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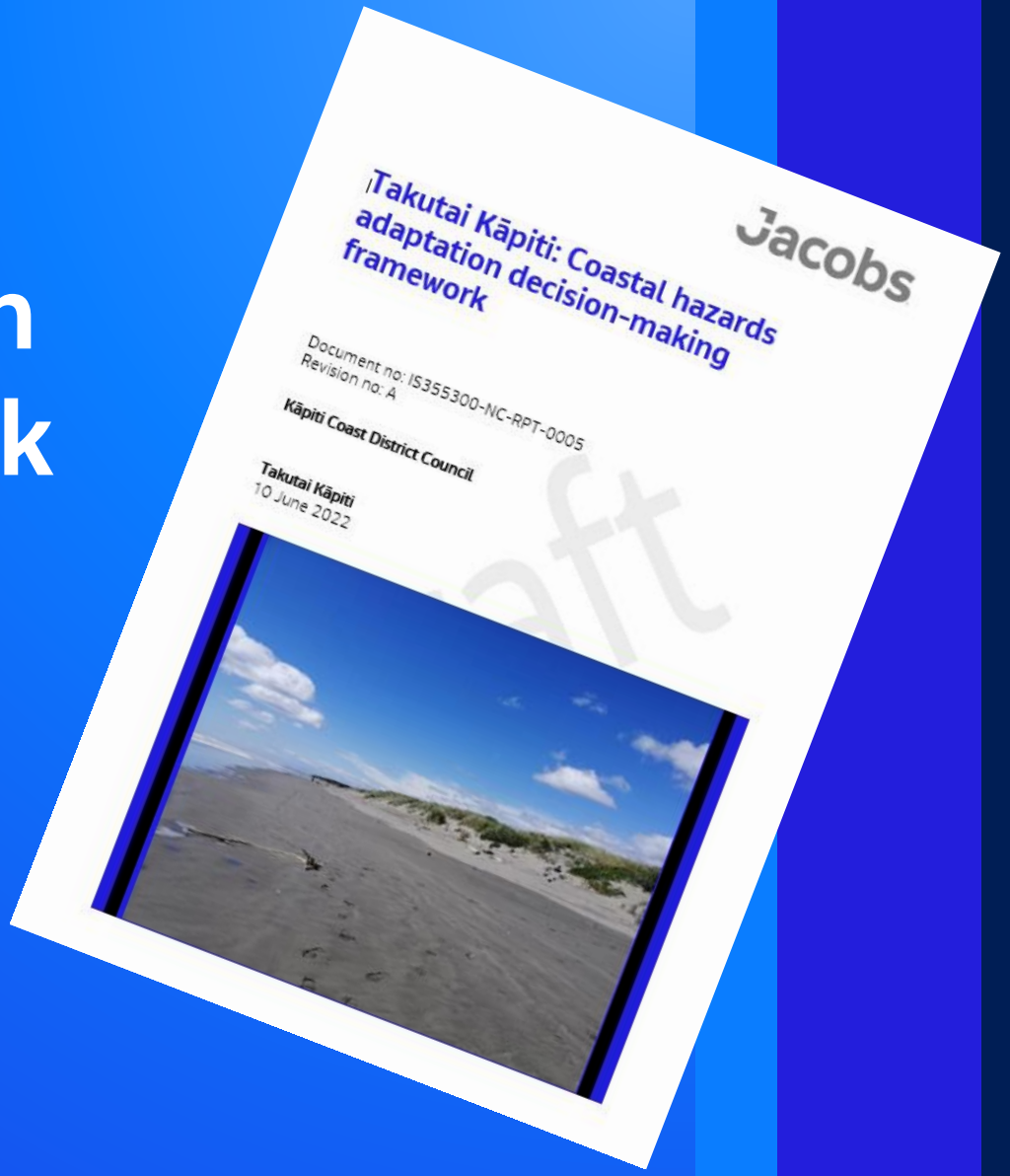
Coastal Hazards Adaptation Decision Making Framework

Report Prepared by the TAG June 2022



Purpose of today's discussion

- To have an understanding of the decision-making framework report, including:
  - the output you are required to produce as a CAP at the end of this;
  - the step by step framework you will use to make these recommendations.

