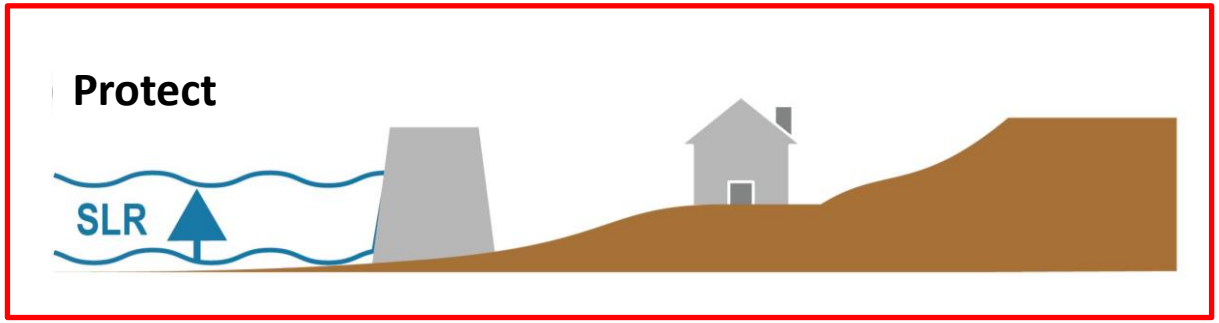
Retain the small-town community feels whereby residents can feel safe and close to the natural environment.

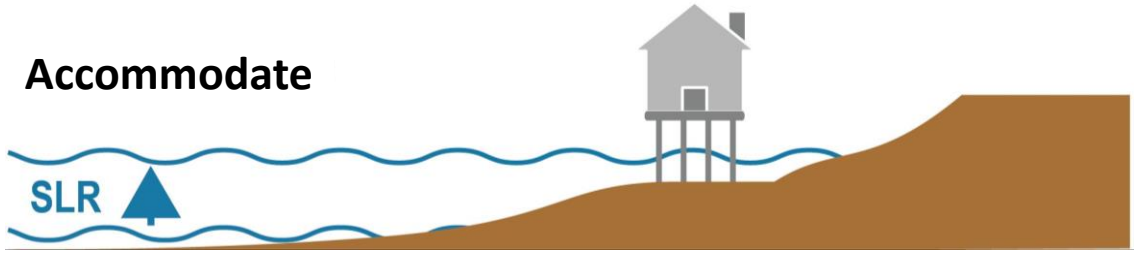
Phase three:
What can we do about it?

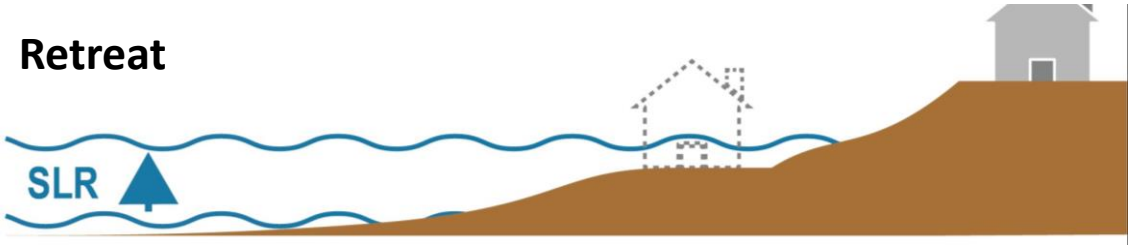


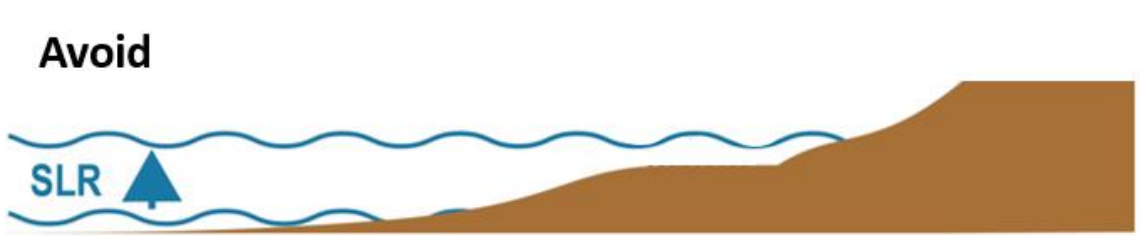
Phase three:
What can we do about it?

