



# Mataikona Road

Long listing workshop – 23 July 2022



# Workshop Purpose

- Confirm project scope
- Confirm problems and benefits
- Seek evidence for business case
- Understand community aspirations and opportunities
- Discuss potential options to address problems
- Examples of coastal protection options
- Understand business case process and how to be involved



# Business case process

- Agree on problems – Why are we doing this?
- Develop case for change – Why do we need to solve the problem? Why now?
- Develop options to solve problems – How could we solve the problem?
- Develop and refine preferred option – What is the optimal solution?
- Next steps
  - Funding and approvals
    - Who will fund it?
    - When will it be delivered?
    - How will it be delivered?





# Context

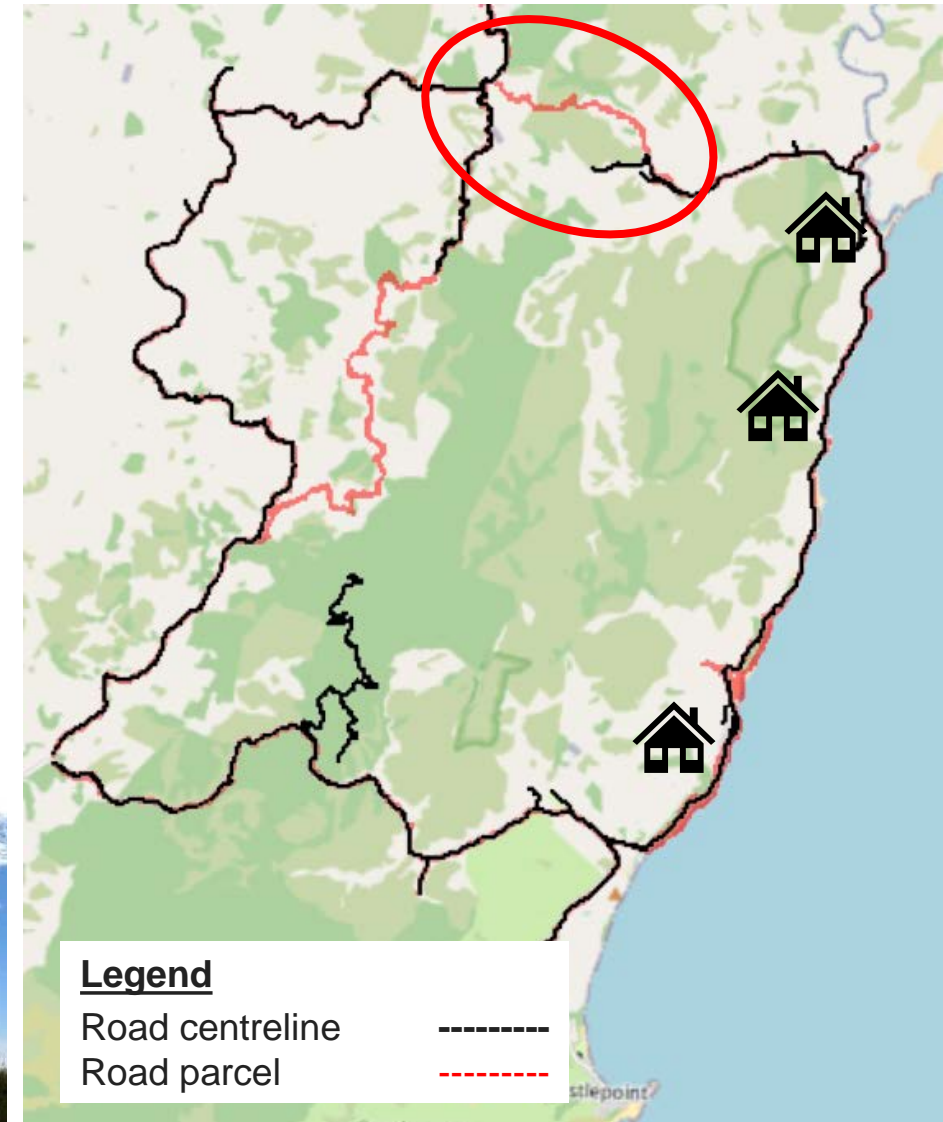






# Transport Context

- Narrow road, no shoulder
- Posted speed limit -100km/h, operating speed limit ~ 30km/h
- Traffic volume ~ 40 - 100 vpd. Approx. 10% heavy vehicles
- Detour via Pack Spur Road (4WD, not all-weather route)
- No alternative route for central settlement



Sandy Bay: Heavy maintenance often required



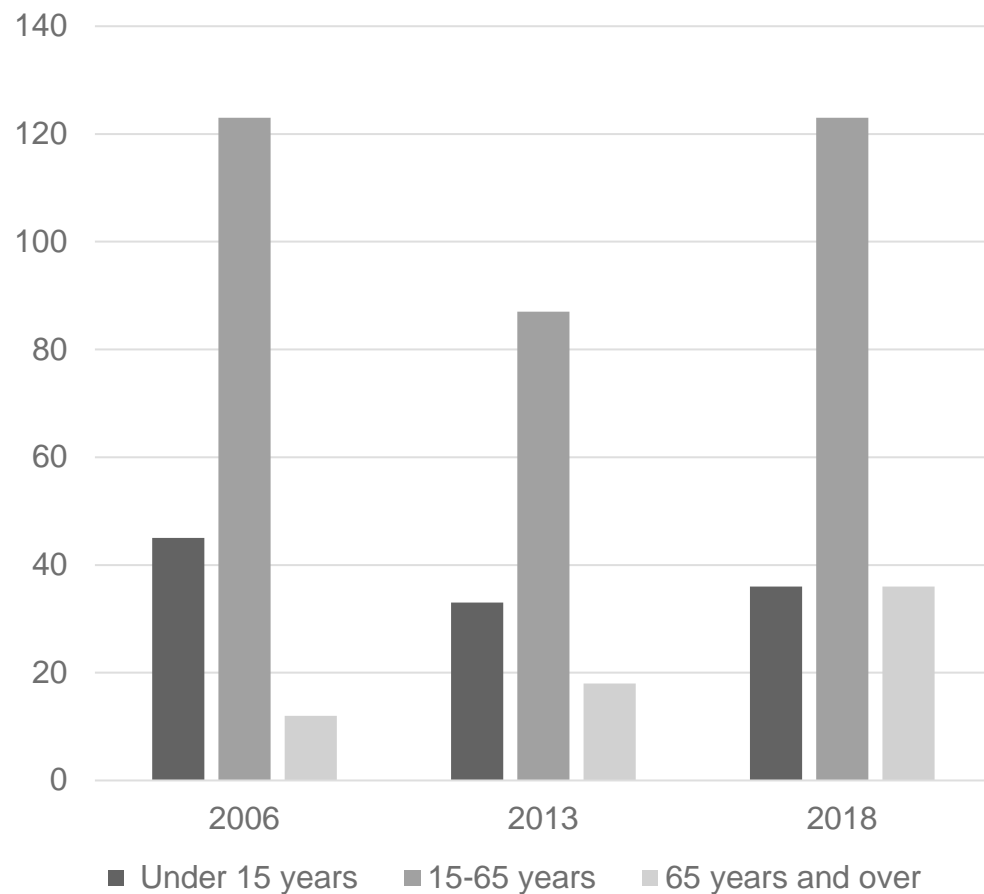
RP ~8km (approach to Suicide Rock): narrow, prone to dropouts



