COASTAL CONVERSATIONS

GORE BAY

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Summary
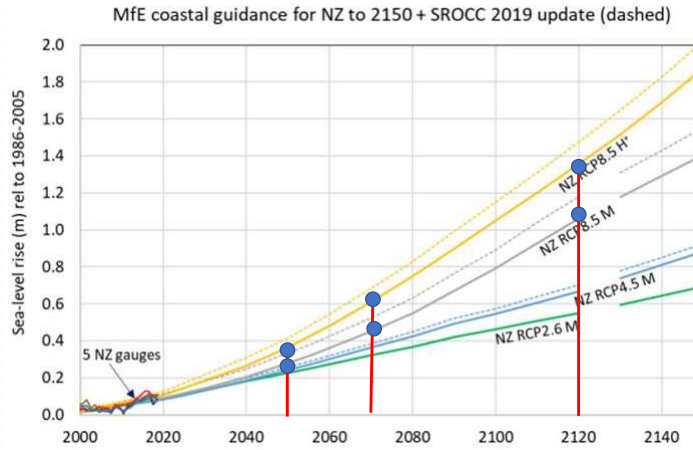
Phase 1 • **WHAT IS HAPPENING?**

Phase 2 • **WHAT MATTERS MOST?**

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

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

HURUNUI District Council

COASTAL CONVERSATIONS
The environment is changing, how will you?

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Phase one:
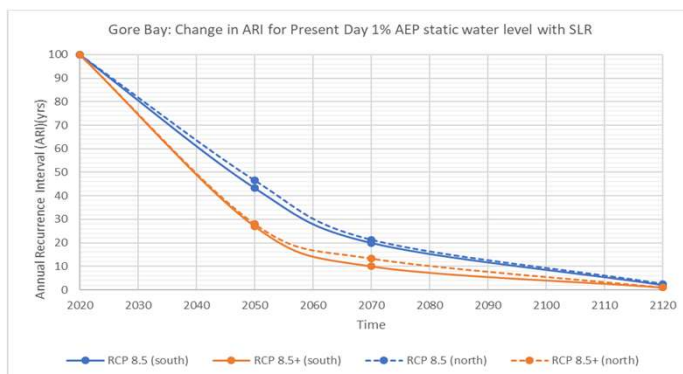**What is happening?**

Sea level rise projections (MfE, 2017)

MfE coastal guidance for NZ to 2150 + SROCC 2019 update (dashed)

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Phase one:
What is happening?

Increase in Frequency of 1 in 100 Year Events with SLR

Gore Bay: Change in ARI for Present Day 1% AEP static water level with SLR

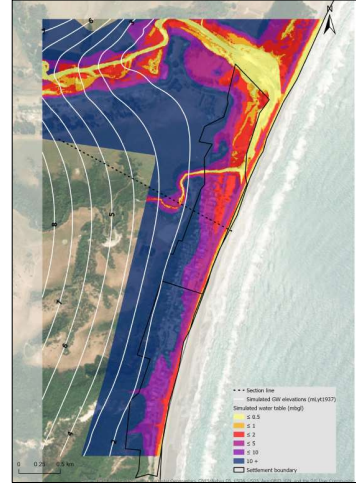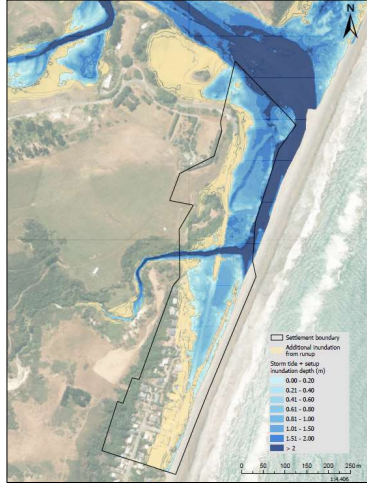**1 in 100 year event could occur every**:
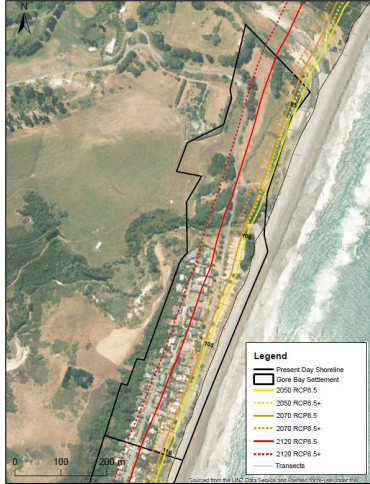
- 30-45 Years by 2050