Types of options









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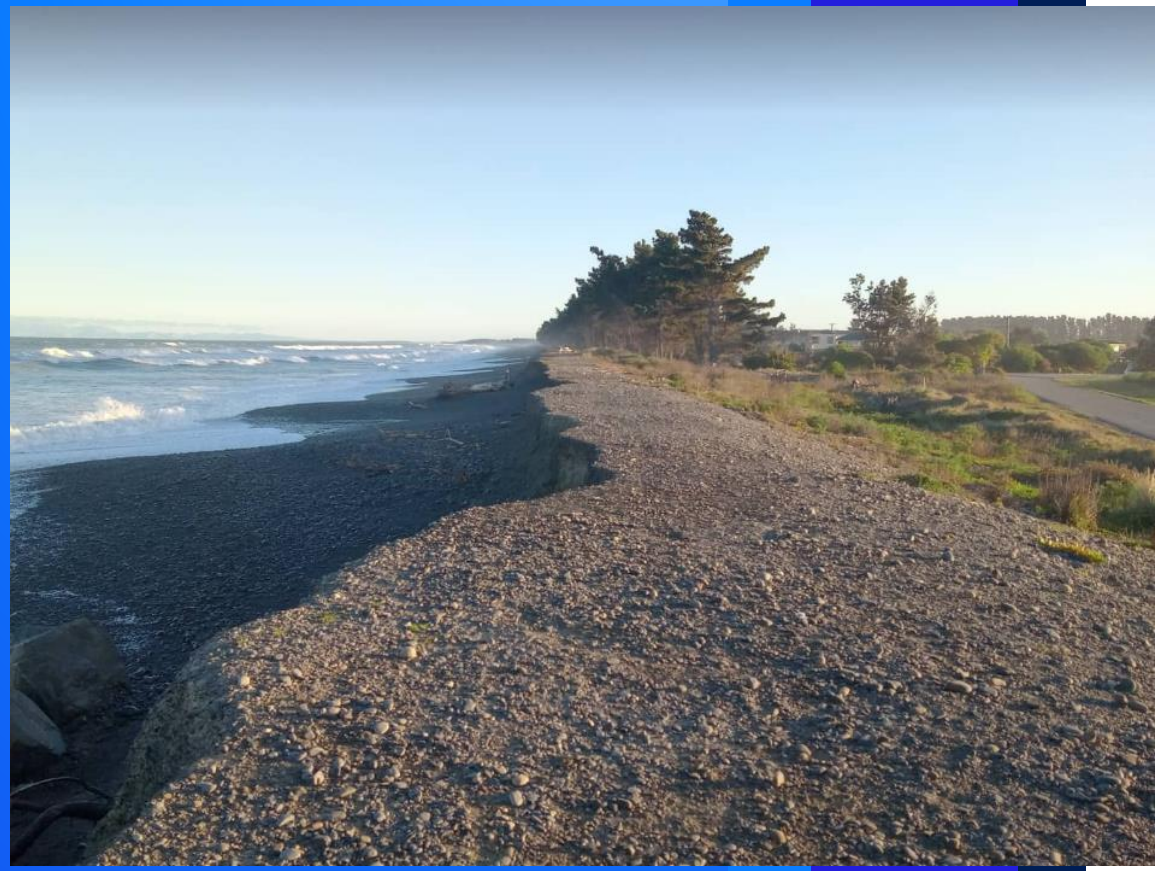
Amberley Beach Bund

