

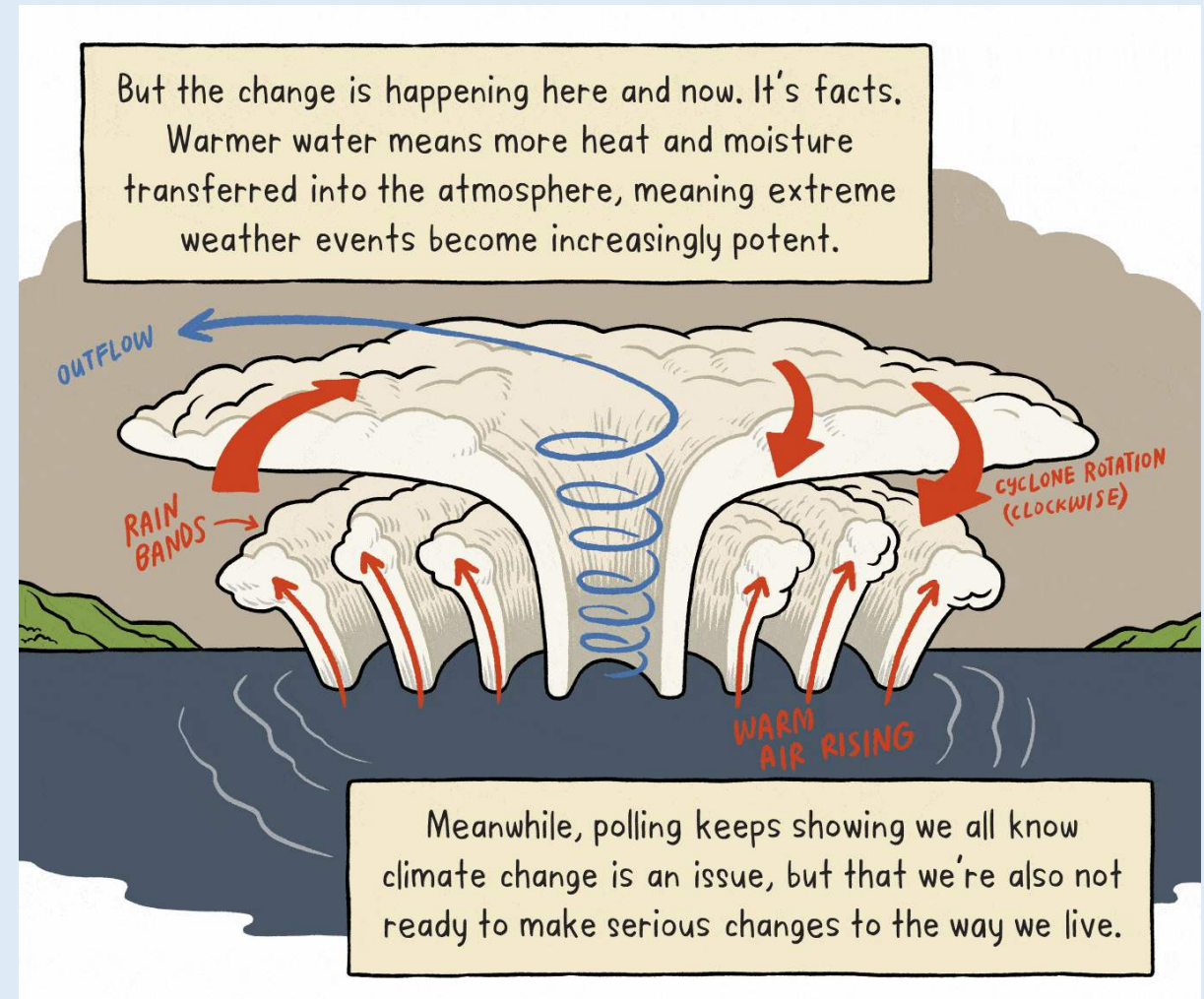
# Impacts of Cyclone Gabrielle

**Martin Manning**

- Extreme events are becoming more extreme
- Climate damages now worse than earthquakes
- A lot of us are living in the wrong places
- Policy and adaptation are not keeping up

