RESILIENT SYSTEMS

WHAT TO DO WHEN ENGINEERING IS NOT ENOUGH?

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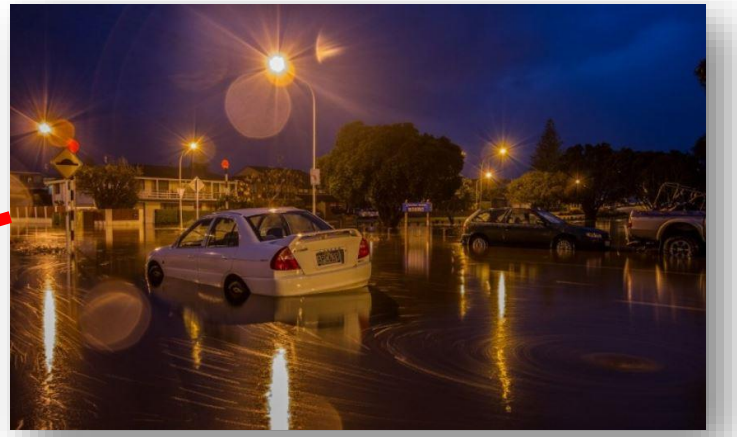
Overview

- Introducing to Mount North
- Defining the problem
- Recapping the business case
- Introducing DAPP
- Presenting the Pilot process and results

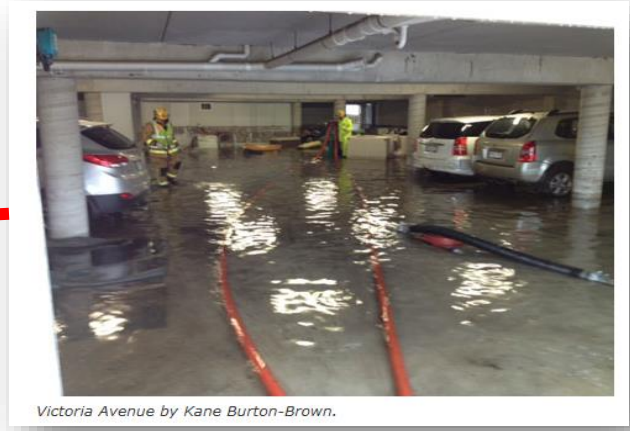

When people think of the Mount...

You might not think of flooding.



20 April 2013 photos courtesy of Sunlive

You might not think of flooding.



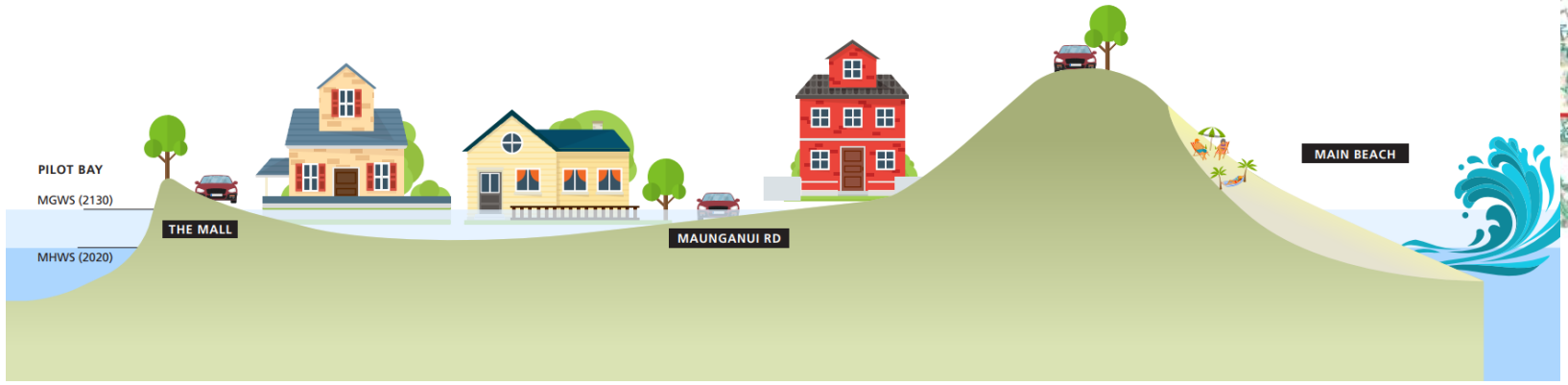
Victoria Avenue by Kane Burton-Brown.

Photos courtesy of Sunlive

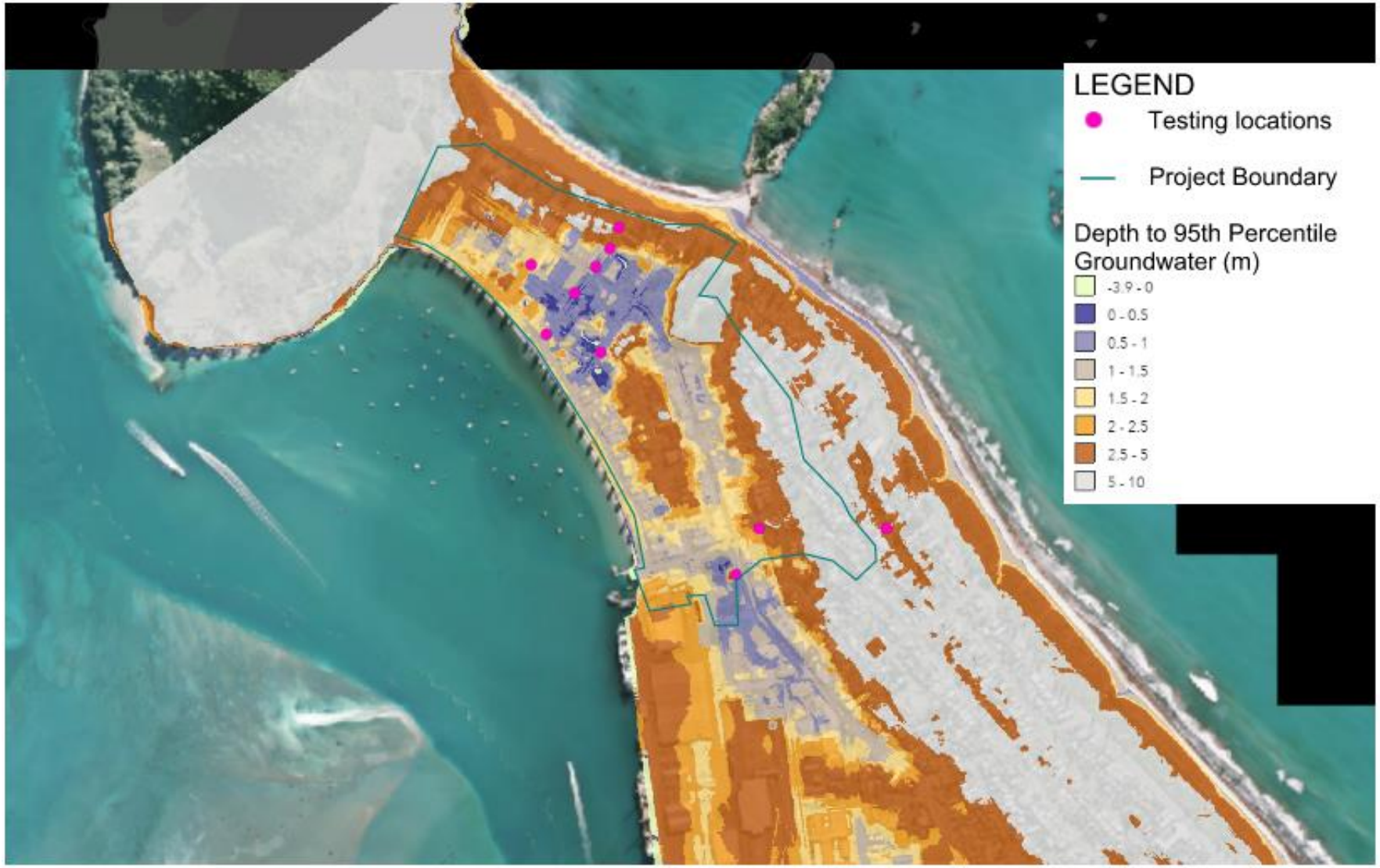
The Mount North Catchment

Land Elevations within the Mount Maunganui North Area

Land Elevations within the Mount Maunganui North Area



Depth to 95th percentile groundwater level (m)