We appreciate that you have only received the report this week, so we expect at the next CAP session to go through any outstanding questions and comments you might have on this process once you have a chance to digest the information.

Purpose of the report

- Coastal Advisory Panel (CAP) are tasked with developing a set of recommendations for how coastal communities and infrastructure within the Kāpiti Coast District should adapt to sea level rise over the next 100 years.
- **The purpose of this report is to set out the tasks and process that CAP will follow in order to produce their coastal hazard adaptation recommendations.**
- The recommendations of CAP will help inform the broader coastal strategy and a district plan change that will be developed following the Takutai Kāpiti process.

What is in the report?

- Section 1 – How this report aligns with the MfE (2017) Guidance
- Section 2 - Overview of the tools that we will be using to help inform the decision-making process
- Section 3 - Relationships, Roles and Responsibilities – Outlines who is on the CAP, TAG and KCDC staff.
- Section 4 – Detailed steps for the decision-making framework.

Section 1.1 Alignment with MfE (2017) Guidance

Section 2 Overview of Decision-making Framework and Tools

- Dynamic Adaptation Planning Pathways (DAPP) Approach
- Risk Assessment
- Multi-Criteria Decision Analysis (MCDA)
- Real Options Analysis (ROA)

2.1 DAPP Approach

A

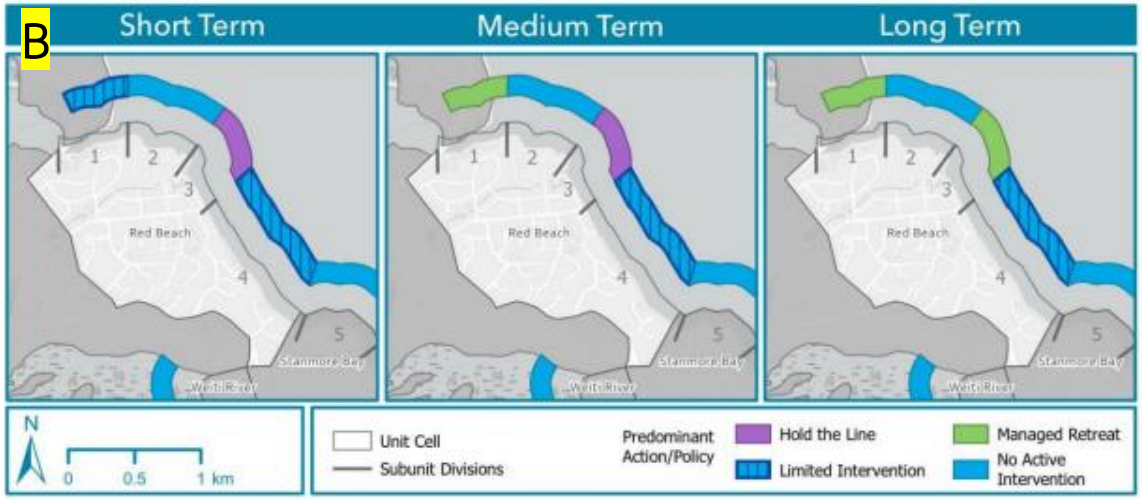
Unit L: Clifton										
Pathway	Short term →	Medium term →	Long term	MCDA Score	MCDA ranking	Cost + Loss[1] ($m)	Cost + Loss[1] ranking	VFM[2] ($'000/ point)	VFM[2] ranking	Short Term build costs[3] ($m)
PW 1	Renourishment →	Managed Retreat →	Managed Retreat	67	2	12.20	6	173	5	7.12 (0.44 / yr)
PW 2	Renourishment + Control Structures →	Renourishment + Control Structures →	Managed Retreat	59	3	10.47	5	159	4	6.25 (0.40 / yr)
PW 3	Renourishment + Control Structures →	Renourishment + Control Structures →	Renourishment + Control Structures	52	4	9.60	3	156	3	6.25 (0.40 / yr)
PW 4	Renourishment + Control Structures →	Renourishment + Control Structures →	Sea wall	43	6	10.29	4	205	6	6.25 (0.40 / yr)
PW 5	Sea wall →	Sea wall →	Managed Retreat	70	1	8.83	2	110	1	5.23 (0.38 / yr)
PW 6	Sea wall →	Sea wall →	Sea wall	49	5	7.65	1	126	2	5.23 (0.38 / yr)

[1] Cost + loss is equal to the total cost estimate (operational + capital costs) for the full 100 year pathway + residual losses due to events that exceed a 1 in 100-year chance of occurrence.