- 10-20 Years by 2070

- 1-3 Years by 2120

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Phase one:
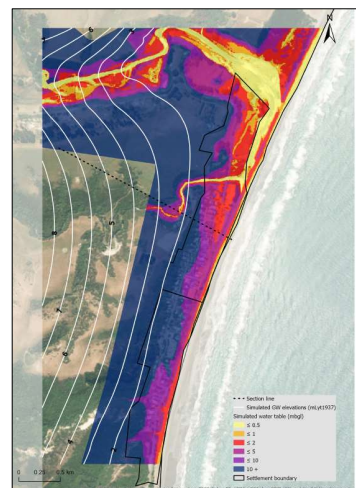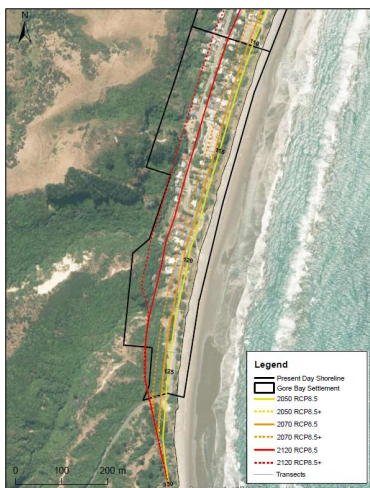**What is happening?**

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Phase one:
What is happening?

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Phase one:
What is happening?

Looking south before the school was built

Looking north in the early 1930s

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The environment is changing, how will you?

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Phase one:
What is happening?

Next steps – it's up to you

1. Continue to share stories / photographs or any other information?

2. Citizen science projects?

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Citizen Science Options for the Hurunui District

Derek Todd (Jacobs)

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Agenda

1. What is Citizen Science?
2. What makes a good Citizen Science project?
3. An overview of different citizen science methods
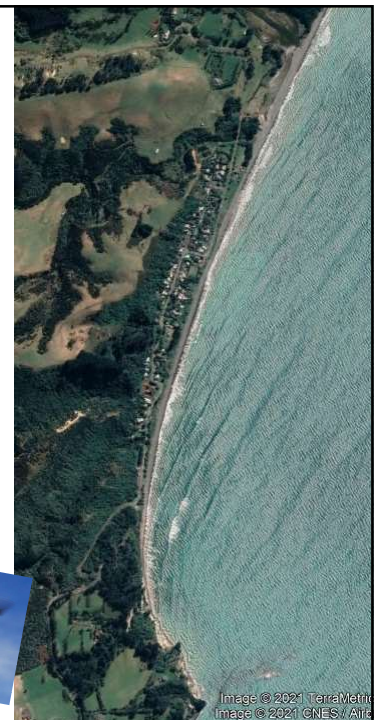4. What options would work in Gore Bay?

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What is Citizen Science?

- **Members of the public collect information and data for scientific research and monitoring.**

- **It creates an opportunity for communities to become experts of their own environment, and assist with data collection in their local setting.**

- **It provides an opportunity to record more regular data and observations than able to be collected by regulatory authorities, especially changes in the environments due to large natural events.**

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What makes a good Citizen Science Project?

1. **Engage with as many members of the community as possible, and for this engagement to be ongoing for years to come.**

2. **Collect valuable data which can be used to help with better understanding of the extent and magnitude of local coastal hazards in the future.**

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What makes a good Citizen Science Project?

Community Engagement (Number of people engaged)

3	• Engages with a wide range of people non-exclusive to the community. • Anybody visiting the site will be able to be involved. • No training is required.
2	• Engages with the whole community. • Easy execution of method for all ages. • Some awareness of the project and methods is required to take part. • Small amount of training required.
1	• Small group of dedicated volunteers. • Training and equipment required • Data collected requires external quality control and processing. • Higher level of technical ability required.

Technical

3	Produces high quality data that can be used in future assessments and to inform broader research.
2	Produces some quantitative data which could be used in future assessments
1	Produces some qualitative data which could be used in future assessments

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Examples of different Citizen Science Methods

- **Physical Beach Parameters**
  - Physical Measurements (e.g. Measuring Rod)
  - Photographs (e.g. CoastSnap)
  - Sediment Sampling
  - Drone Surveys

- **Vegetation Cover**
  - Ecological Surveys
  - Dune Profiles

- **Tension Cracks and Cliff Failure**
  - Measuring tension crack width
  - Recording failure events

- **Basic Ocean Parameters**
  - Measuring wind and waves
  - Storm observations

- **Pre and Post Storm Monitoring**
  - Recording changes to beach health following storms

- **Recording water-levels during large events**
  - Photographs
  - Water level gauges