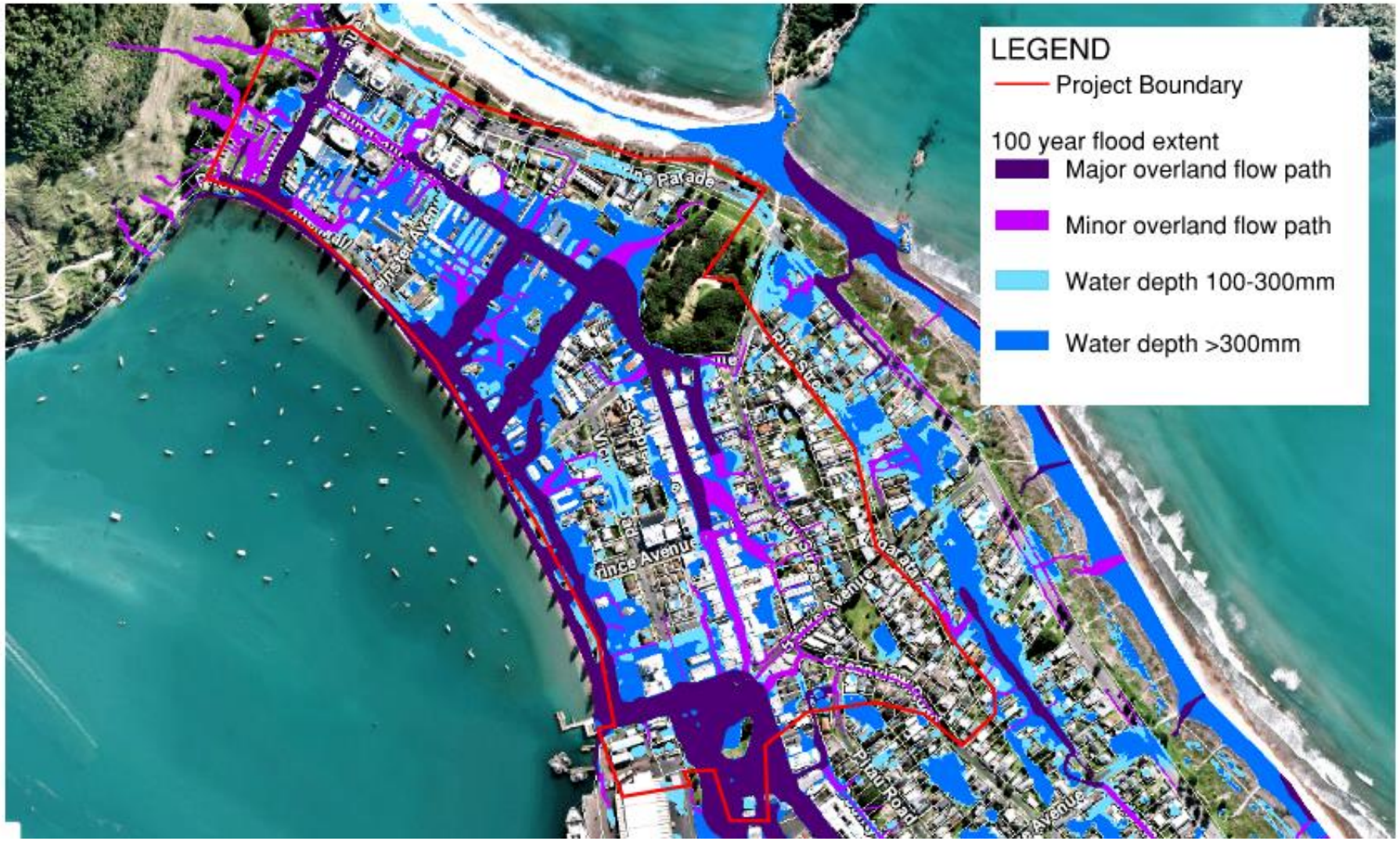


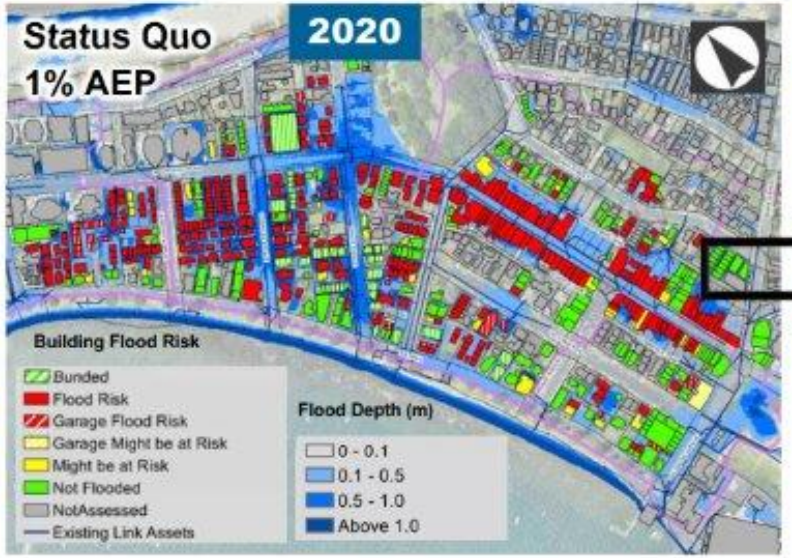
Sensitivity

Note: Pacific coast flooding not shown.

1 in 100-year flood event in 2020 climate

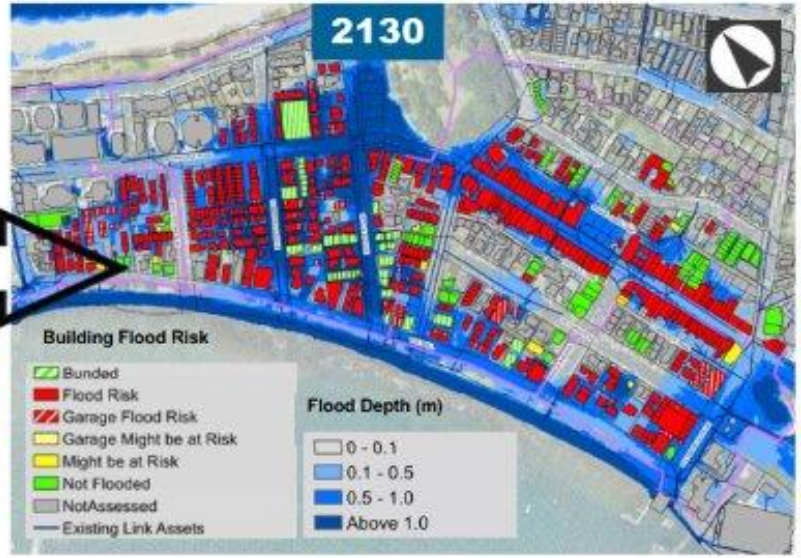
1 in 100-year flood event in 2130 under RCP8.5 climate pathway





SUB-CATCHMENT	FLOOD TYPE	RESIDENTIAL	COMMERCIAL
Adams	Flood Risk	59	0
	Might be at Risk	6	0
Commons / Grace	Flood Risk	141	0
	Might be at Risk	5	1
CBD	Flood Risk	68	66
	Might be at Risk	10	3
Salisbury	Flood Risk	14	33
	Might be at Risk	4	5

SUB-CATCHMENT	FLOOD TYPE	RESIDENTIAL	COMMERCIAL
Adams	Flood Risk	62	0
	Might be at Risk	3	0
Commons / Grace	Flood Risk	147	0
	Might be at Risk	11	1
CBD	Flood Risk	71	66
	Might be at Risk	10	5
Salisbury	Flood Risk	16	34
	Might be at Risk	2	8



SUB-CATCHMENT	FLOOD TYPE	RESIDENTIAL	COMMERCIAL
Adams	Flood Risk	64	0
	Might be at Risk	3	0
Commons / Grace	Flood Risk	179	1
	Might be at Risk	1	0
CBD	Flood Risk	91	75
	Might be at Risk	5	0
Salisbury	Flood Risk	34	61
	Might be at Risk	1	3

Modelling of flood risk by Awa Environmental
(Mount Maunganui North Options Modelling, 2020)

Indicative Business Case (2020)

- The IBC process considered a number of approaches including:
  - Land raising over time in one of the sub-catchments,
  - Increased capacity in the gravity pipe network, and
  - Pump stations to increase discharge capacity.
- This had significant short term tradeoffs during implementation and would require a coordinated effort to be effective.