Consenting Strategy

- Existing consent Expires: Feb 2023
- Lodge New consents: Aug 2022



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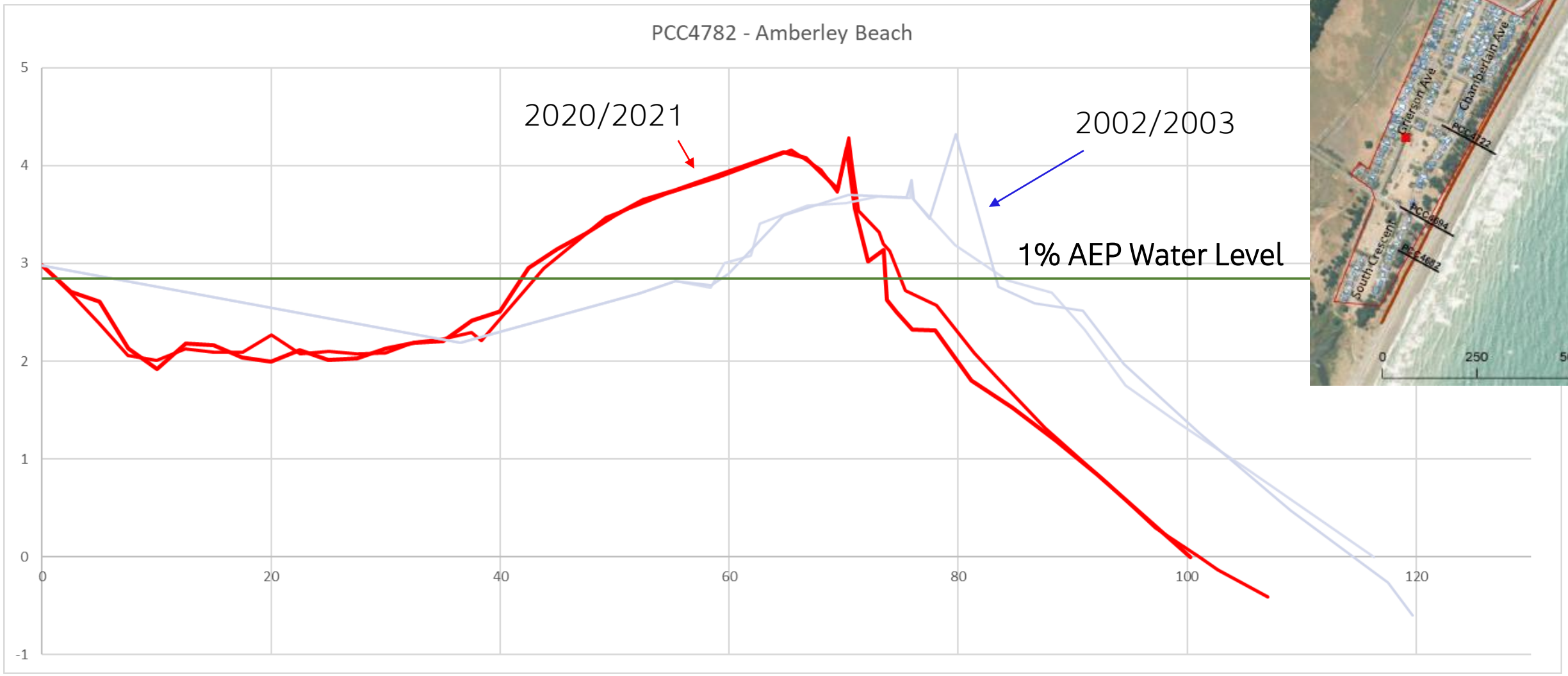
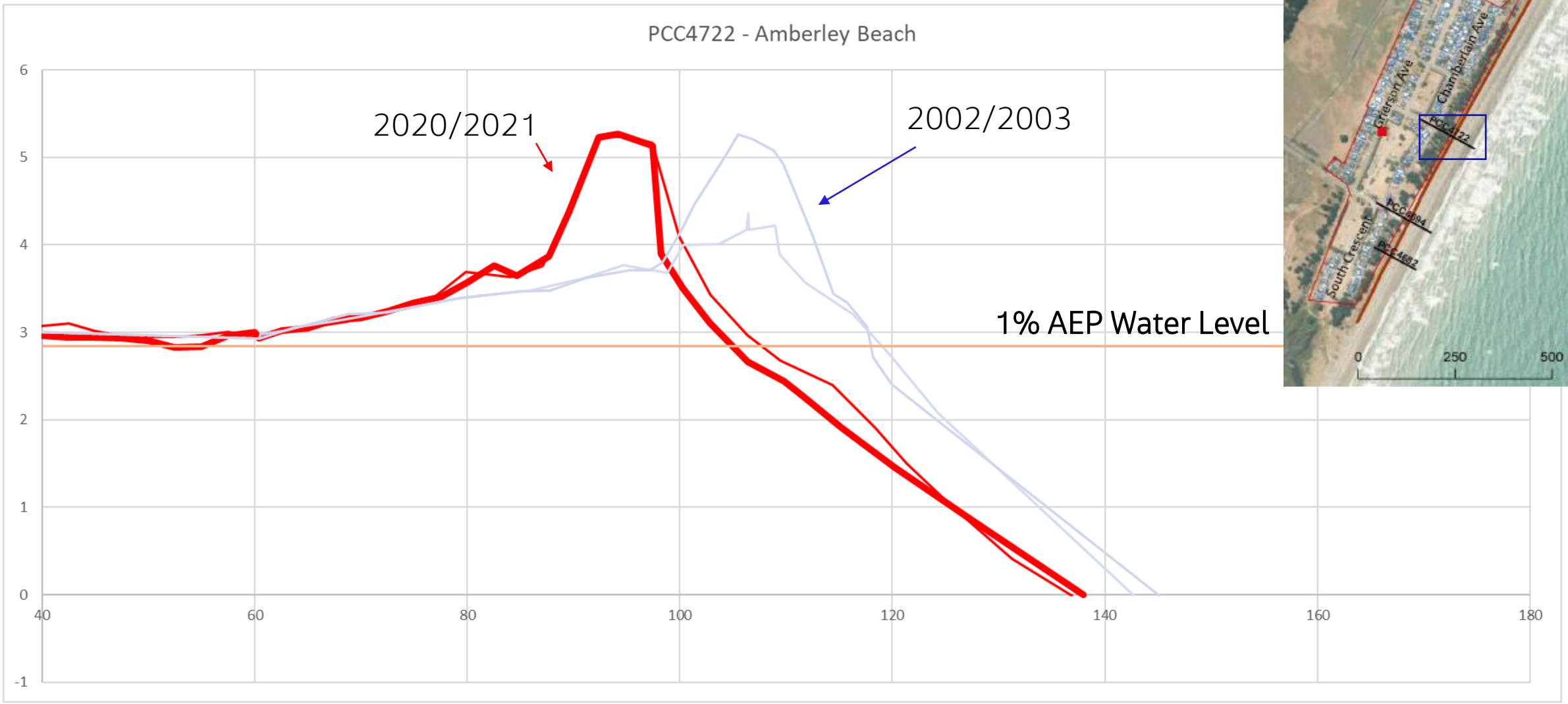
Purpose of the Bund