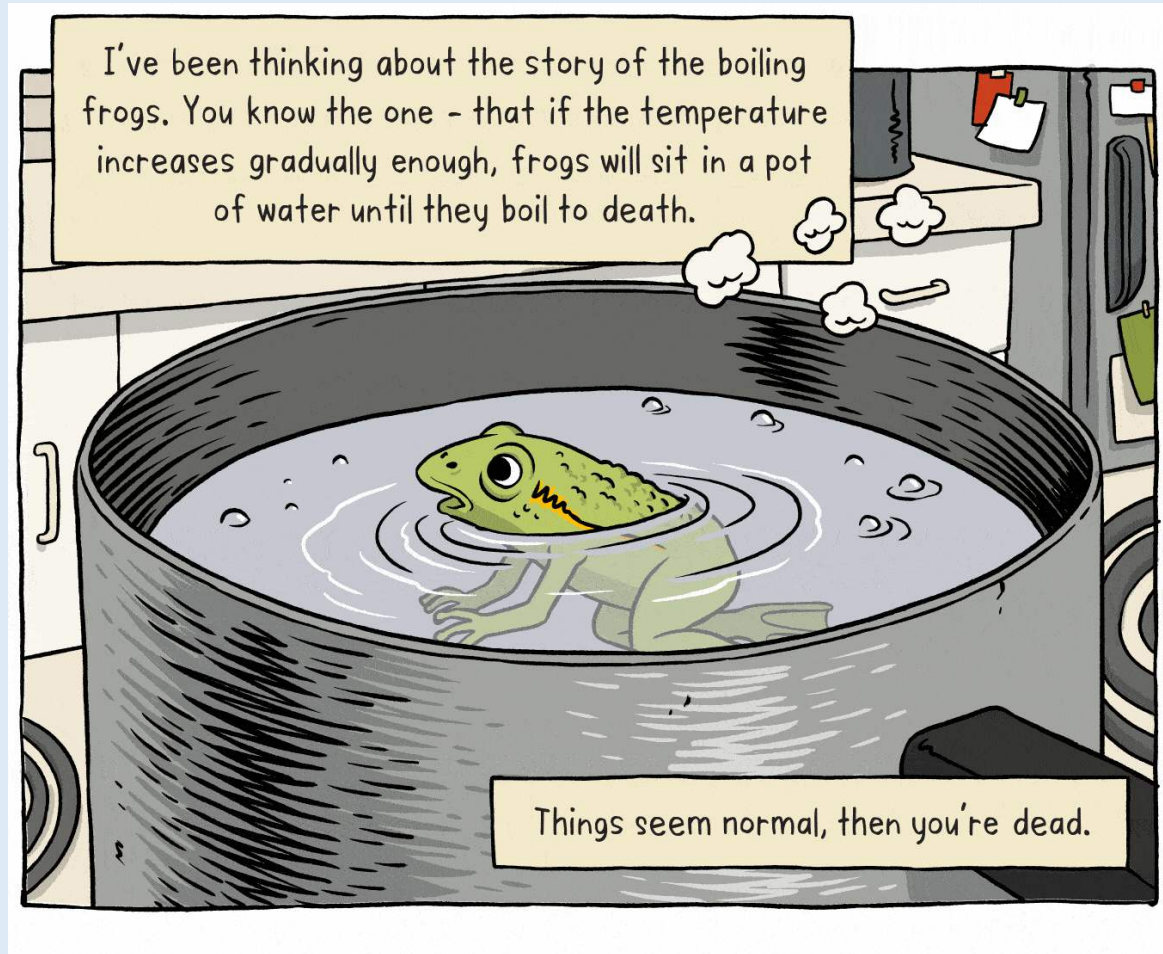


# Spinoff: A climate change reality check





# Spinoff: A climate change reality check



Adaptation to change has been talked about for many years.  
When are we going to jump?



# Cyclone Gabrielle



Flood waters more than 1 m past Cyclone Bola's level.