An assessment would:

- Need to consider options performance over timeframe
- Need to incorporate consideration of climate change – e.g. what is impacted and when
- Need to allow for flexibility and uncertainty

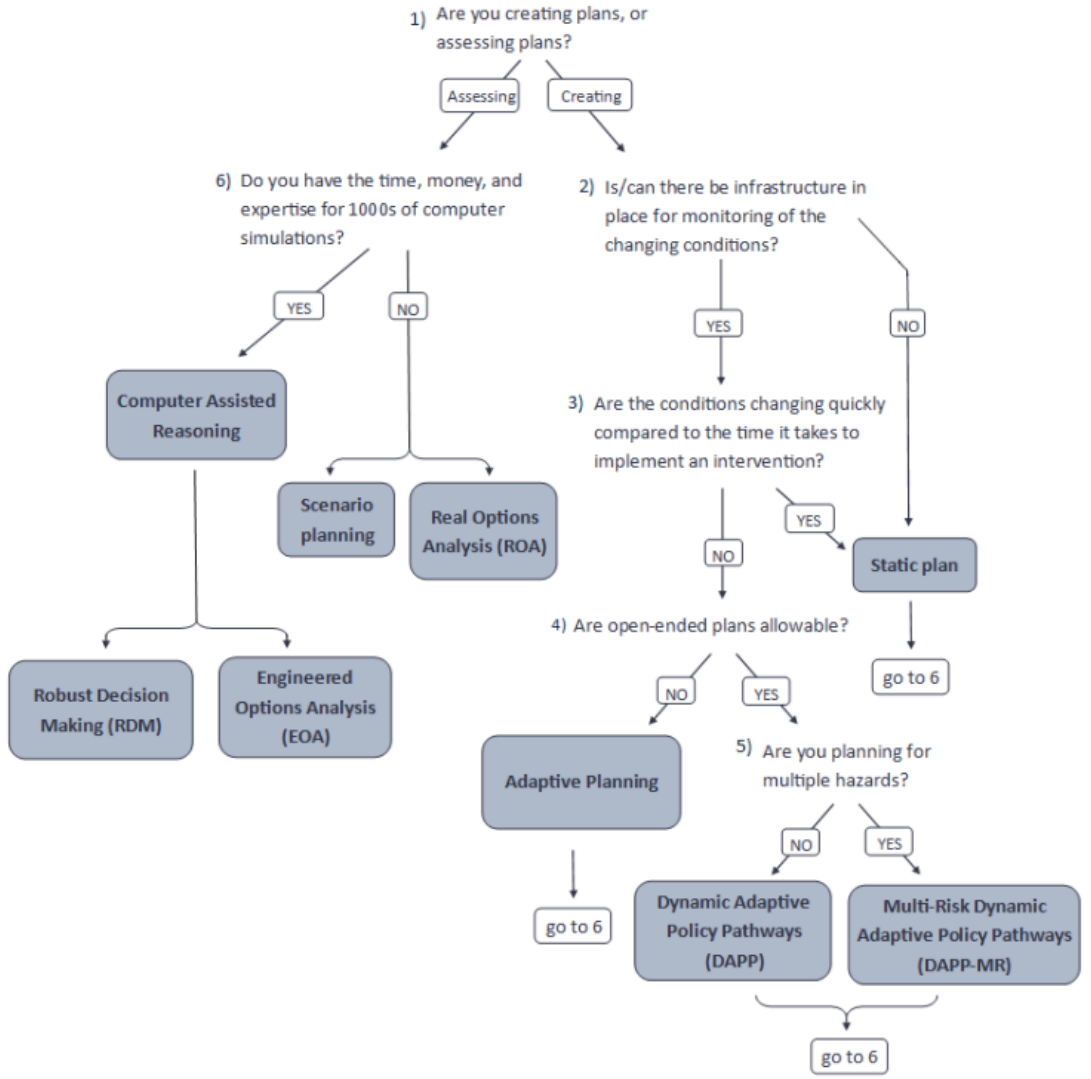
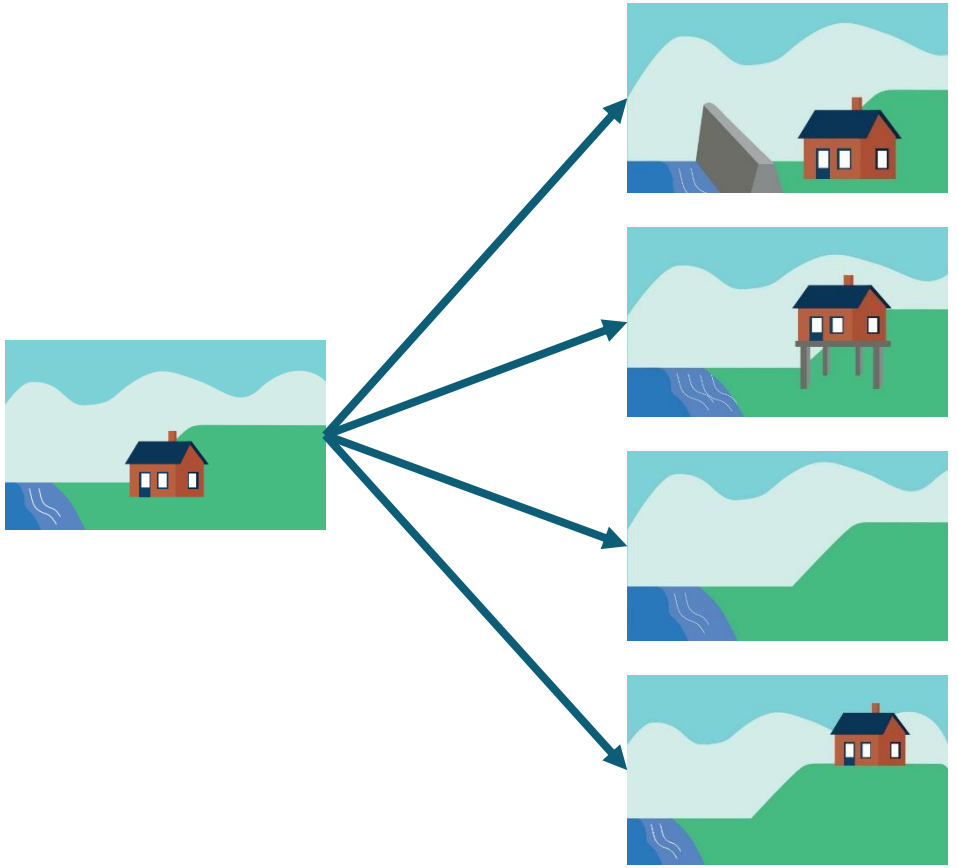