- Primary Purpose – protection against coastal flooding in large seas
- Secondary benefit – to slow down coastal erosion in front of the settlement

PCC4782 – ECan Profile



PCC4722 – ECan Profile



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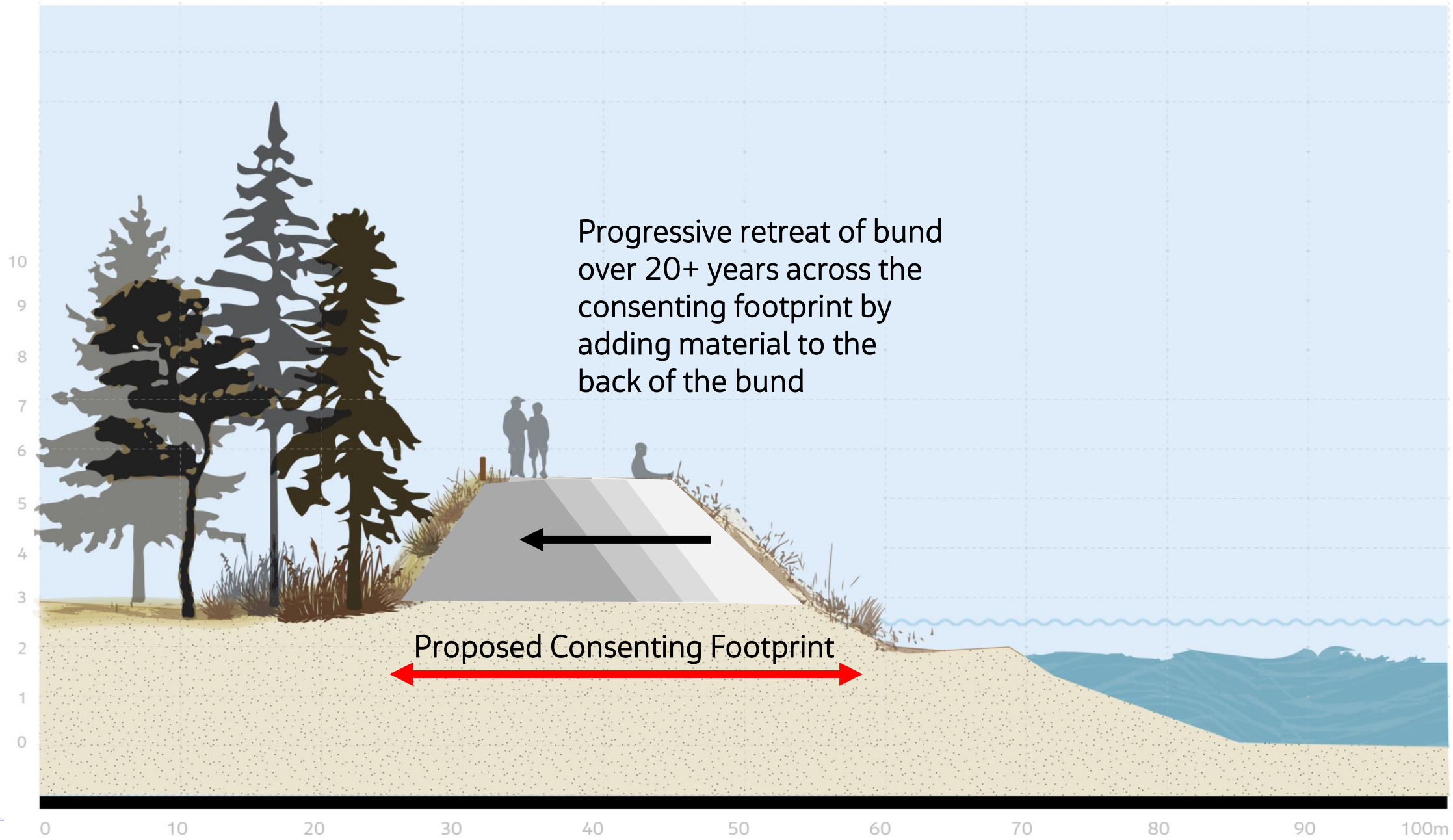
Proposed Bund Consenting Strategy

Consent Strategy

- Apply for the longest possible consent term – but likely to be a 20-year consent from ECan
- Apply for a larger footprint (landward) to allow for progressive shifts in location with erosion – around 15 m retreat of bund over 30 years
- Apply for greater longshore length to include Golf Links Road approx. 200 m north of culvert and small return bund at southern end
- Will need to include hard engineering options around the culvert
- Review existing conditions on construction, design, maintenance and monitoring.
- Will need to consider the potential effects on – vegetation loss (behind the structure for wider footprint), ecology, drainage, natural hazards, access.
- Look for limited-notification consent
- Hold Pre-lodging meeting with ECan to test strategy approach

Proposed Consenting Footprint


Progressive retreat of bund over 20+ years across the consenting footprint by adding material to the back of the bund
Proposed Consenting Footprint
10
9
8
7
6
5
4
3
2
1
0
0
10
20
30
40
50
60
70
80
90
100m

Description:

- Increased crest elevation +0.5m to be 5.7m LVD
- Bund crest progressively relocated 15 m landward as required by erosion.
- Existing 1 km length plus possible 250 m northern extension
- Material supplied by ready mix Christchurch, and community has a contract with them to get lower cost ($15/m3).
- Bund slopes to match as much as possible natural upper beach slopes:
  Front of bund: Approx 1:3.5 to 1:4 slope. Backslope of 1:6 to 1:8.