# Social and Economic Context



Population

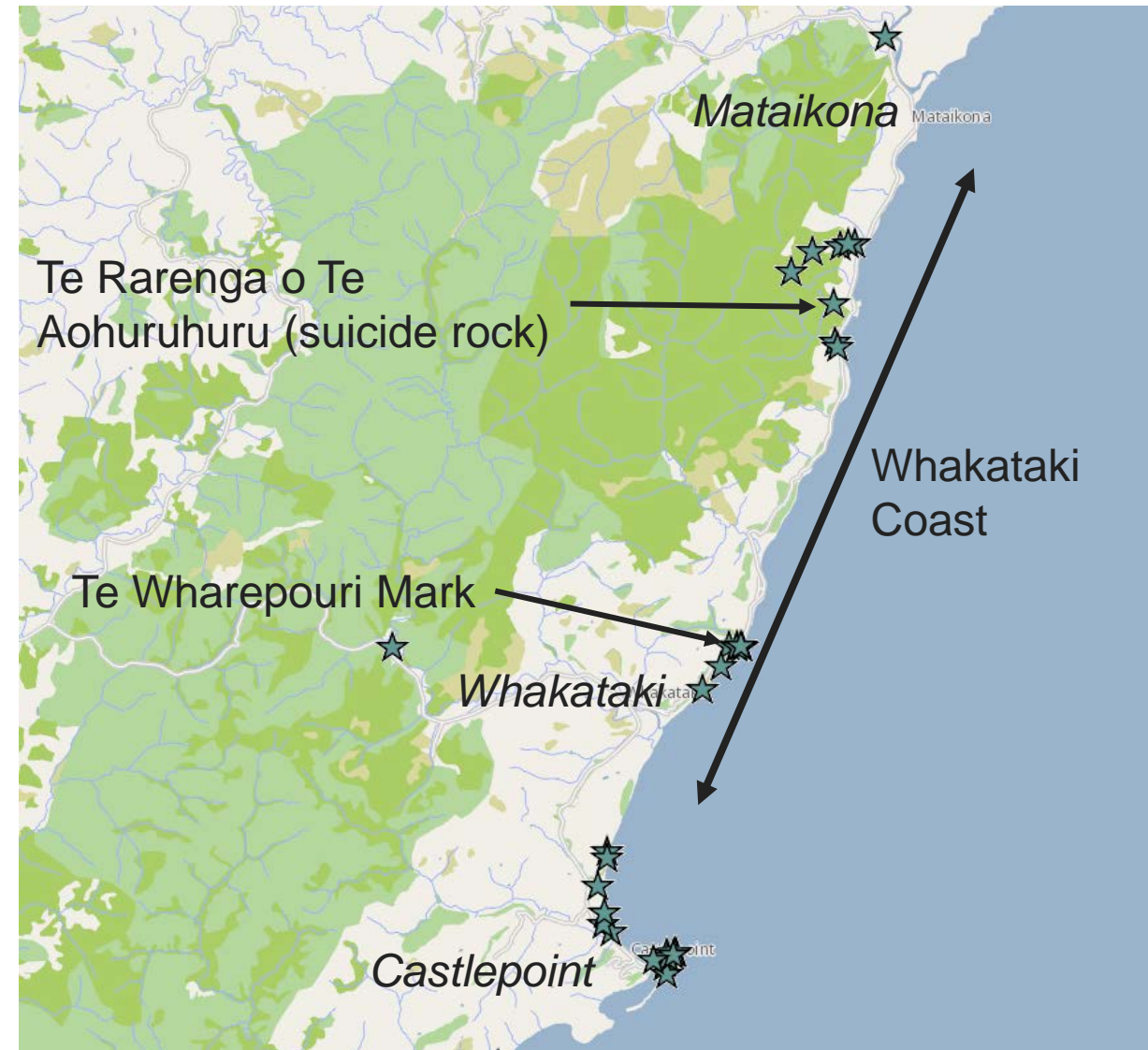






# Cultural Context

- >100 recorded archaeological sites
- District Plan -13 sites recorded
- Areas with significant mana whenua values
  - Mataikona reefs
  - Owahanga coast
  - Mataikona River mouth
  - Whakataki Coast