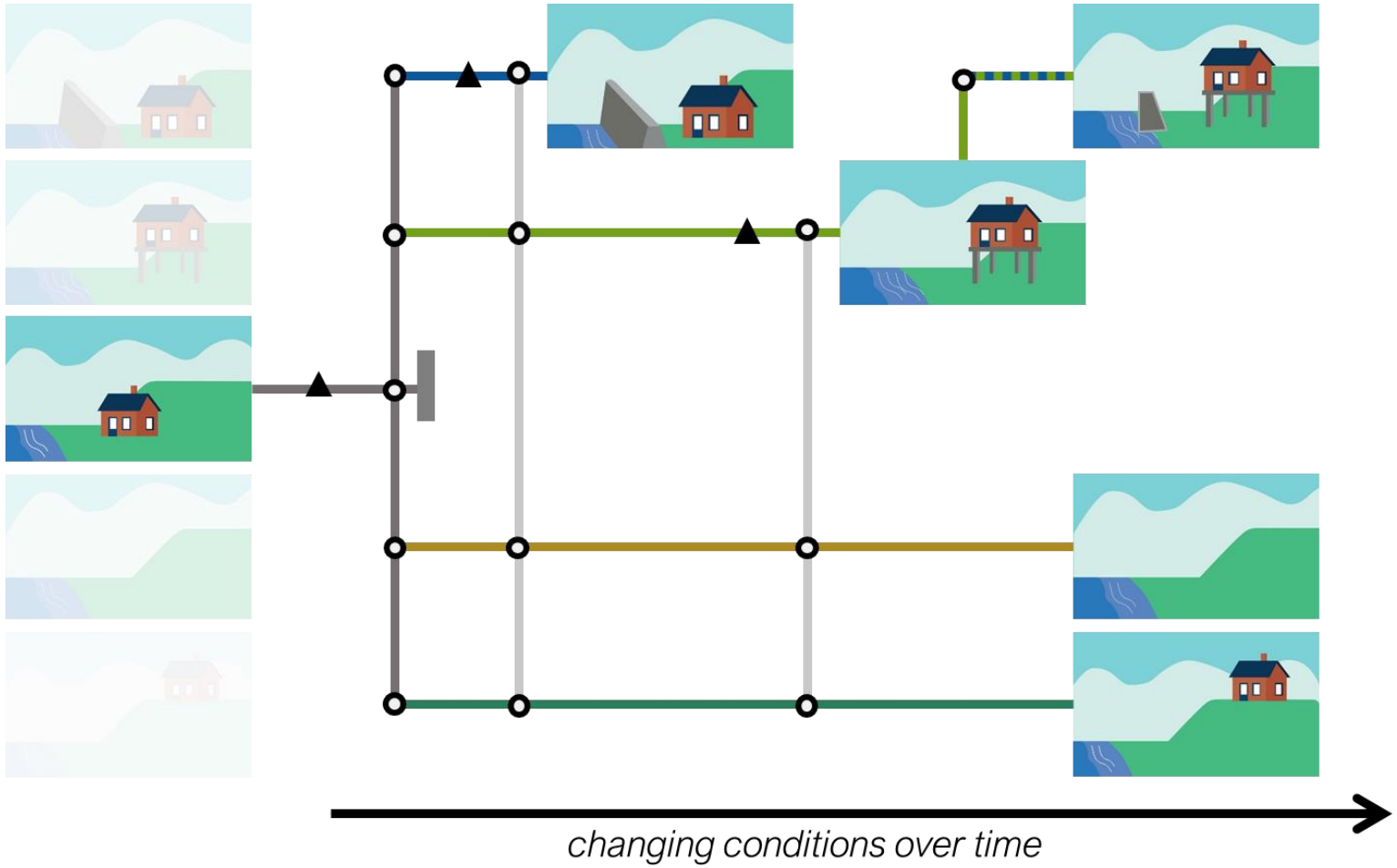
Figure 2 – Decision Approach Tree used for identifying the best approach(es) for a task (Curran, Wreford, and Logan 2023)

What can we do about it?

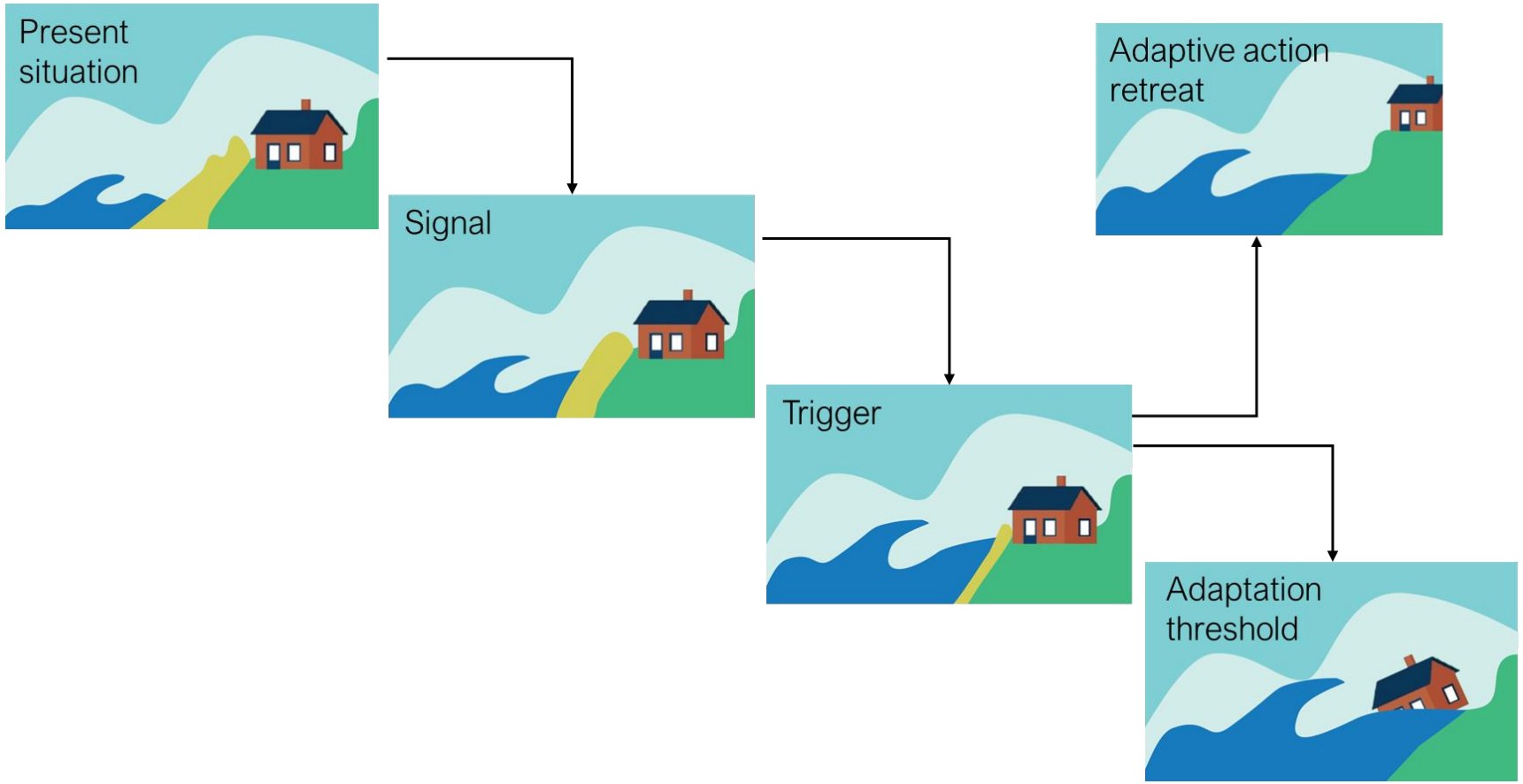
The usual way...



What about pathways?