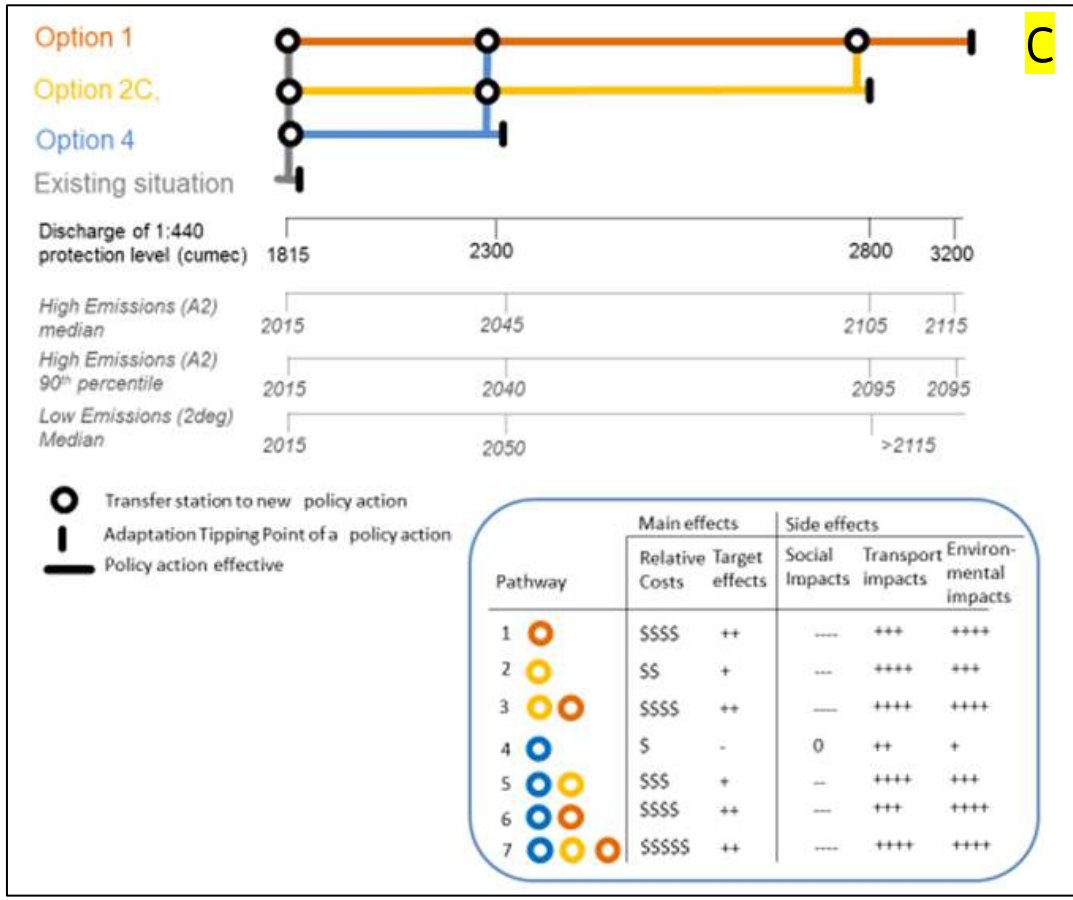
[2] Value for Money measure – how much it costs to "purchase" each MCDA point based on the MCDA score and total cost estimate (operational + capital) of each 100 year pathway

[3] Mid-point cost scenario (including operational costs) for the first stage of each pathway (i.e the short term option). Numbers in brackets are the annual rating cost of the short term option over 20 years.