South of Napier



# Lots of comments

“Let’s hope we respond to these sudden shocks by ditching short-termism

- Rod Oram, Newsroom

“Auckland’s battered infrastructure is ‘very fragile’

... disastrous one-two punch should provoke a rethink about how important transport links like bridges are built

- Matthew Scott, Newsroom

“We should have bit the bullet 20 years ago, 30 years ago, but now we have what we have and it's going to be more expensive, but the events that we see are not going to be any less frequent or any milder

- Timothy Welch, U Auckland

... the term “managed retreat” has gone from being a specialist one to something discussed much more widely. And with the growing prospect of repeat events, the urgent need for a national managed retreat framework is very much in focus

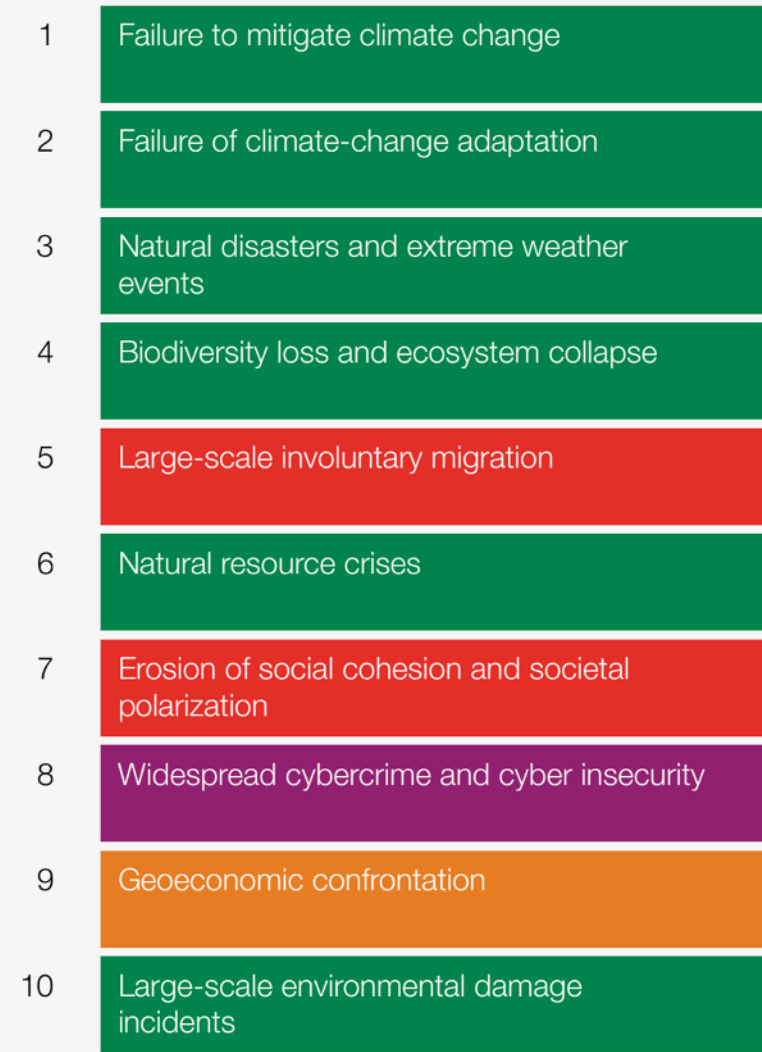
- The conversation, Feb 14

# World Economic Forum warnings

## 2 years



## 10 years



Risk categories

Economic

Environmental

Geopolitical

Societal

Technological

# The Kapiti Context

- More flooding, landslips, loss of roads & infrastructure is coming and what is sustainable is changing.
- We need to be able to cope with wide scale loss of electricity and loss of road access north and south.
- Low lying land in Otaki, back from the beach dunes, is no longer a place for houses.
- Low lying housing in Waikanae back from the dunes is where rain water stays for longer, and where river flood will go.
- The rate of sea level rise is increasing and affecting groundwater levels in coastal regions.