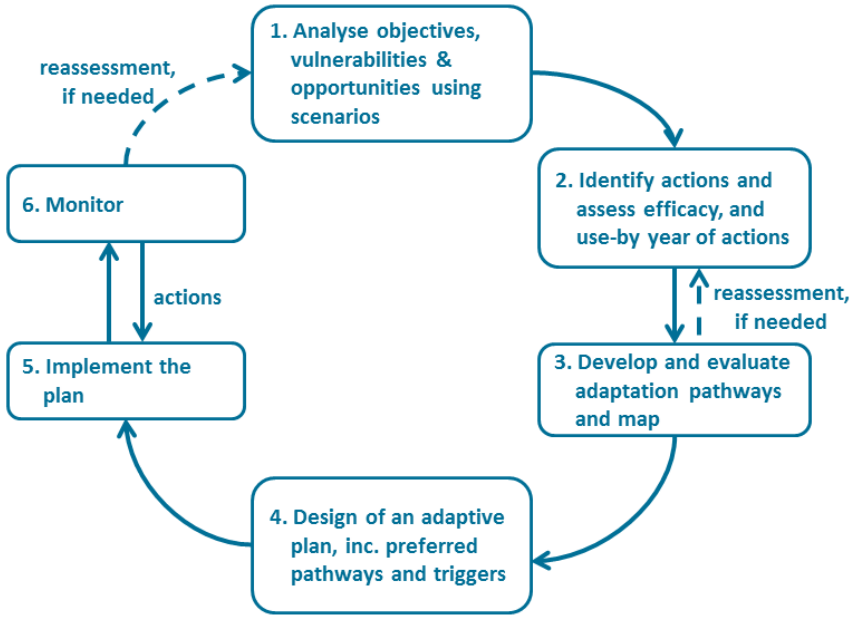


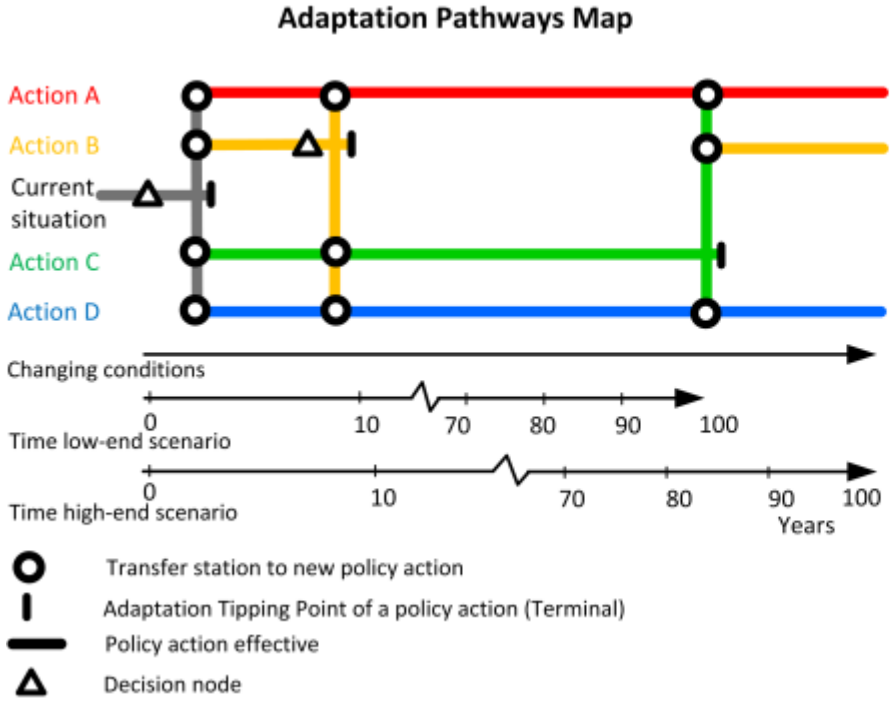
What about pathways... with signals?

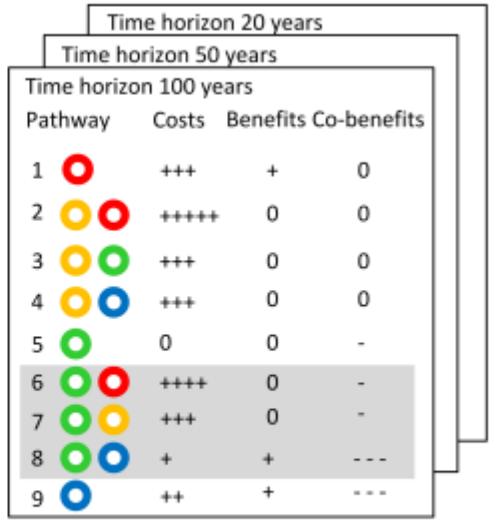


Adapted from Allison, 2021

Dynamic Adaptive Planning/Policy Pathways







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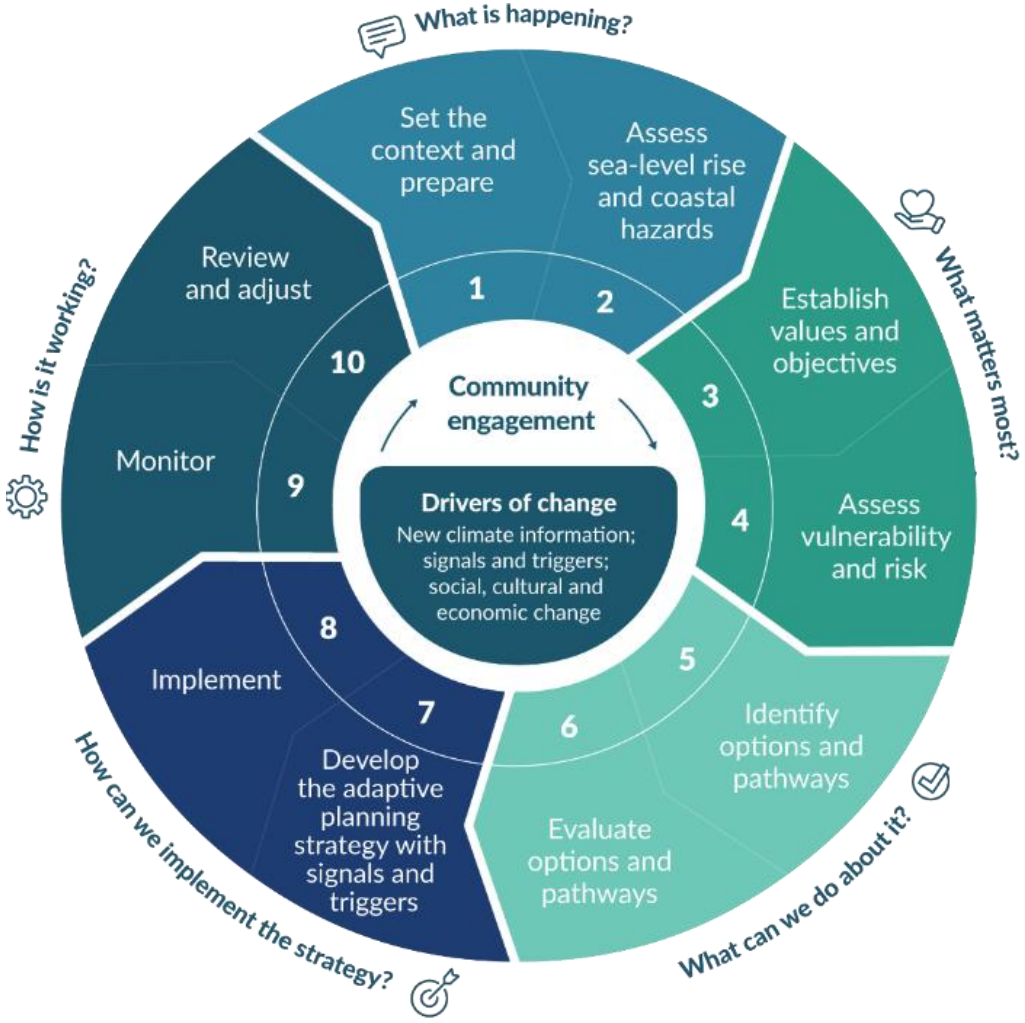