Positives	Limitations
• Progressive landward relocation of bund crest by adding material to back of structure reduces maintenance volumes, maintains integrity and increases longevity of the bund. • Material slowly lost from the front of the bund feeds into the beach system. • Crest level increased as adaptation for SLR for at least 30-year timeframe, and can be adapted for further sea level rise if required • Material can be locally sourced, reduces the costs involved. • Can be easily repaired or 'topped up' by maintenance injections of additional gravel to the back of the bund if there are any breaches or failures. • Does not impede access to and along the beach, with path along the bund crest. • Has a more 'natural' appearance than high engineering options. • Can be deconstructed/removed more easily than hard engineering protection options. • Meets the requirements of Policy 26 of the NZCPS (use of natural defences), therefore likely to be less contested consent path than for other hard engineering protection options.	• **Progressively over time will be exposed to greater wave attack and increasingly rapid sediment losses, hence likely to require more frequent maintenance injections over time.** • Occupies a new footprint in the backshore which is currently occupied by the carpark and plantation. Would require tree removal and loss of some carpark area. • Cost would increase depending on distance landward that the bund is relocated. • Any water overtopping the structure needs to be contained by secondary bund • Northern section of bund footprint would be located on the current Golf Links Road, therefore compromising this access to the Golf Club. Any northern extension of the re-aligned bund would totally compromise this road access. • Any northern extension would also require rock protection around the lagoon culverts. • Weakness of tie-in at northern end to existing Golf Links Road.

Other things we need to consider:

- Limited notification (Community Sign off)
- ✓ Loss of vegetation and reserve status (done)
- ✓ Approval for tree removal (done)
- ✓ Interference with wetlands (done)
- Ecological effects – birds, lizards (TBC)
- Culvert – What and how hard engineering protection options incorporated into consent – possible “black box” approach using Conditions that hard engineering design needs to be approved by ECan prior to be undertaken (TBC)
- Future of Golf Links Road
- Future of Amberley Beach Road Carpark