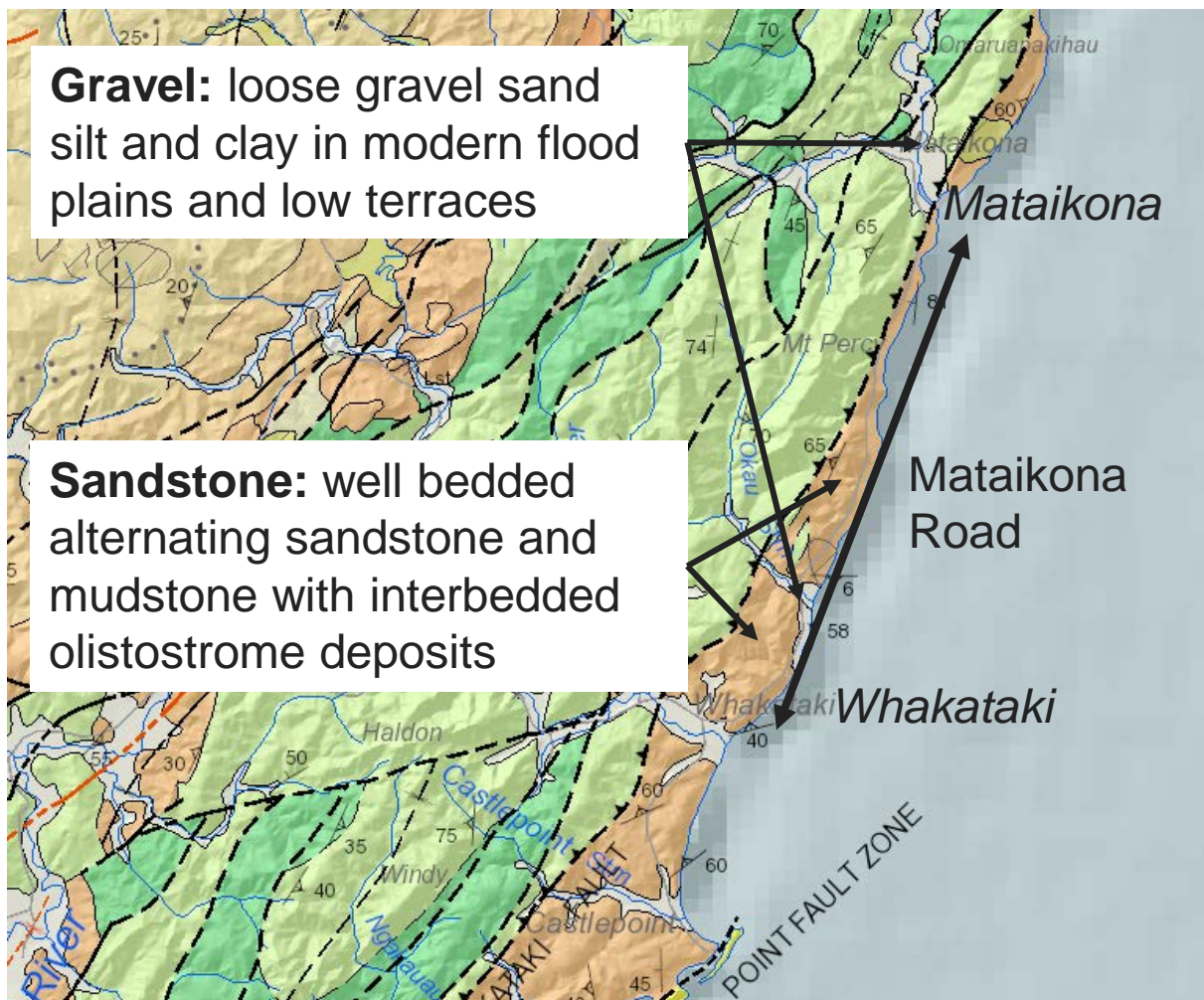




# Geological Context

**Gravel:** loose gravel sand silt and clay in modern flood plains and low terraces

**Sandstone:** well bedded alternating sandstone and mudstone with interbedded olistostrome deposits







**Drone footage**





# Investment Logic Map

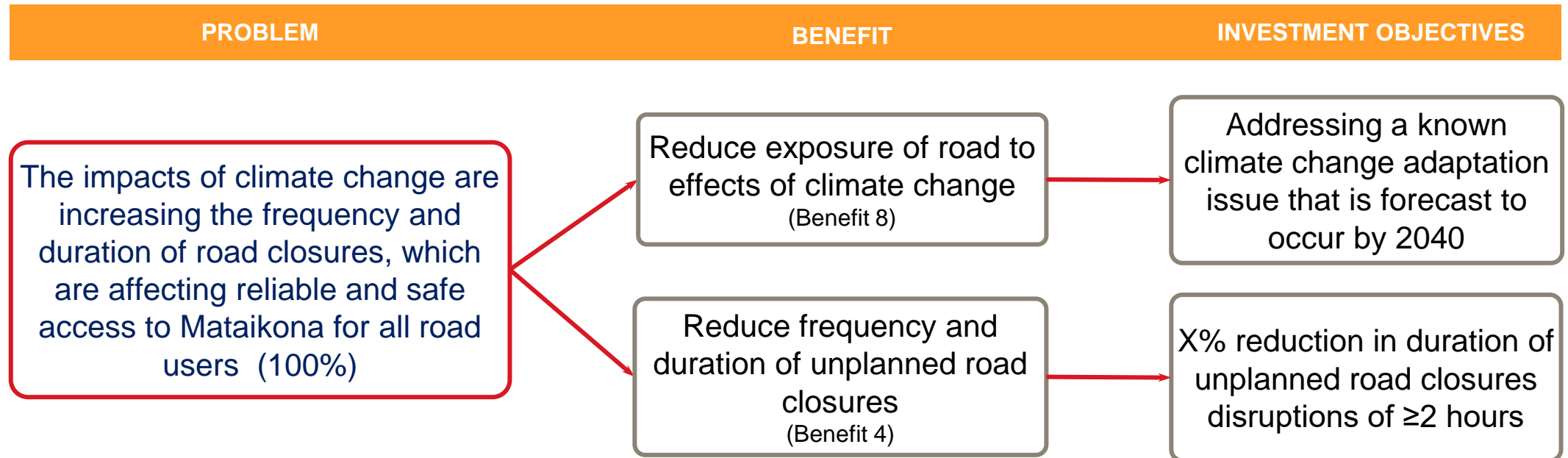






## Mataikona SSBC

### Purpose Statement: Provide resilient and sustainable access to Mataikona



#### Opportunity

Improve road user safety on Mataikona Road

**Note:** Benefits are aligned with Waka Kotahi's Land Transport Benefits Framework. Benefit numbers refer to the relevant benefit within the framework.





# Key Evidence







# Problem

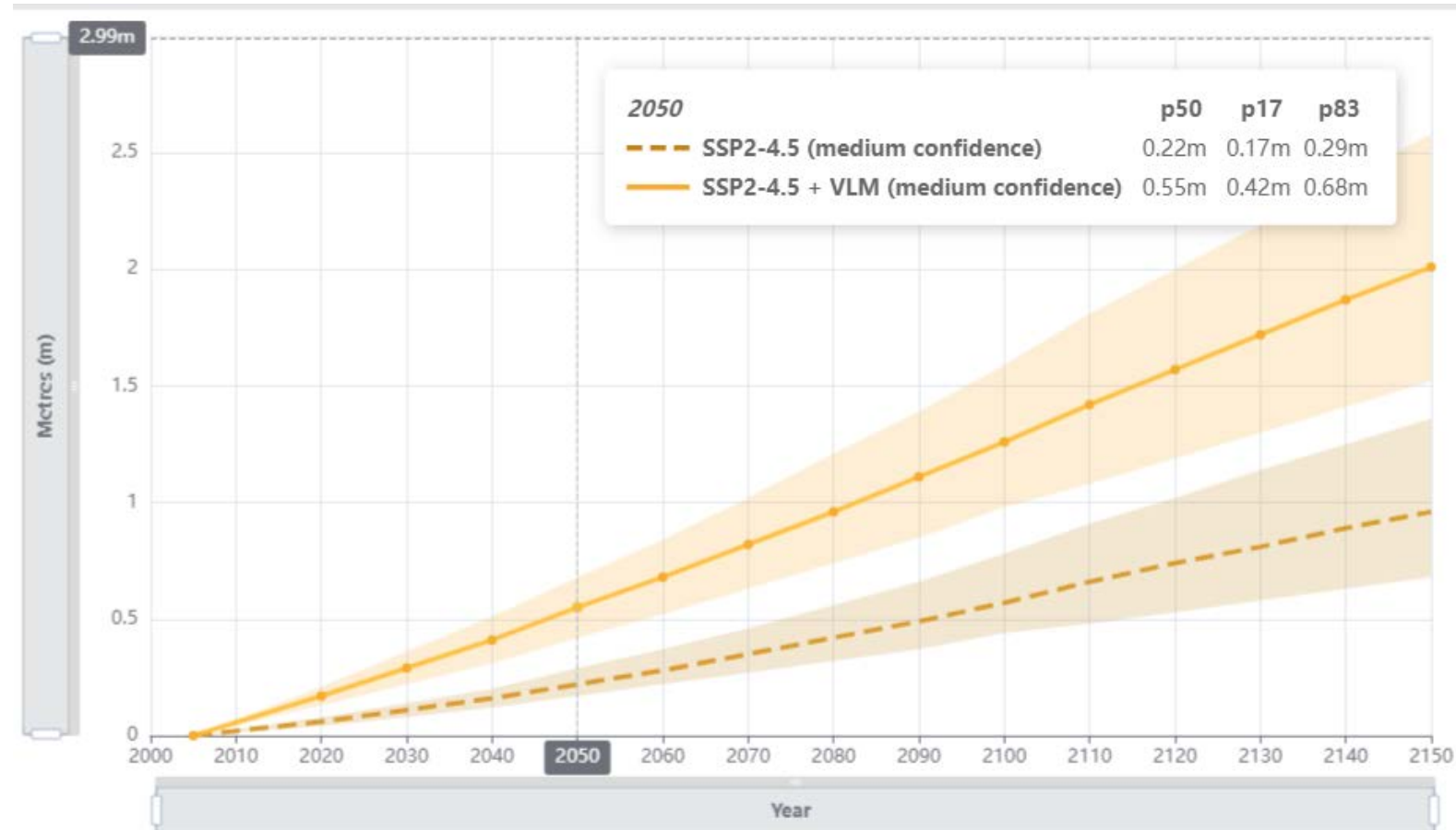
The impacts of climate change are increasing the frequency and duration of road closures, which are affecting reliable and safe access to Mataikona for all road users

Cause	Sea level rise Land subsidence Coastal erosion Dropouts No alternative routes
Effect	Increased frequency of road closures Increased duration of road closures
Consequence	Increased maintenance costs Impacts on route reliability and uncertainty of access Unsafe route for users



# Sea level rise and land subsidence

- Sea level rising ~ 3mm/year
- Land subsiding ~ 7mm/year
- SSP2-4.5: “Middle of the road”  
Climate Change Scenario.
- 2050 – 0.55m net SLR
- 2100 – 1.26m net SLR