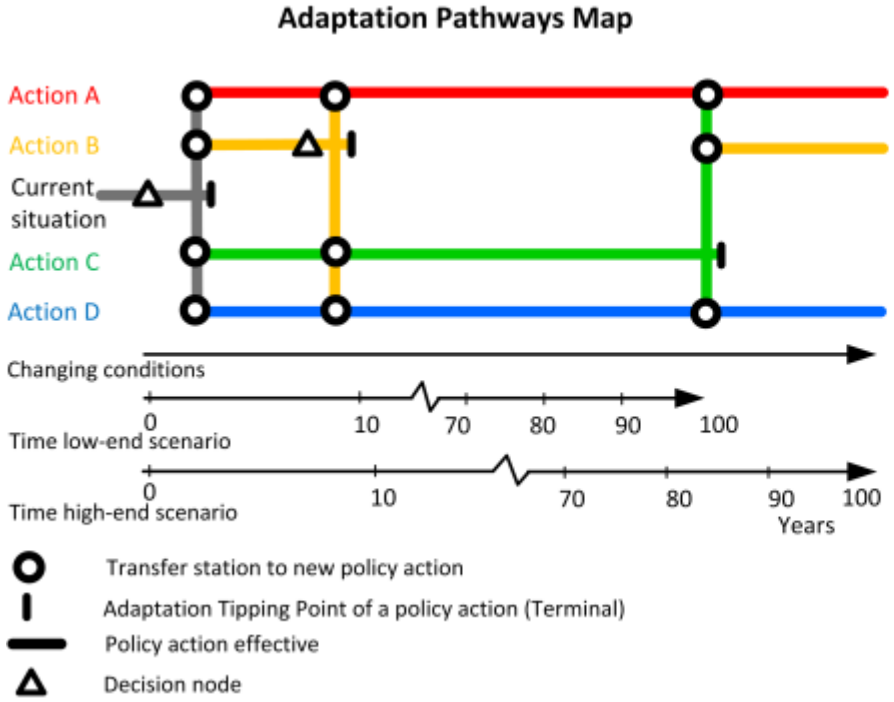

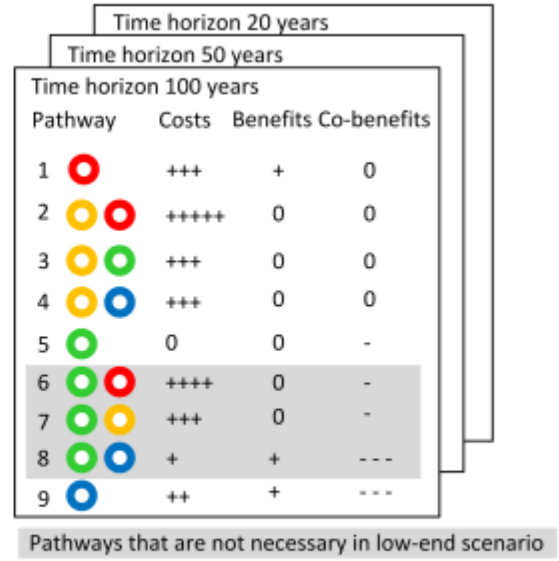

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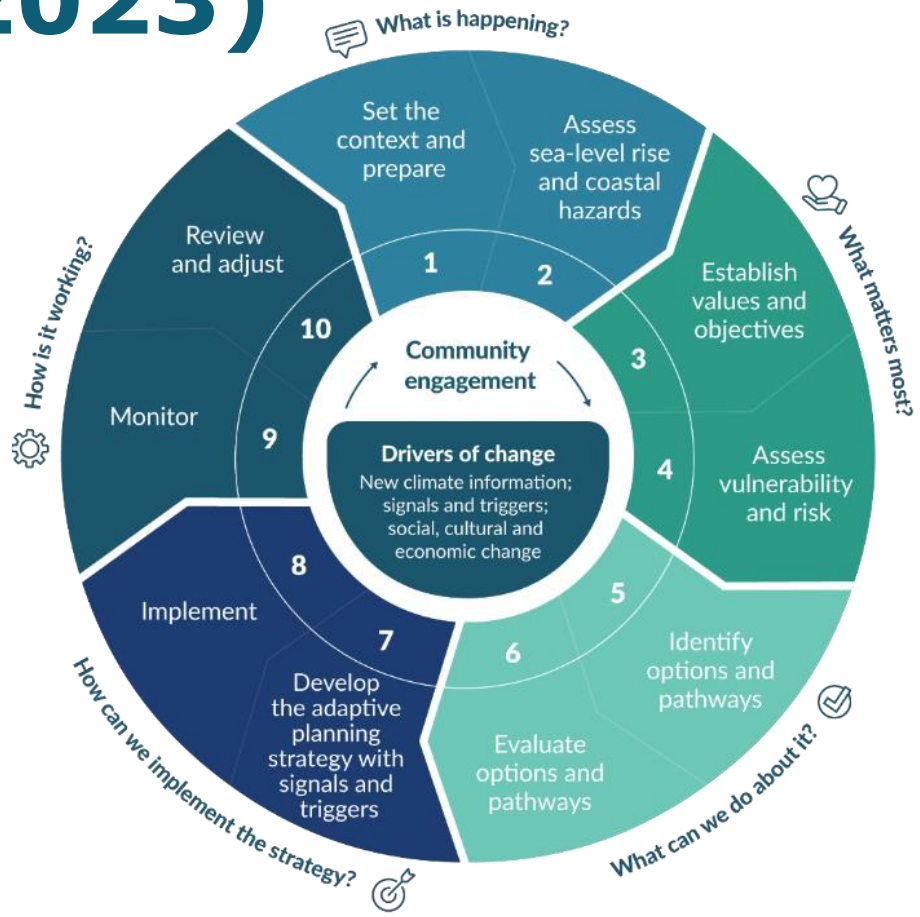
Pilot Project – DAPP 'lite' (2023)

- To test engagement techniques and messaging
- To avoid stakeholder confusion and fatigue
- To scope additional work to prepare
- To get (hopefully!) buy-in from a focus group to build support prior to community rollout



What is happening?

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What matters most?

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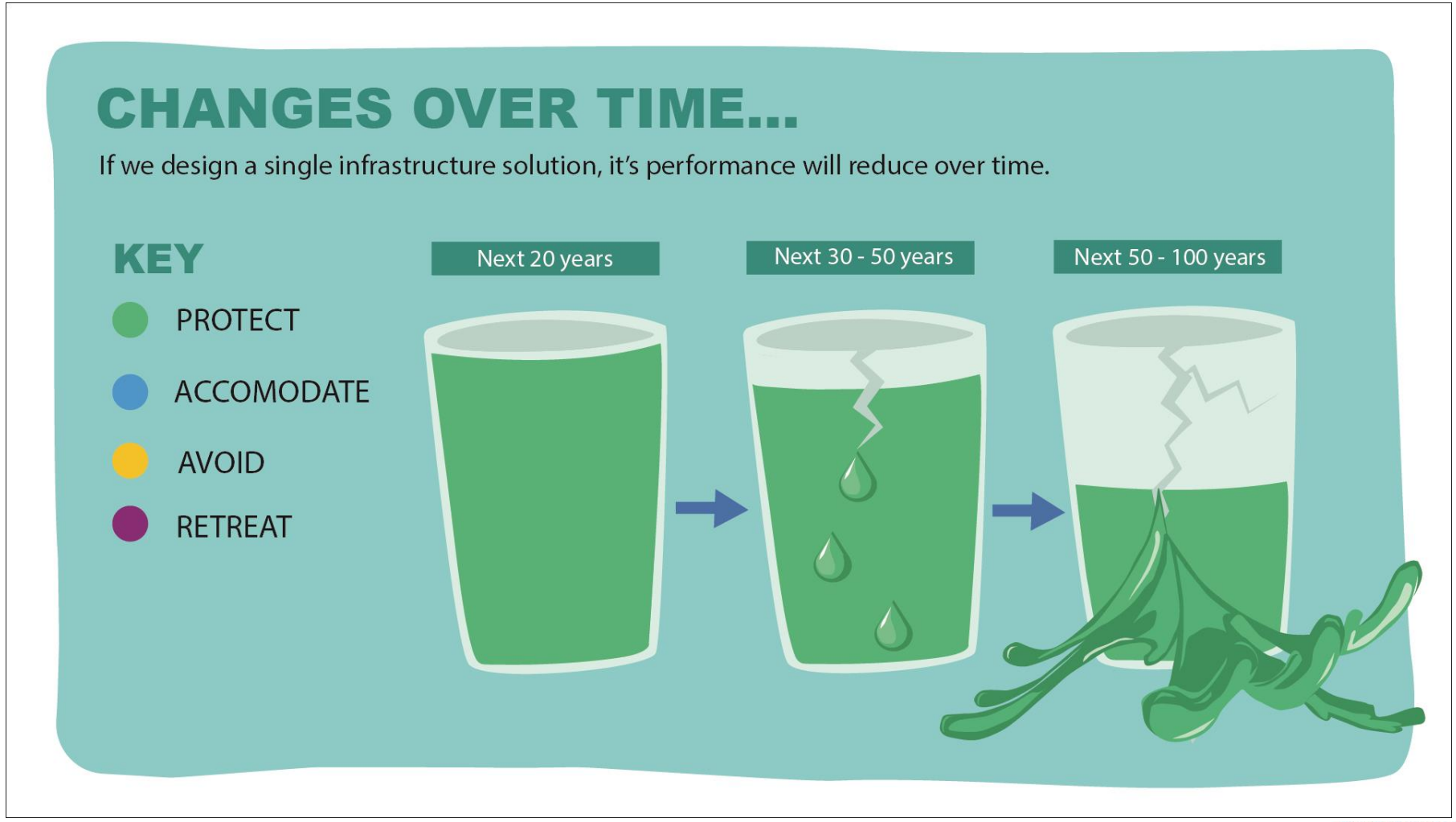
What can we do about it?