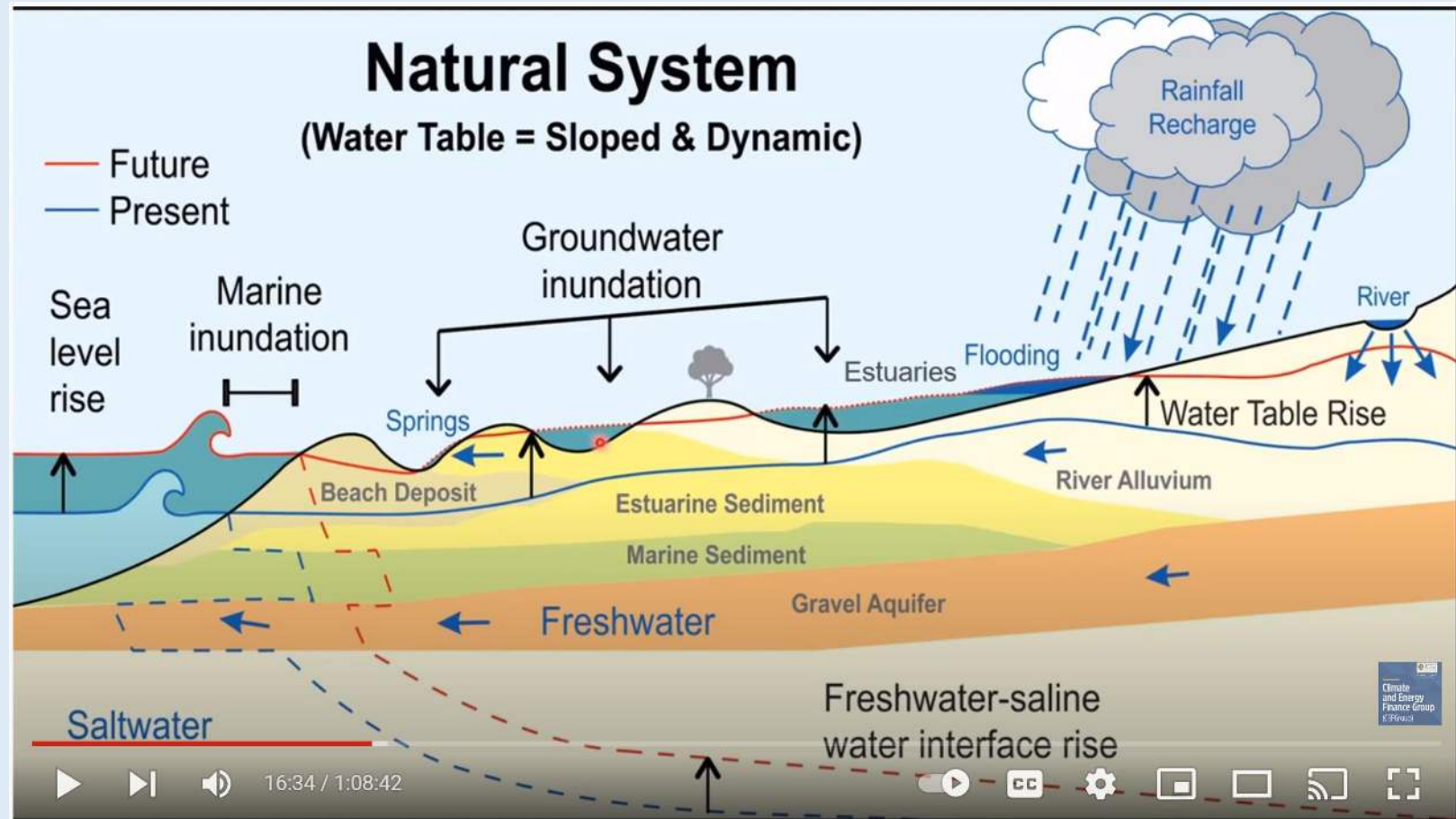


# Rain – Groundwater – Sea level all connected

Very good summary of why we need to know where the groundwater is and how it is rising was given by Simon Cox, GNS, last year.

In Kapiti, the block of land at 77 – 109 Kapiti Rd was identified as a floodwater ponding area and has now been sold to a developer.

Who bears the risks of how it gets used?



GNS Seminar : Models of Groundwater Inundation as a consequence of Sea Level Rise [Dr Simon Cox]