# Erosion

2013



2011







# Slips and dropouts

Front Hill



Approach to Suicide Rock









# Road closures

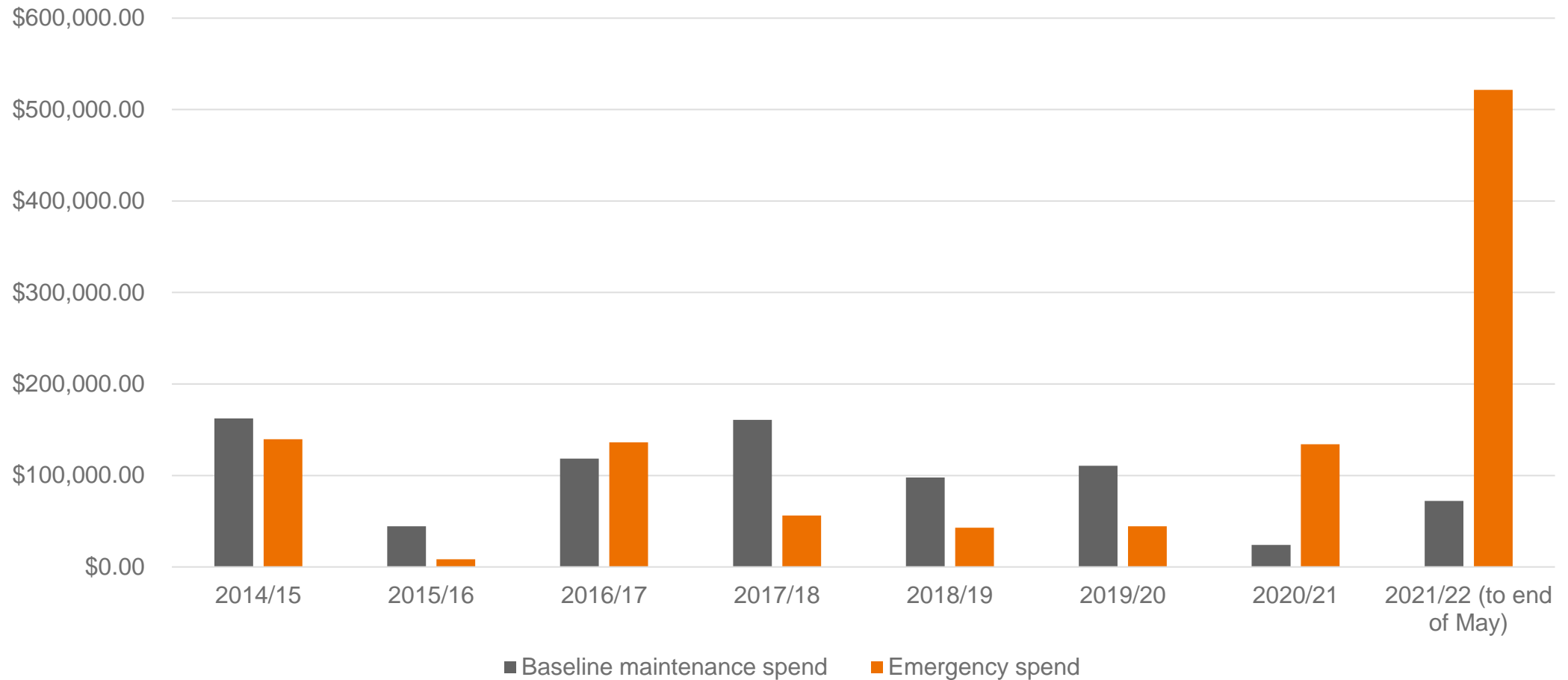
- No alternative route for two southern settlements
- Data gap - Anecdotal evidence:
  - Most closures are max 1-2 days
  - In 2005 Front Hill closed for 10 days
  - In 2022 partial closure for 3 months
- Council Facebook page
  - 25 March 2022: road closed for slips at Suicide Rock
  - 13 February 2022: slips at Suicide Rock, passable with care
- Affects route reliability and certainty of access