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Data Collection	Method	Engagement	Technical	'Score'	Gore Bay
Physical beach health parameter	Measuring Pole and physical measurements	2	2	4	✓
	Photographs (CoastSnap)	3	2	6	✓
	Sediment Sampling	1	3	3	✓
	Drone Survey	1	3	3	✓
Basic Ocean Parameters	Physical Measurements	2	1	2	✓
Vegetation Cover	Ecological Surveys - Quadrant	2	1	2	✗
	Dune profiles (CRT Guidelines)	1	3	3	✗
Cliff Failure and Tension Cracks	Physical Measurements and estimates	1	2	2	✗
Pre and Post Storm Change	Notification of Incoming Storm	Potentially 2[1]	Potentially 3[1]	Potentially 6	✓
Water levels in extreme events	Water Gauge (with warning notification)	2	2	4	✓
	Photographs (with warning notification)	2	1	2	✓
Structures	Survey with Photographs	2	1	2	✓

[1]This method is used in addition to another method (e.g. physical beach measurements), therefore most of its success is based on what method is employed for measuring/recording beach health or water levels.

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Photographs (CoastSnap)

Engagement	Technical
3	2

- CoastSnap uses images from a single reference point to measure shoreline changes over time.
- Photos taken using a smartphone in the 'CoastSnap' App.
- Relatively low cost
- Information could be used for shoreline tracking, time lapse videos, useful information following storms.
- Currently being used at other places on the Canterbury Coast
- Equipment
  - Private Smartphone
  - Cradle installation

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CoastSnap Example

Date: 2020/11/30 Time: 14:50 Contributor: CharlieBell

Sourced from Youtube

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Measuring Pole and Physical Measurements

Engagement	Technical
2	2

- Recording the beach elevation on a permanent, surveyed measuring pole which has been installed at the back of the beach.
- Gives information about the dynamic and changing volume of the beach
- Information could be recorded in a notebook or via an online survey form
- Relatively low cost
- Could be installed in line with Environment Canterbury beach profile monitoring sites, so that the information could add value to the longer term (20-30 year) record.
- Equipment
  - Installation of permanent measuring pole (by surveyors)
  - Measuring tools (beach profile equipment – measuring rods, tape measure, inclinometer)

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Pre and Post Event Monitoring

Engagement	Technical
Potentially 2	Potentially 3

- Additional **'warning system'** which could alert the community when a storm may be coming so that can capture pre and post storm data (via other methods e.g. CoastSnap, measuring pole)
- Notification would be digital (e.g. text or email)
- This would give us a record of when large events happen, and what the effect of them was.

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Water level Gauge Readings

Engagement	Technical
2	2

- The installation of a water gauge which members of the public could read and record in flood events.
- A record of actual water level in lagoons/river mouths near settlement would be useful to verify flood modelling.
- Relatively low cost.
- Information could be recorded manually (notebook) or digitally.
- Equipment
  - Installed Water Gauge
  - Notebook/survey form

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Engagement	Technical
1	3

Dune profile surveying

- Involves using a series of methods to capture information about dune slope/shape, vegetation species and coverage, and taking photos from set points (could be CoastSnap site) to monitor changes in vegetation coverage.
- Some or all of the methods could be used.
- Would use the guidelines proposed from the Coastal Restoration Trust website and build their database.
- Requires some training and equipment.
- Produces good information about dune health

Source: Coastal Restoration Trust

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Phase one:
What is happening?

Next steps – it's up to you

1. Continue to share stories / photographs or any other information?

2. Citizen science projects?

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Phase two:
What matters most?
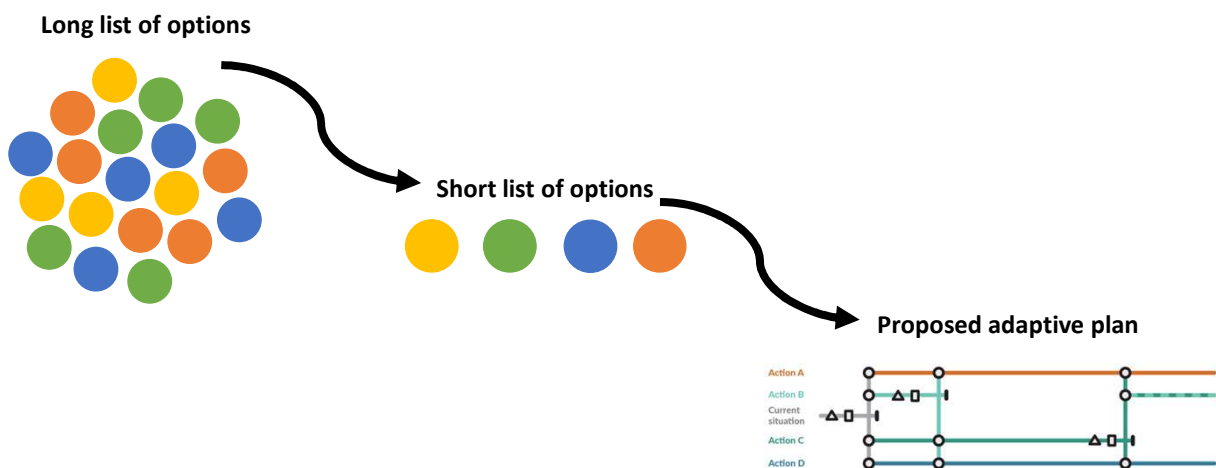