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Other Options Considered

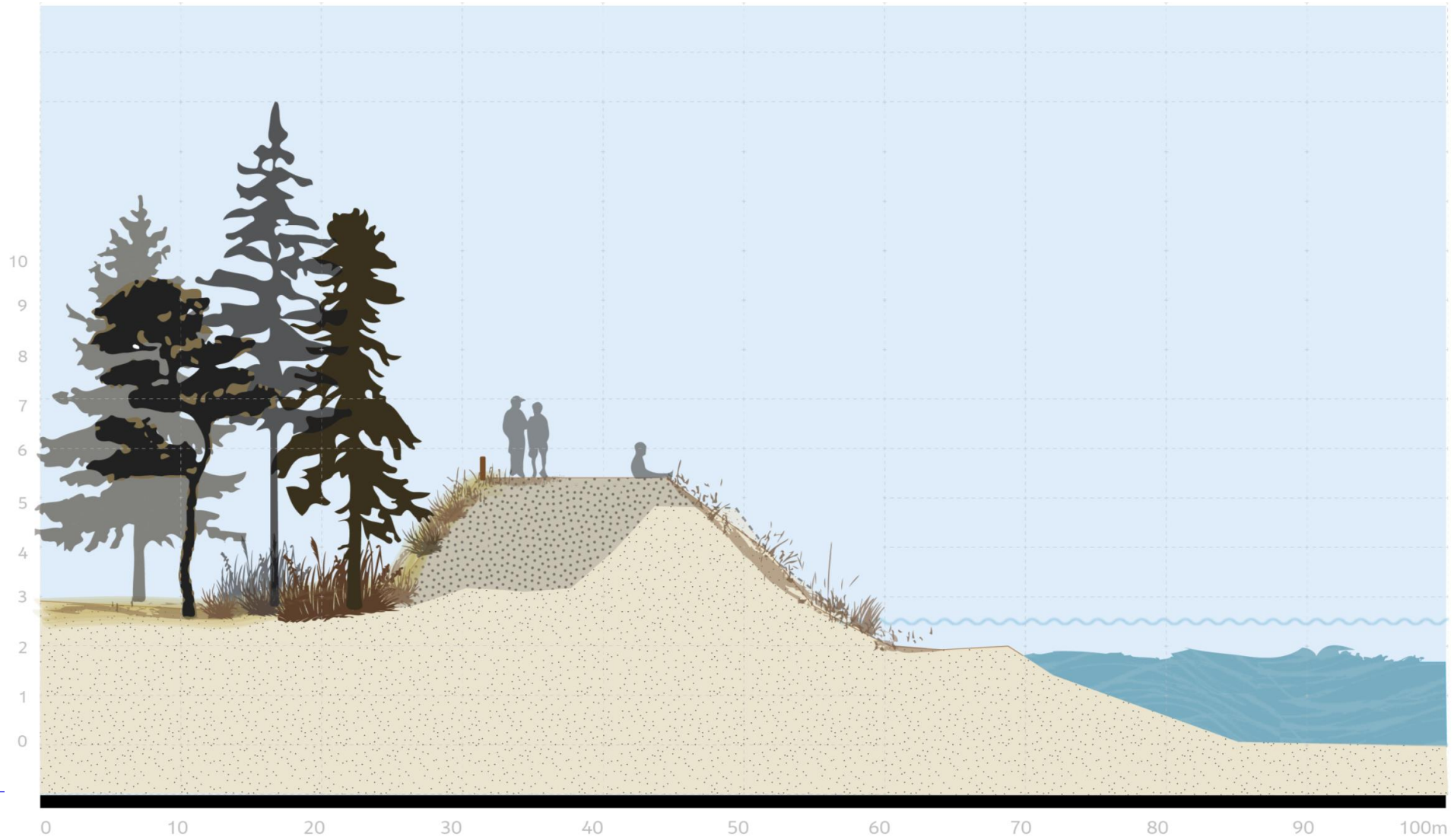
Short-listed Options for Amberley Beach

- **Bund**
  - Option 1a & 1b: Bund in its current location with crest elevation increased by 0.5 m (1km length), with addition 250 m extension along Golf Links Road
  - Option 1c: Over its current length (1 km), bund relocated 5 m landward and crest elevation increased by 0.5 m
  - Option 1d: Over its current length (1 km) bund crest extended landward with a regrade of existing front slope and crest elevation increased by 0.5m