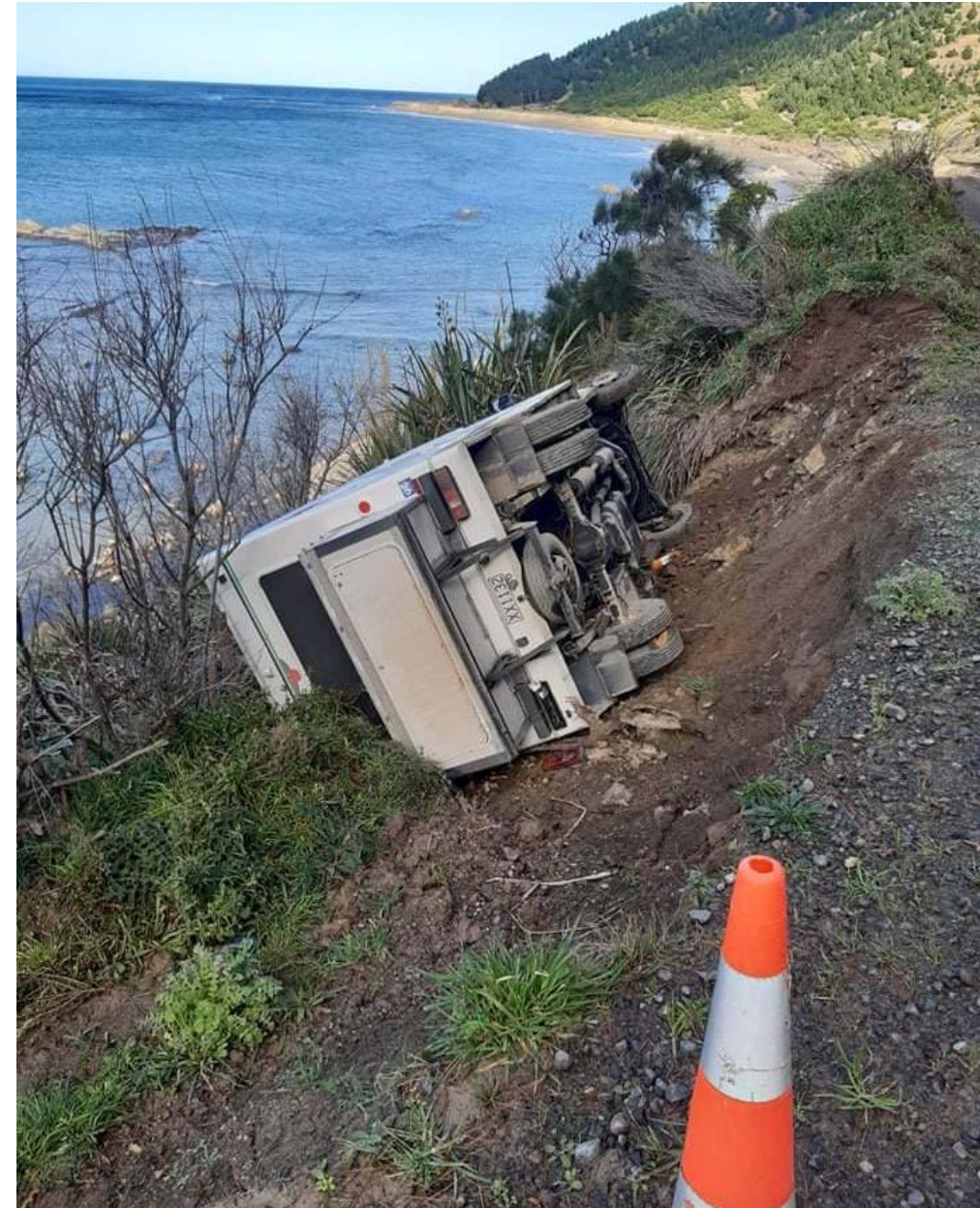
# Increasing emergency spend





# Unsafe access

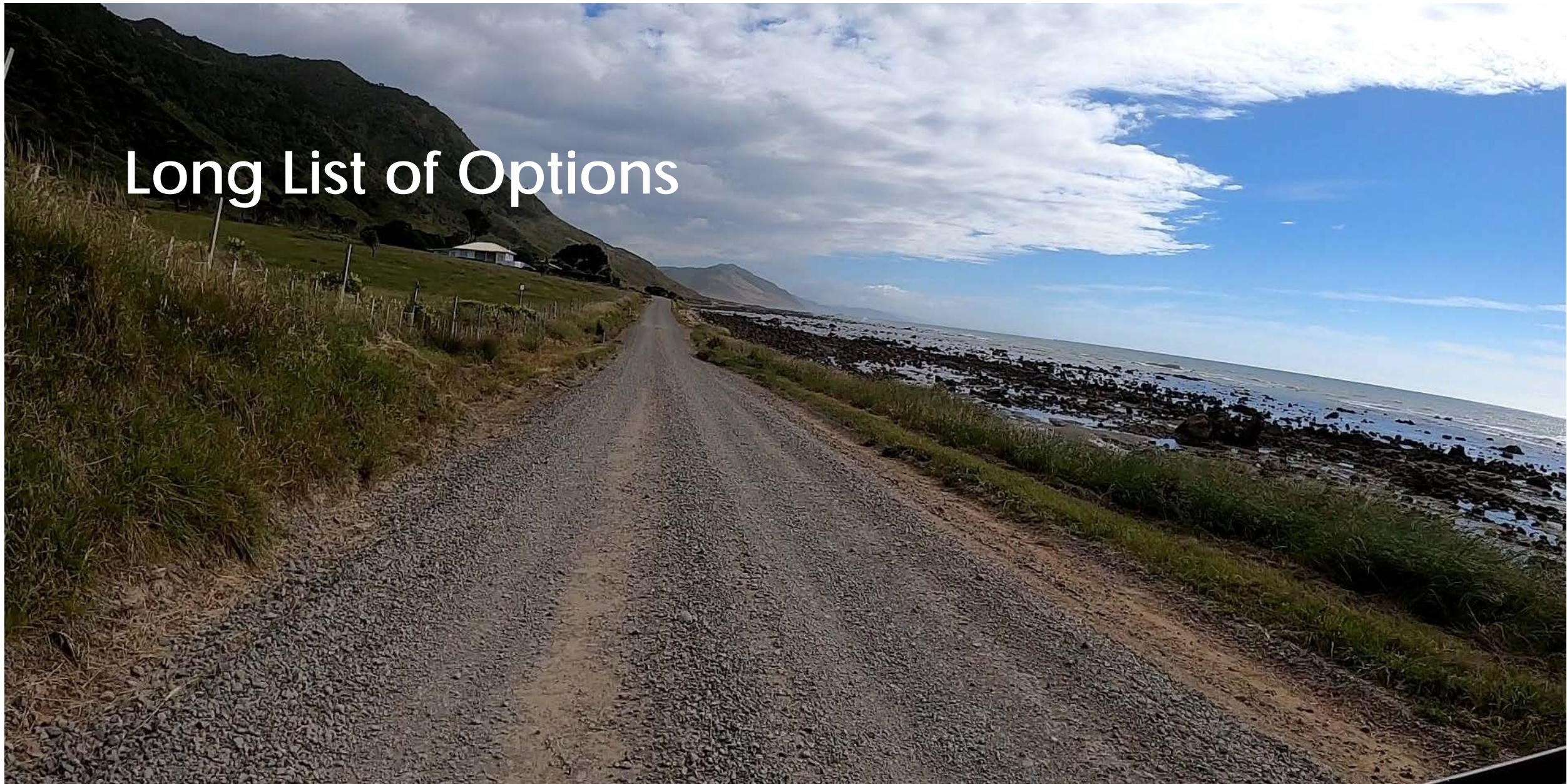
- Narrow road with torturous alignment
- Erosion and dropouts making this worse
- Not suitable for some vehicles or drivers:
  - Drivers not used to gravel roads
  - Stock trucks and five-axle trailer trucks have issues







# Long List of Options



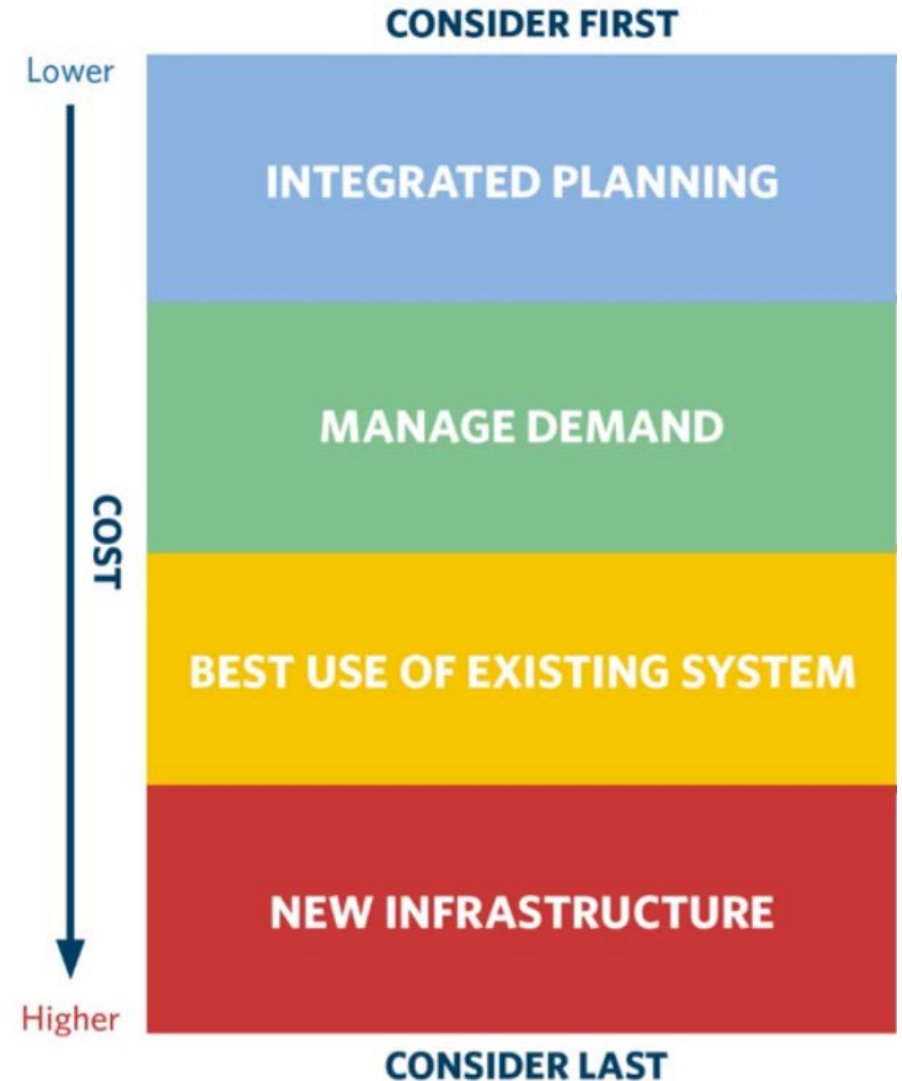




# Long-listing

Potential options to address the problem resilience

- Accept and monitor risk
- Preparedness
- Reduce risk (maintain)
  - Reactive/ temporary repairs
- Reduce risk (improve)
  - Longer term repairs/ strengthening
- Prevent / remove / avoid risk
  - Alternative route
  - Alternative access
  - Retreat
- Consider options for different locations vs whole route