What can we do about it?

Dreamer

What can we do?

Anything is possible
Let your mind wander
Blue sky thinking

Realist

How can it be done?

Be practical and realistic

Critic

What are the barriers?

Be critical

Find the holes in the ideas

What can we do about it?

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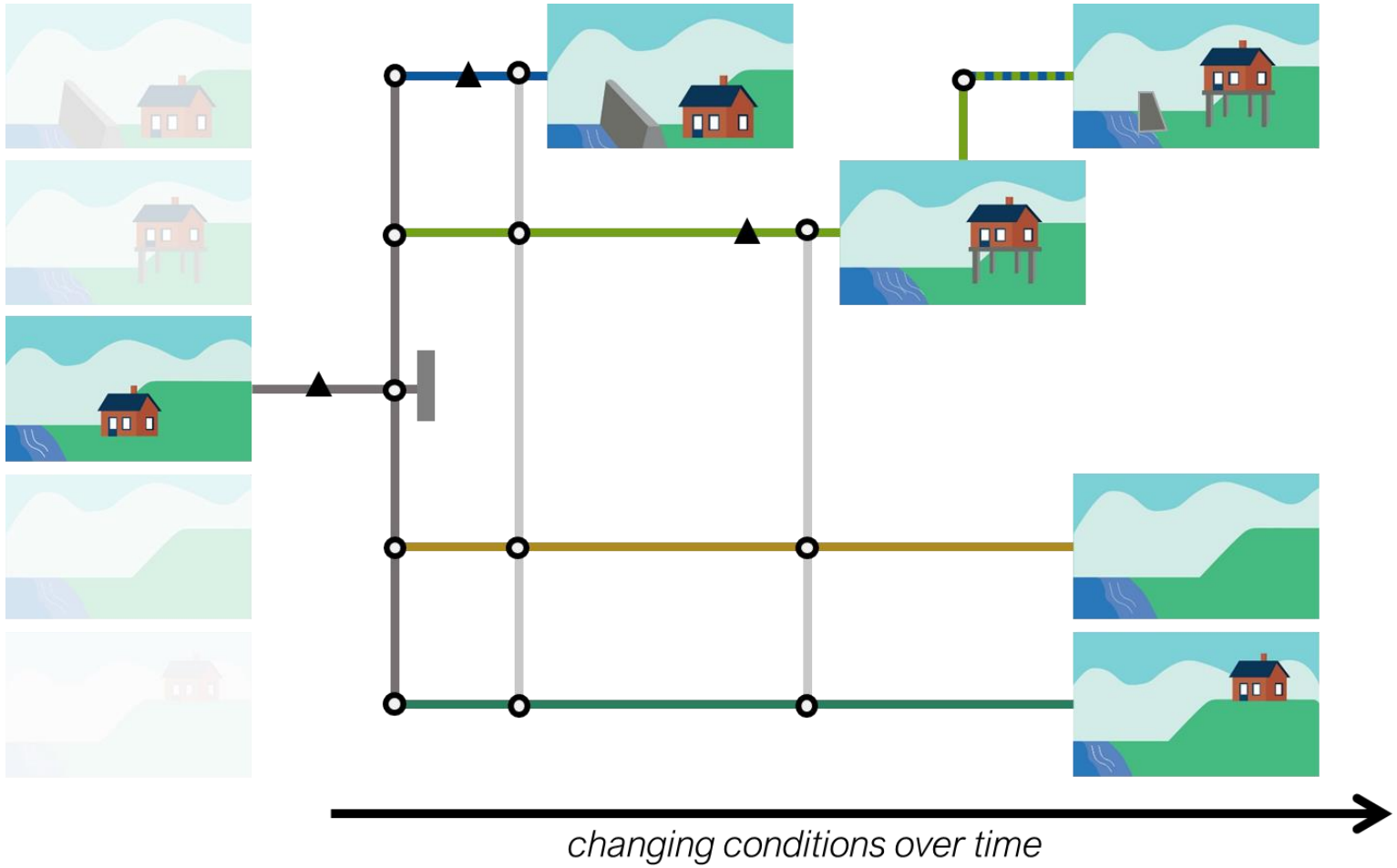
What about pathways?



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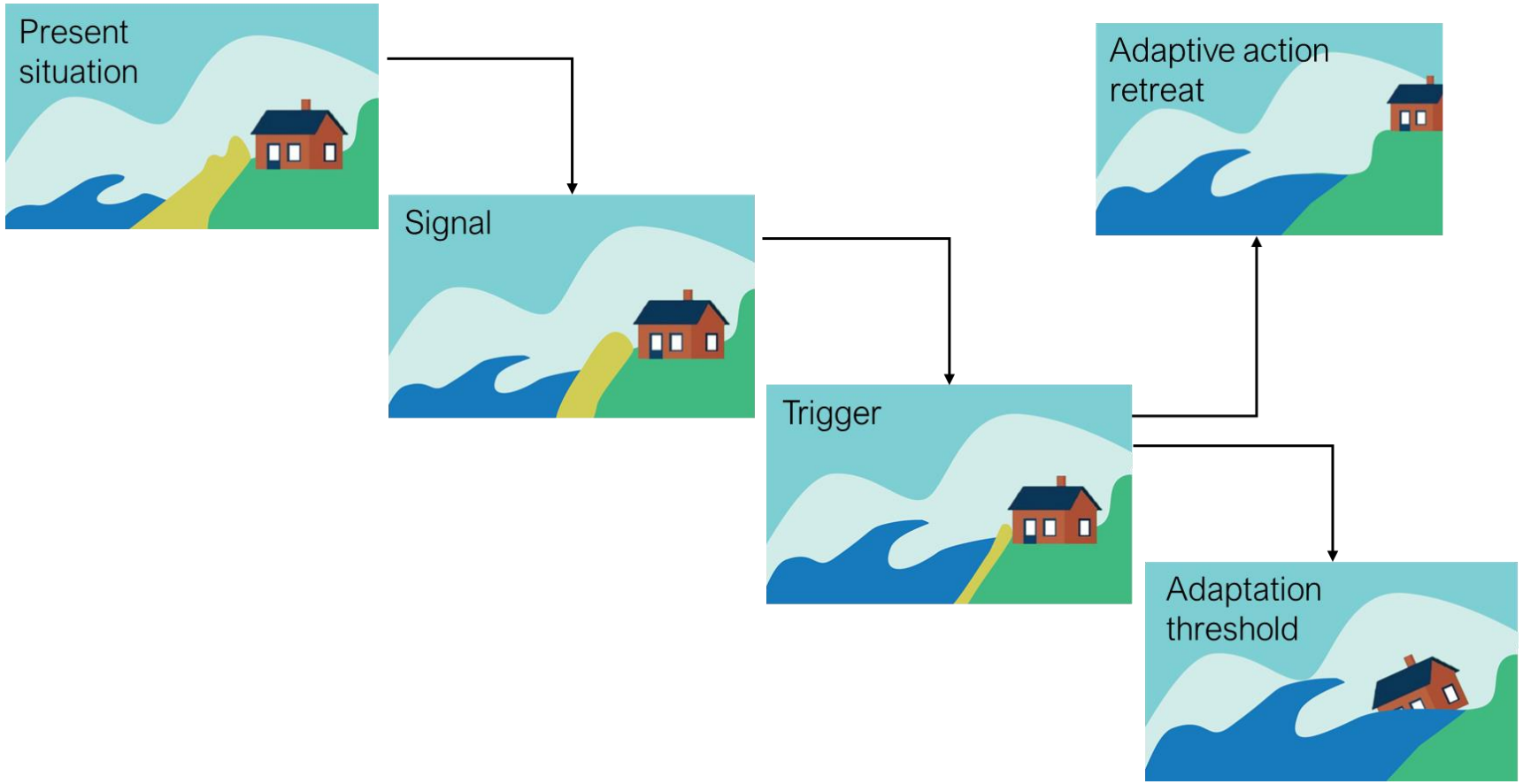