- **Rock revetment**
  - Option 2a: Rock revetment encapsulating existing bund (1 km length)
  - Option 2b: Rock revetment over 250 m of Golf Links Road
- **Interlocking Concrete wall**
  - Option 3a: Interlocking concrete seawall tiered into the front of existing bund (1 km length)
  - Option 3b: Interlocking concrete seawall over 250 m of Golf Links Road

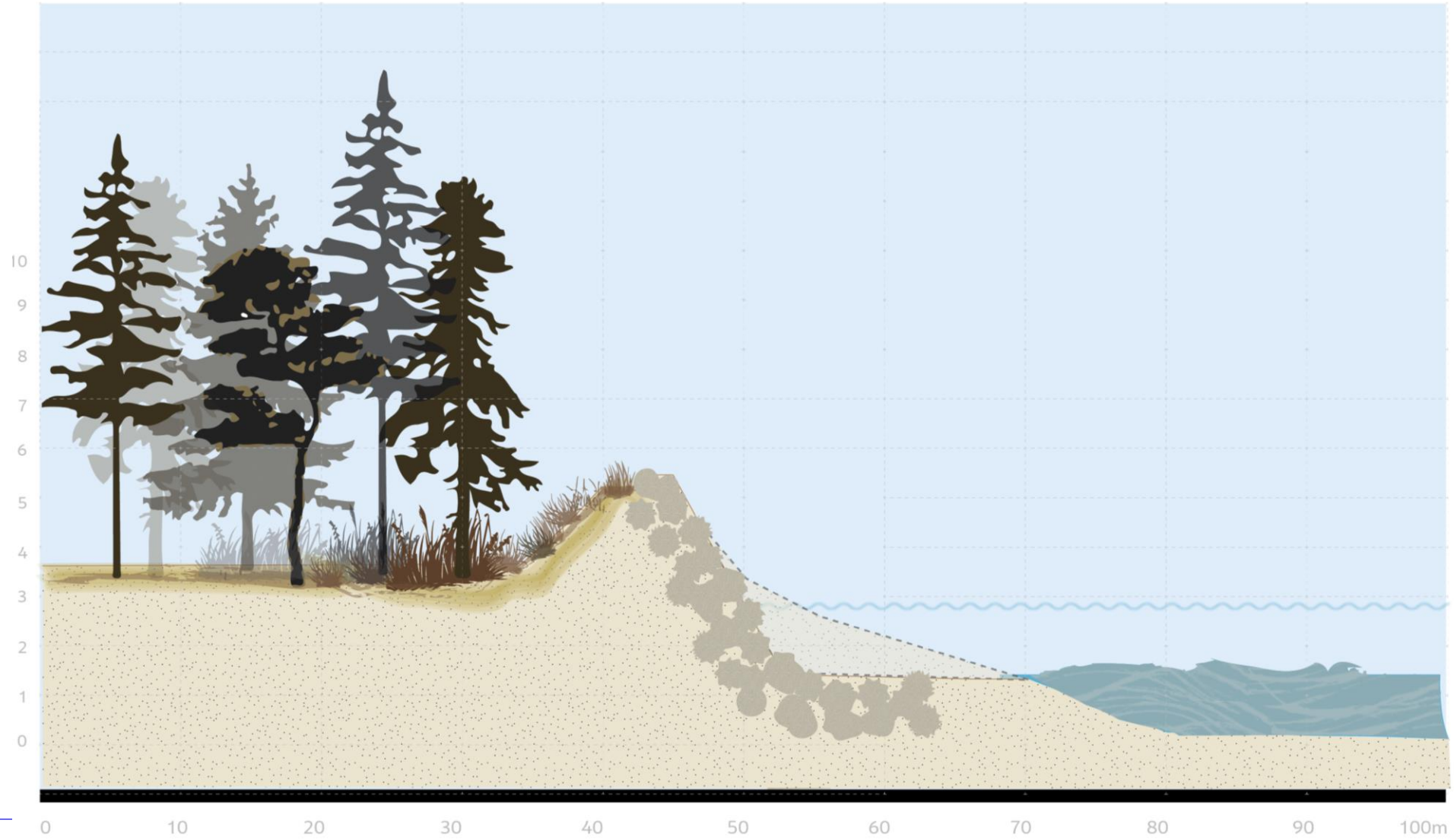
Option 1a: Increase current bund alignment crest by 0.5m (existing 1km)
Option 1b: Same as 1a and extend 250 m north