# Examples of coastal protection options



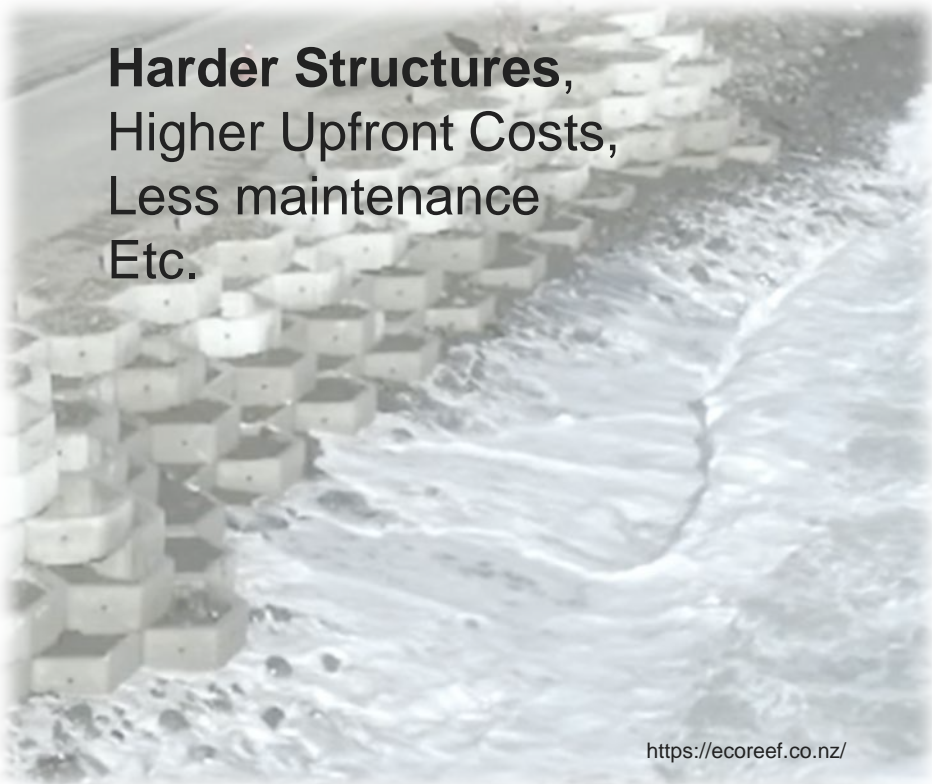




# Possible Solutions



**Harder Structures,**  
Higher Upfront Costs,  
Less maintenance  
Etc.



<https://ecoreef.co.nz/>

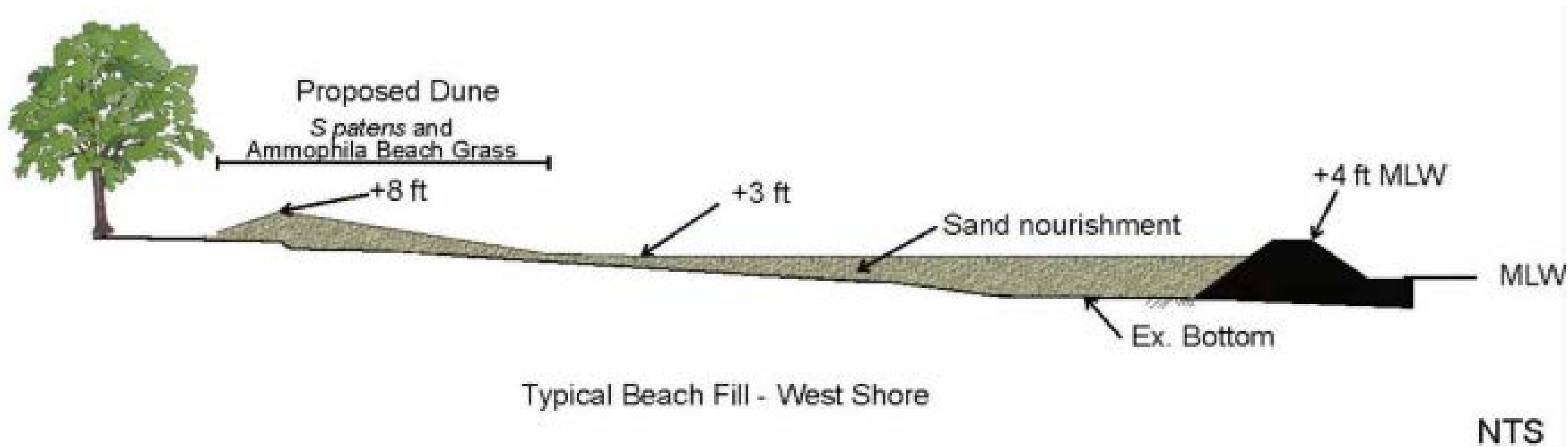
**Working with nature,**  
Lower Upfront Costs,  
Ongoing maintenance  
Etc.



<https://www.coastalrestorationtrust.org.nz/dune-restoration/restoration-planning/>



# Beach Nourishment





# Submerged Breakwater/ Artificial Reef







# Beach Stabilisation

Groynes to prevent longshore movement





CIRIA C685

# Seawalls

Longevity vs Cost



Remedial work on the current seawall, 2021. Image: Mark Coote





Bruce Bay, NC

# Revetment

Harden up the coastline.  
Material Available?