Example objectives:

Maintain safe, aesthetically pleasing, public greenspaces (including picnic and playground facilities) along (or close to) the foreshore and distributed throughout the community.

Ensure a functioning coastal ecosystem that supports rare and mahinga kai species.
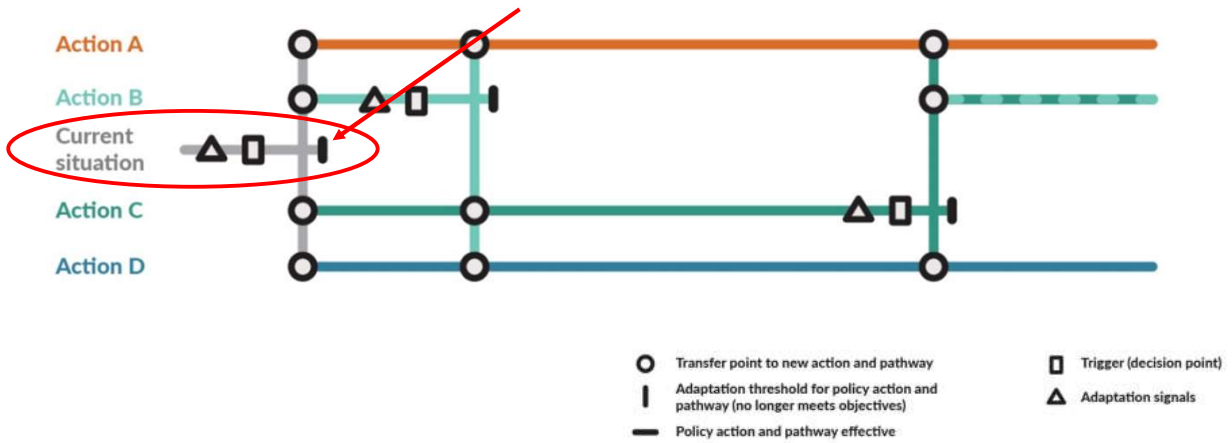
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Phase three:
What can we do about it?

Long list of options

Short list of options

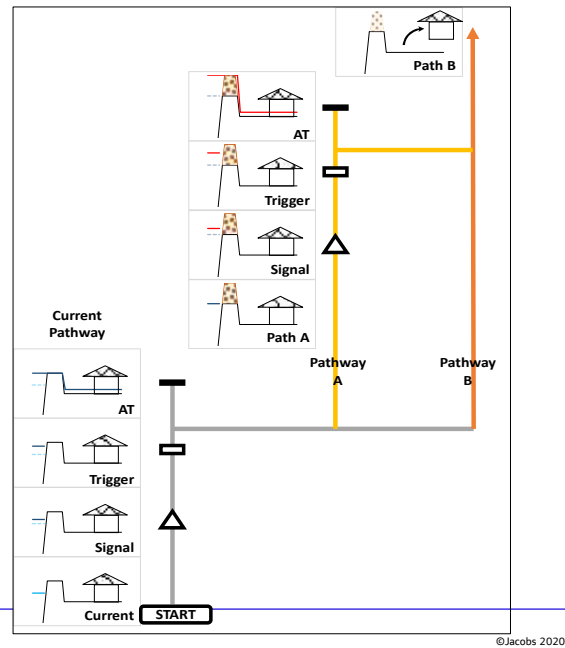**Proposed adaptive plan**

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Phase three:
What can we do about it?

An example adaptation pathway

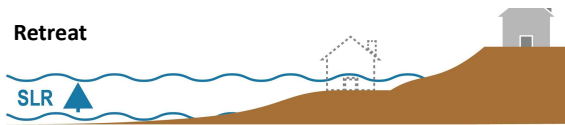**Phase three:**
What can we do about it?