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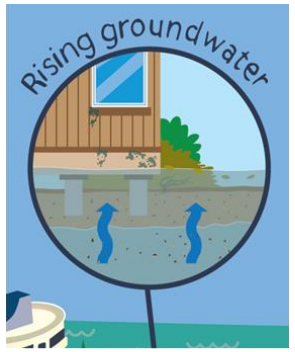

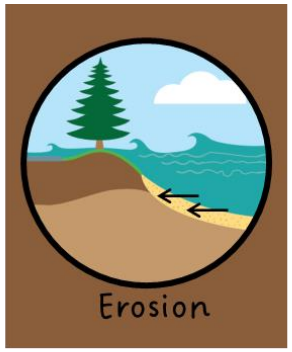

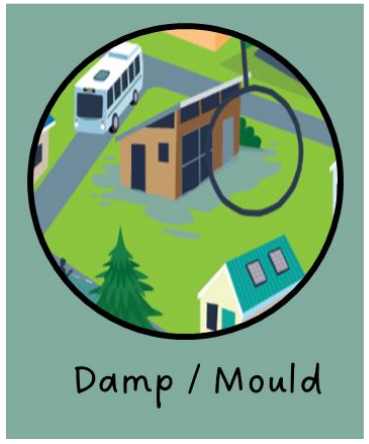

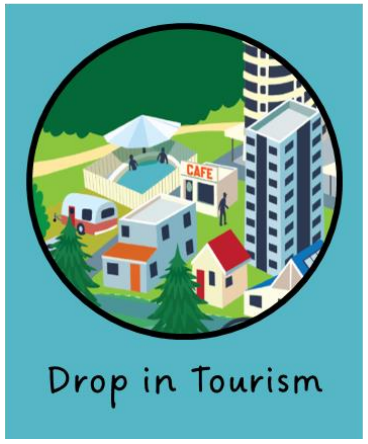

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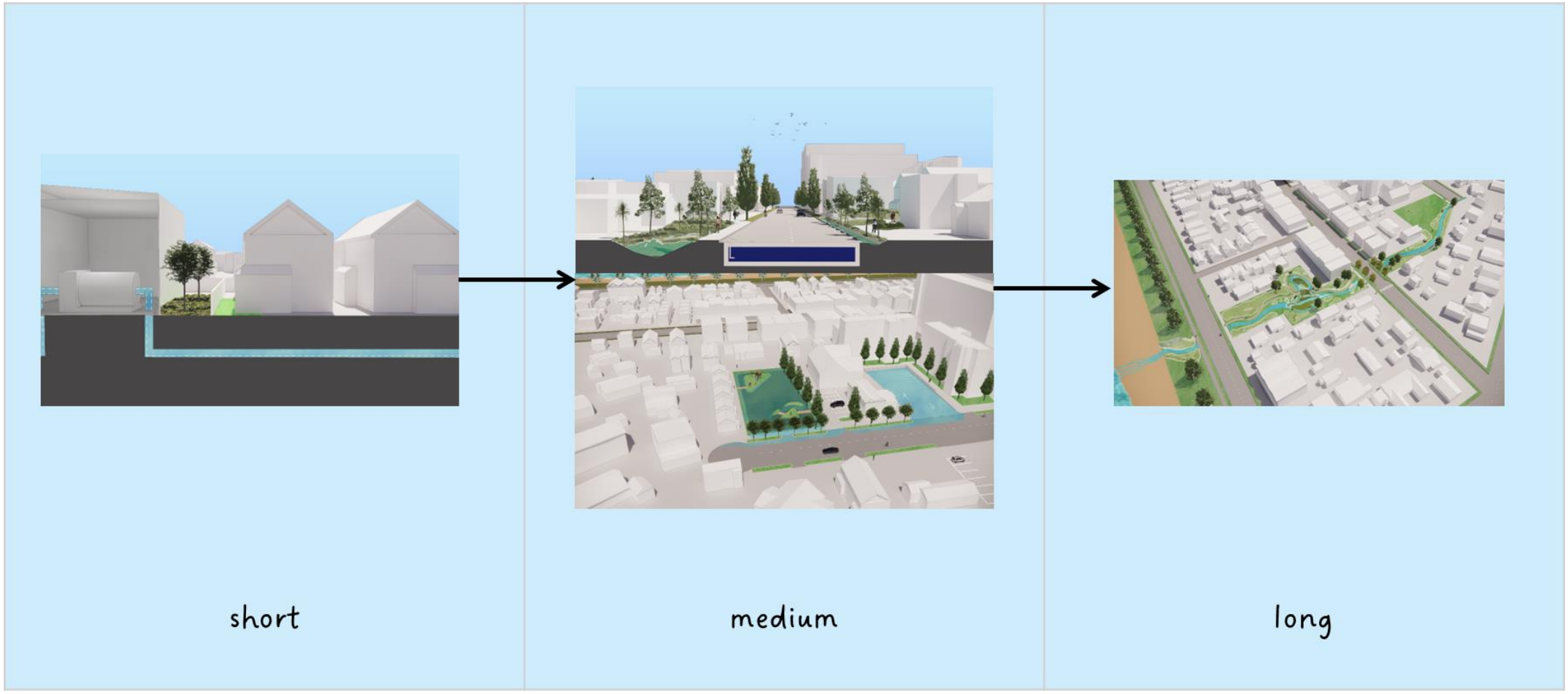
Can we collaboratively develop pathways?



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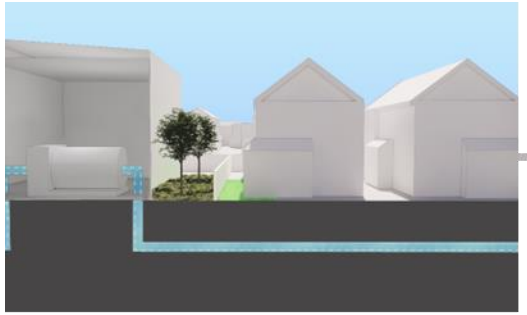

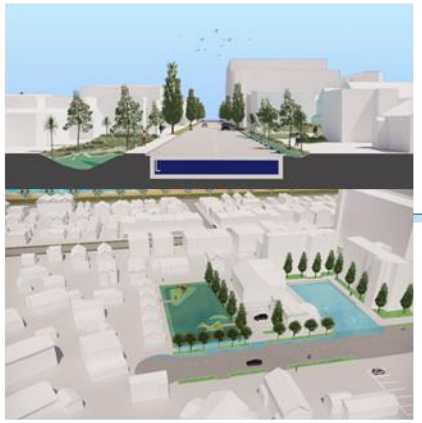

Benefits of this approach for our pilot

- Our focus group valued:
  - Incorporation of te ao Māori lens
  - Taking action to make a plan to adapt
  - Allowing members of communities to be involved in plan development
  - Finding ways to bring more nature into the Mount
- We valued:
  - The ability to test messaging and activities
  - Feedback from the panel – about not just what they thought but why
  - Developing champions for the project moving forward.
- Taking a DAPP approach with communities at the heart does require significant effort and thoughtful communication, but in return, communities will have more trust in the process, and in the recommended solutions.

Strategic Lessons Learned

- DAPP is a hugely useful framework for decision making when there is deep uncertainty and potential for high risk/high value/contentious projects and maladaptation.
- We can do this in a way that puts community at the heart of trade-offs and decision making, using frequent engagement.
- DAPP allows us to build in flexibility and avoid investment in redundant infrastructure – while still giving communities the comfort that there is a plan in place.
- This can be used for URBAN STORMWATER projects - not just coastal projects.
- Using a pilot phase to test concepts/nurture community support/develop scope has proven incredibly useful and could be used elsewhere.

Thank you!
Questions? Patai?

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