# Concrete Armour Units

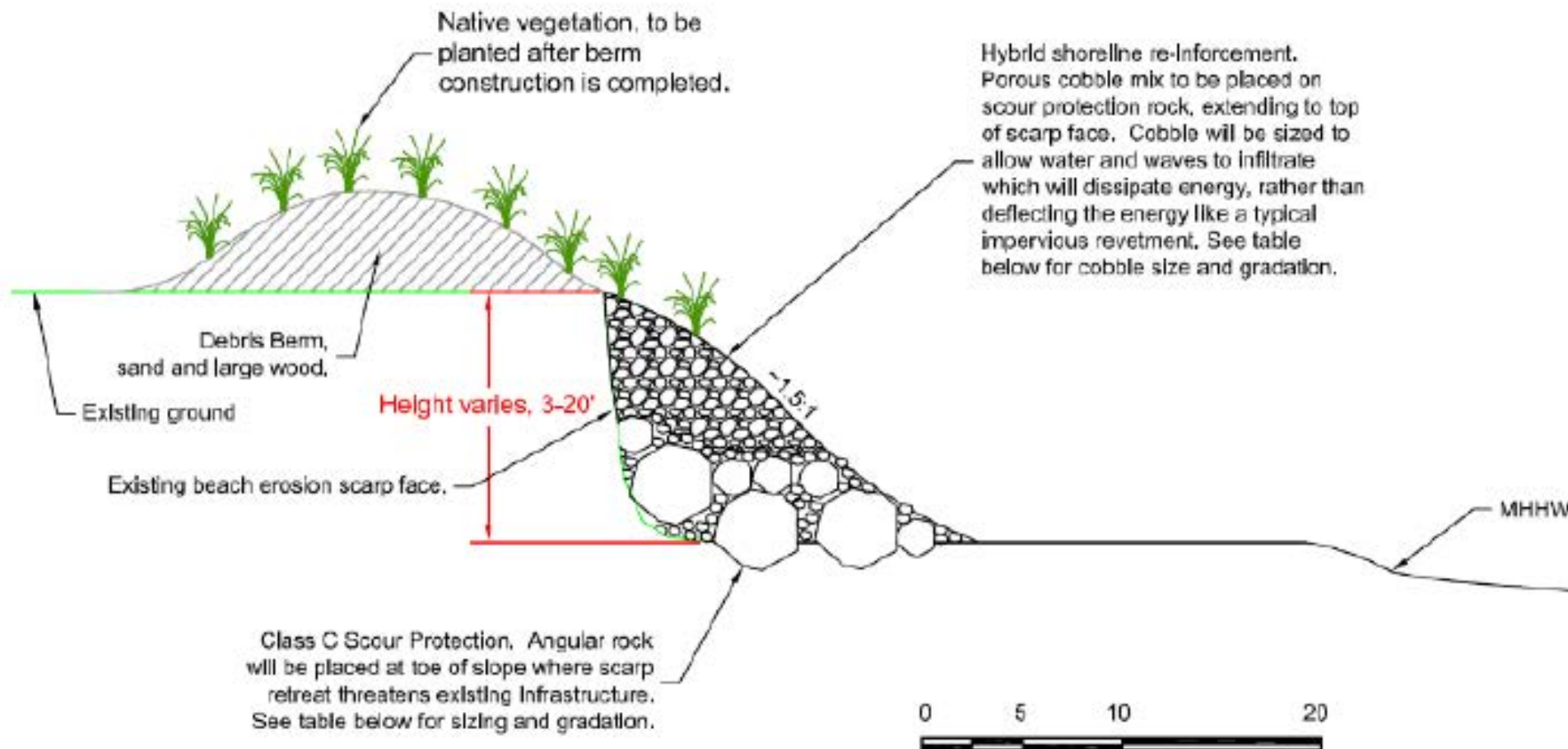








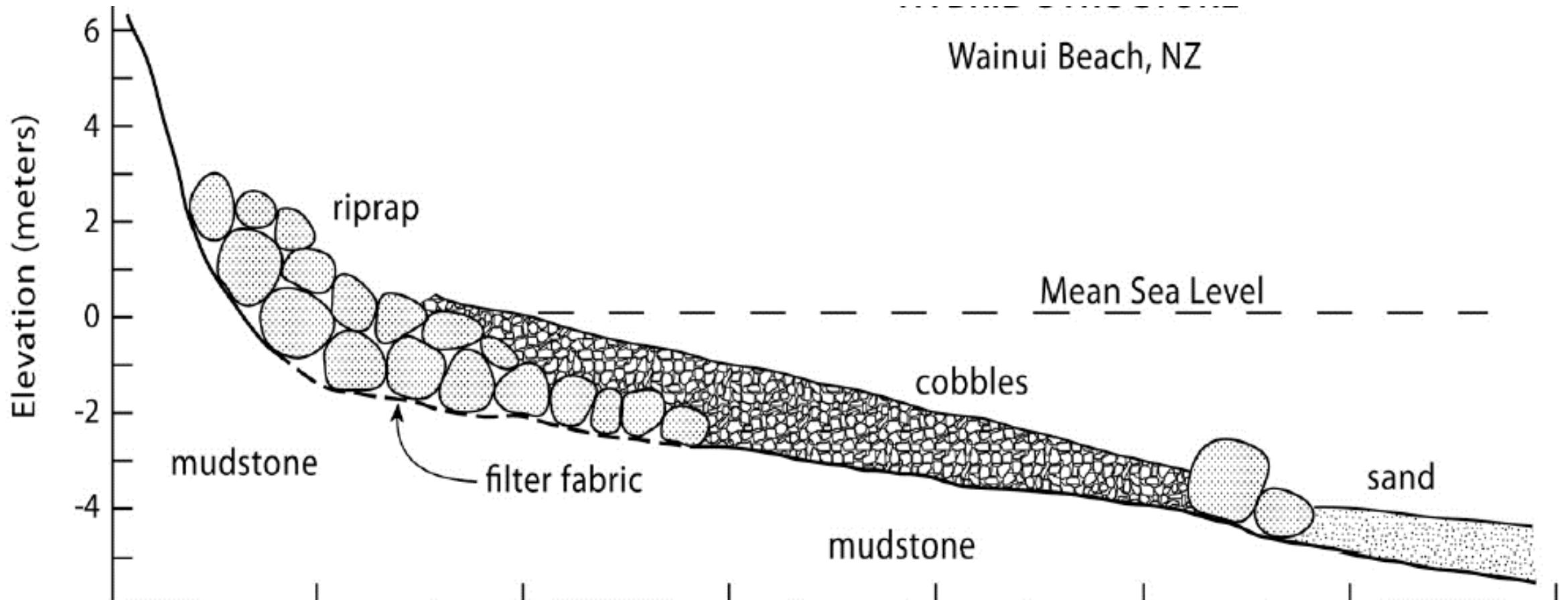
# Hybrid Structure







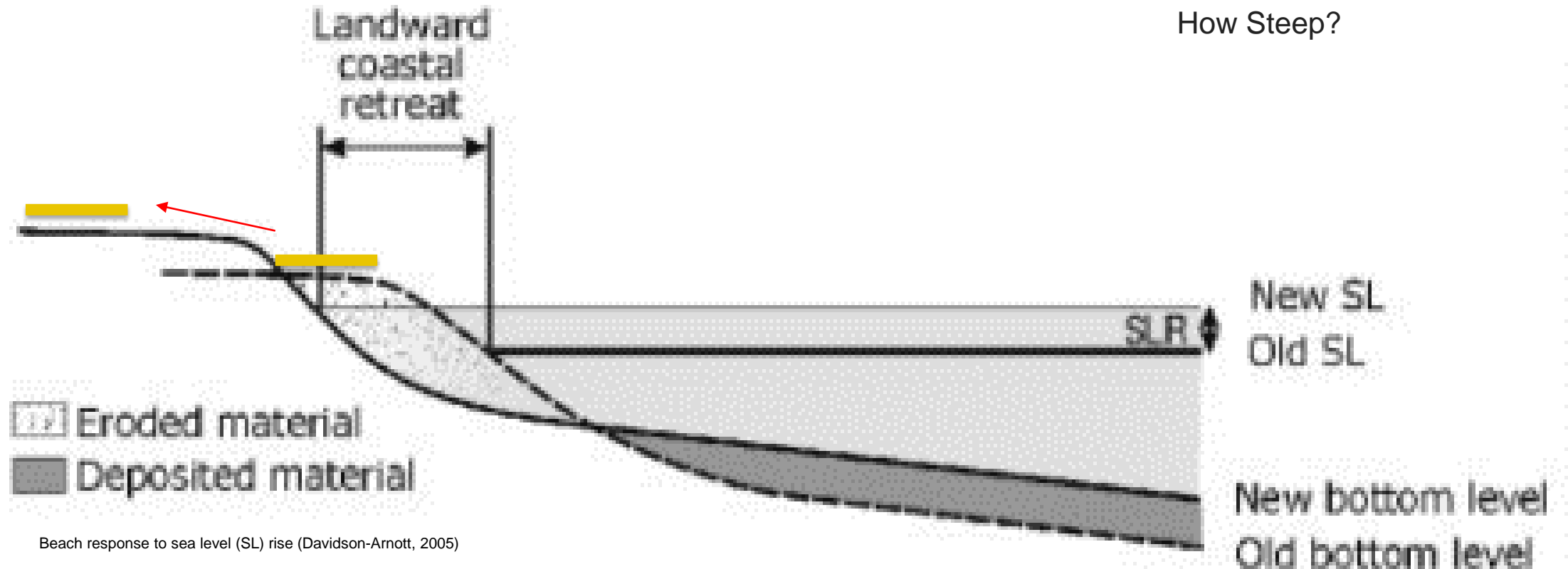
# Hybrid Structure





# Relocate Road Back (if possible)

Is land available?  
How Steep?