Types of options

Accommodate

SLR ▲

Protect

SLR ▲

Retreat

SLR ▲

Avoid

SLR ▲

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Phase three:
What can we do about it?

Accommodate

SLR ▲

- Raise floor levels for new builds
- Accept some surface flooding
- Identify new access points

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Phase three:
What can we do about it?

Protect

SLR

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Phase three:
What can we do about it?

Retreat

SLR


- Retreat after an event
- Managed retreat
- Require new development to be relocatable or prevent new development entirely
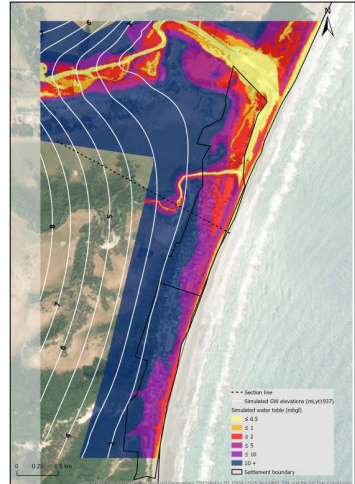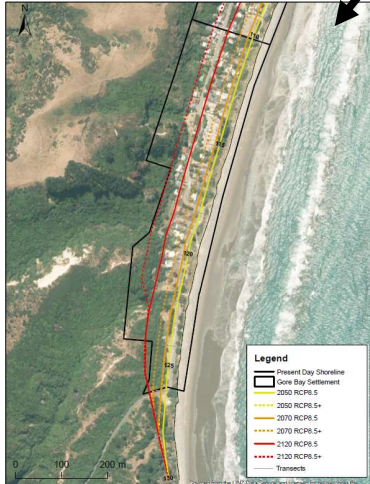
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Phase three:
What can we do about it?

Avoid

SLR

• Prevent new development in areas of risk
• Stop intensifying development in existing areas subject to risk
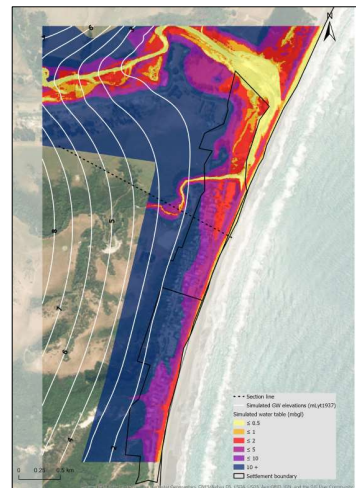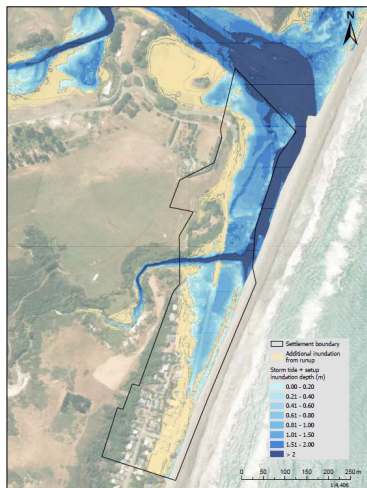
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Phase one:
What is happening?

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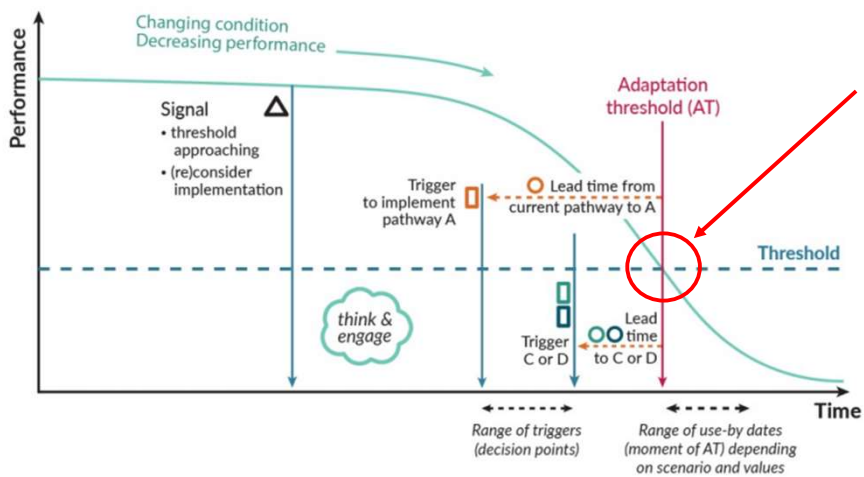
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Phase one:
What is happening?

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Phase four:
How can we implement the strategy?

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Thank you

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