<https://www.youtube.com/watch?v=zoe2kAghA9c>

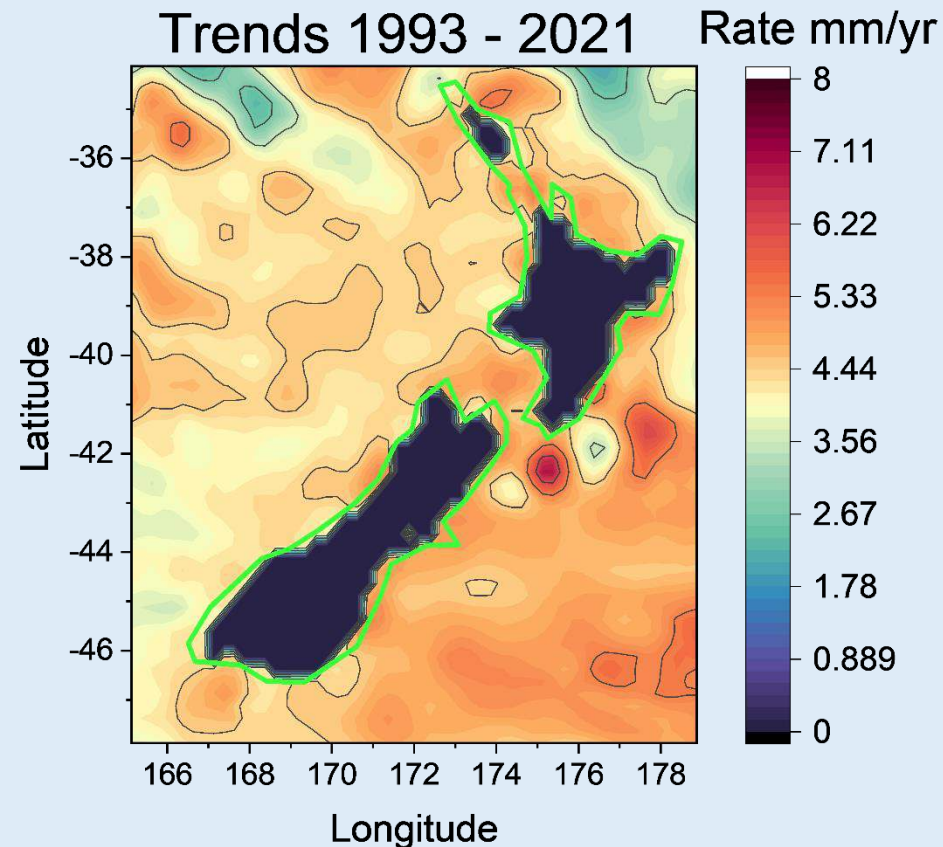


# Satellite data on Sea Level around NZ

Satellite data to monitor sea level has been collected since late 1992 and analyses done by groups in the EU and USA are publicly available.

Satellite data has sea level rise around NZ averaging about 5 mm/yr over the last 29 years. Trends in station tide gauge data are shown for comparison.

Trends in tide gauge data for 1993 – 2015 (mm/yr)	
Auckland	4.6
Dunedin	3.6
Lyttelton	6.0
Moturiki	4.4
New Plymouth	1.3
Wellington	4.9



# Local Adaptation Requirements

- Active Engagement with:  
the public, iwi, all levels of government, scientists
- Continual monitoring of change – coastlines, wetlands, flood extent & its persistence
- Investment in better monitoring of groundwater
- Identification and regular updating of thresholds for sustainability of current practice
- Developing alternative forms of land use for low lying coastal areas
- Continually evolving group of advisors and interaction with other groups doing similar things

# “Adapt and thrive”, MfE, April 2022 Report

Has 72 questions for the reader.