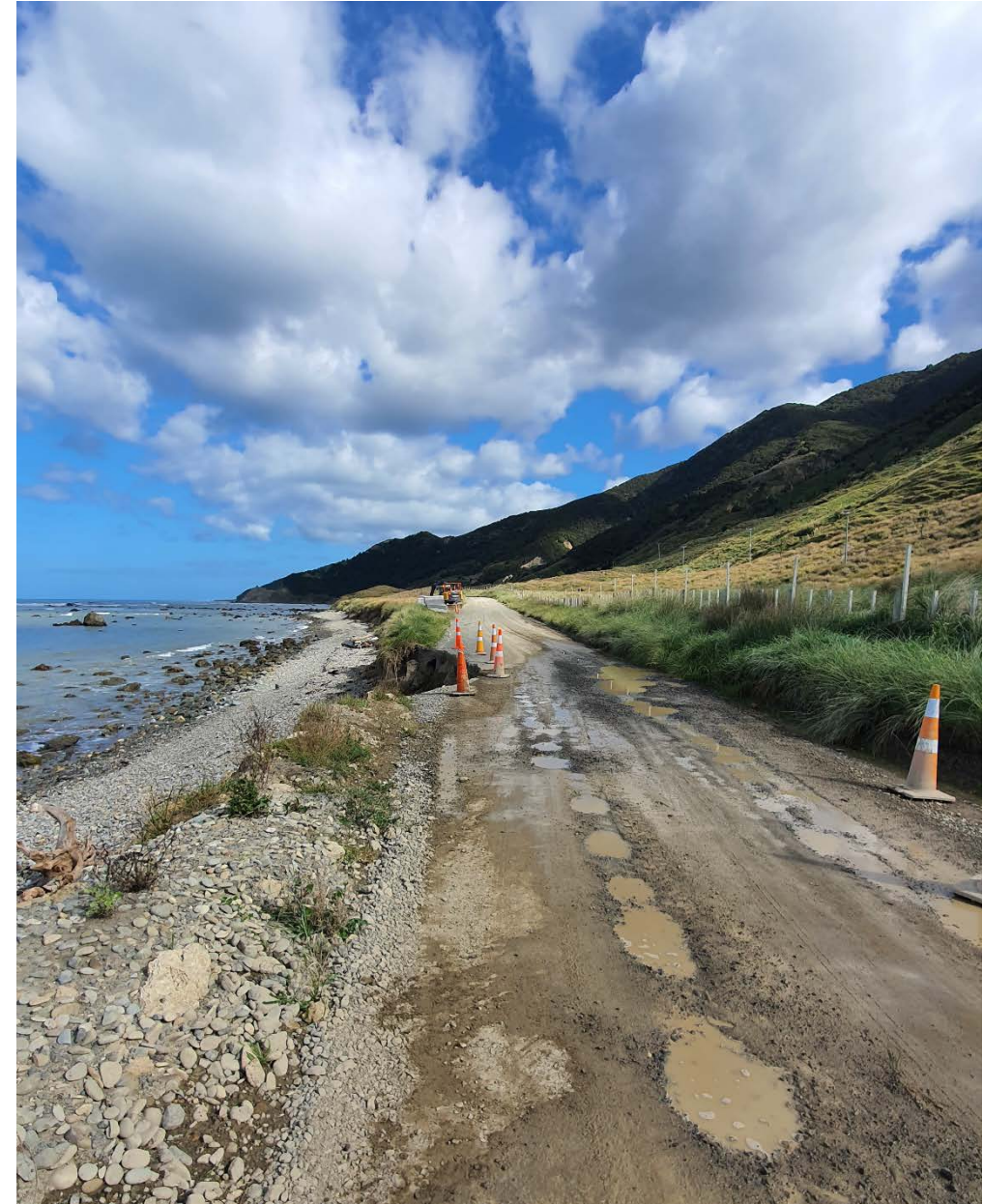


Beach response to sea level (SL) rise (Davidson-Arnott, 2005)



# Stakeholder Preferences

- Preferred option? Why??
  - Different solutions for different locations?
- 
- Do nothing (access is lost soon)
  - Do minimum (short term reactive repairs)
  - Strengthen existing route (longer term repairs)
  - Alternative route (Pack Spur Road)
  - Alternative access modes (e.g. sea, air, walking, cycling, etc)
  - Retreat





# Next Steps

- Collate long list of options
- Define evaluation criteria
- Complete MCA evaluation → shortlist of options
- Undertake analysis of shortlisted options
- Undertake MCA of short list → emerging preferred options
- Confirm preferred option
- Complete preliminary design for preferred option
- Complete and submit business case document
- Target completion date – xxx

**Opportunities for future engagement / involvement**



# Evaluation criteria (MCA)

## Investment objectives

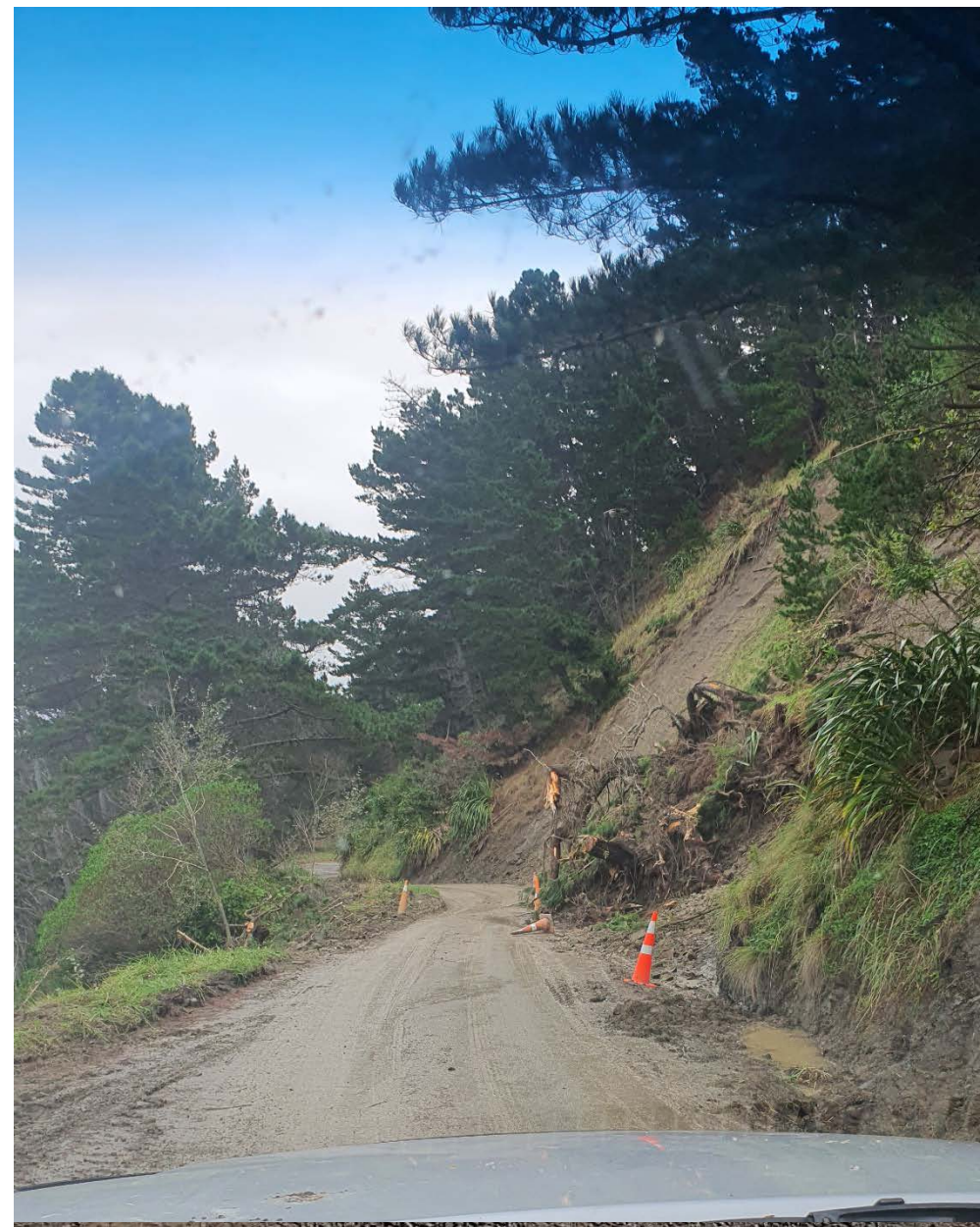
- Addressing a known climate change adaptation issue
- Reduction in duration of unplanned road closures

## Critical Success Factors

- Property impacts
- Consentability
- Climate change mitigation
- Technical difficulty
- Safety and design
- Value for money

## Four wellbeings

- Effects on Te Ao Māori
- Environmental effects
- Social and community
- Economic development and growth







Questions?





Providing resilient  
and sustainable  
access to  
Mataikona