Option 1c: bund relocation 5 m landward over current length (1km) and crest elevation increased by 0.5 m

Option 1d: bund crest extended landward, with a regrade of existing front slope, and crest elevation increased by 0.5m (existing 1 km length)



Option 2a: Rock revetment along existing bund alignment (1 km length)
Option 2b: Same as 2a and extended 250m north



Option 3a: Interlocking concrete seawall tiered into the front of existing bund (1 km length)
Option 3b: Same as 3a and extended 205m north

Source: Westlock Concrete Solutions Ltd

Summary of Indicative Costings (Excl. consenting and maintenance)

Short-listed Option	Indicative Cost	Indicative Budget*	Indicative budget cost/linear meter
Bund			
Option 1a – Increase current bund alignment crest by 0.5m	$292,000	$370,000	$350/linear m
Option 1b – Extend current bund alignment 250m along Golf Links Road with 0.5m crest elevation increase	$530,000	$680,000	$520/linear m
Option 1c - bund relocation 5 m landward over current length (1km) and crest elevation increased by 0.5 m	$595,000	$760,000	$725/linear m
Option 1d - bund crest extended landward, with a regrade of existing front slope, and crest elevation increased by 0.5m (existing 1 km length)	$664,000	$850,000	$810/linear m
Rock Revetment			
Option 2a - Rock revetment along existing bund alignment (1km length)	$17,306,000	$22,070,000	$21,000/linear m
Option 2b -Rock revetment along existing bund alignment (1 km length) with 250m extension along Golf Links Road	$21,417,000	$27,310,000	$21,000/linear m
Interlocking concrete seawall			
Option 3a - Interlocking concrete seawall tiered into the front of existing bund (1 km length)	$5,321,000	$6,780,000	$6,460/linear m
Option 3b - Interlocking concrete seawall tiered into the front of existing bund (1 km length) with extension along Golf Links Road (250m)	$6,557,000	$8,360,000	$6,430/linear m

- Indictive budget includes 12.5% professional services & 15% contingency
- Maintenance requirements for the bund are not included in the price, but would impact the whole of life costs of options.

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Important

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What next?

1. Bund consent engagement
2. Preparation of resource consent application
3. CoastSnap photos
4. Longer term adaptation option discussion (including Golf Links Road) later this year

Thank you