Consultation document

## Kia urutau, kia ora: Kia āhuarangi rite a Aotearoa

Adapt and thrive: Building a climate-resilient New Zealand

Draft national adaptation plan

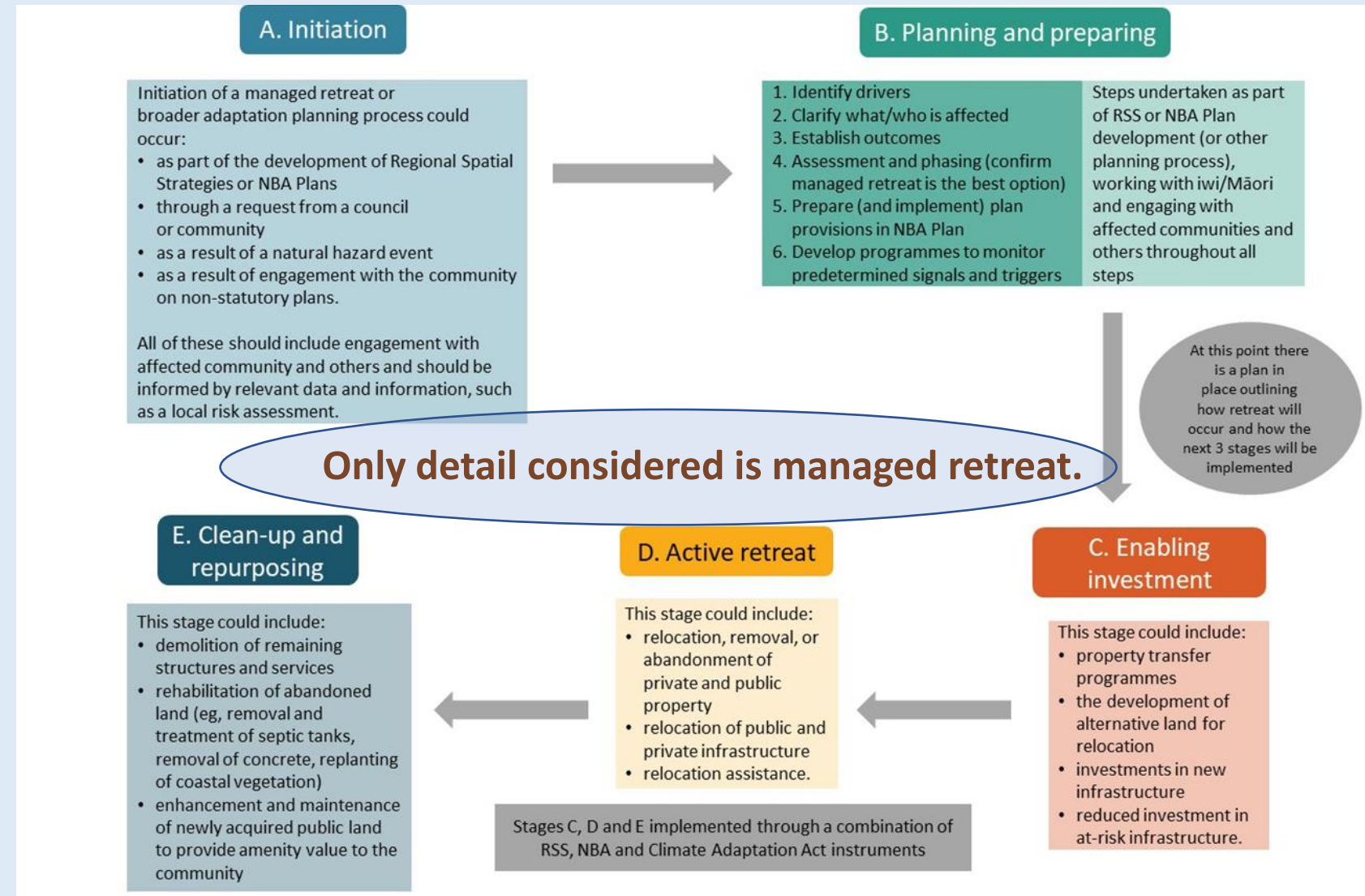
Managed retreat



Ministry for the  
Environment  
Māori Hei Whiwhi



Te Kāwanatanga o Aotearoa  
New Zealand Government





# Comments on “Adapt and thrive”, MfE, April 2022 Report

## Prof Bronwyn Hayward

“... importance of integrating all actions. ... decision-making is most effective when inclusive, transparent, and focused on protecting the most vulnerable first.

“... enormity of the task facing the government after years of inaction; we now need to implement climate planning guidelines across a raft of new legislation

“If home owners, businesses, schools, ports or airports have to move away from a high-risk area for example, who pays?

## Prof Anita Wreford

“... groups waiting in anticipation for this NAP may have hoped for more concrete direction in implementing adaptation ... require much more guidance for decision-makers.

“... central government cannot bear all the risks and costs of climate change. ... (but) would have liked to have seen identification of the role for Central Government alongside other groups.

# Conclusion

- Relocation of people on low lying land needs to start now with identification of priorities and engagement with property owners.
- Developing new land to move onto is becoming more important than protecting existing housing.

*“The era of procrastination, of half measures, of soothing and baffling expedients, of delays, is coming to its close.*

*In its place, we are entering a period of consequences*

– Churchill in a fiery speech to UK Parliament in 1936.  
as cited by Rod Oram