B



C



Pathway	Main effects: Relative Costs	Main effects: Target effects	Side effects: Social Impacts	Side effects: Transport impacts	Side effects: Environmental impacts
1	$$$$	++	----	+++	++++
2	$$	+	---	++++	+++
3	$$$$	++	----	++++	++++
4	$	-	0	++	+
5	$$$	+	--	++++	+++
6	$$$$	++	---	+++	++++
7	$$$$$	++	----	++++	++++

A – Mitchell Daysh (2018). Clifton to Tangoio Coastal Hazards Strategy 2120 Report of the Northern and Southern Cell Assessment Panels. Report prepared for Hawkes Bay Regional Council.

B - Greater Wellington Regional Council (2015). Flood Protection: Option flexibility and its value Hutt River City Centre Upgrade River Corridor Options Report. Prepared for GWRC by Infometrics & PSConsulting. Greater Wellington Regional Council, Wellington, p. 31.

C - Howe, T., N. Carpenter, R. Reinen-Hamell, M. McNeill, M. Rivers (2022). Shoreline adaptation plan: Whangaparāoa pilot 2022

2.2 Risk Assessment

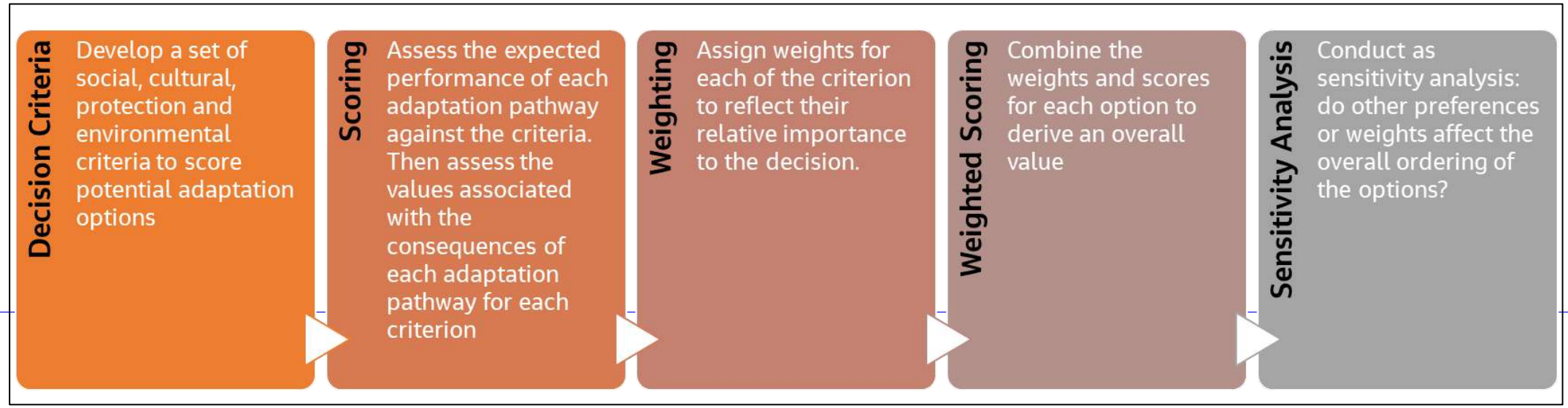
- Is consolidation of all the technical assessments for each Adaptation Area.
- **Purpose**: 1) To bring the CAP up to speed on all of the consequences (Infrastructure/assets, community, cultural, natural character, ecological) of coastal erosion and inundation hazards in each Adaptation Area.
- 2) To provide a baseline case for the consequences of failing to address SLR in order to test the success of their potential pathways against for the MCDA assessment (e.g. the 'do-nothing' option).
- **Output**: 1) Maps on web viewer of the intersection of the hazard exposure with the spatial location of elements which are at risk of damage or loss from the hazards Includes: land parcels, land-uses, infrastructure, community services, areas of significant cultural, social and environmental uses.
- 2) Commentary on the risk of hazards to non-spatial social, cultural, and environmental values (e.g. loss of ability to access the beach).

2.3 Multi-Criteria Decision Analysis (MCDA)

- Is a tool to assist decision-making where need to consider a number of different criteria, including both qualitative and quantitative.
- Is used in a number of contexts to help provide analysis of different options and outcomes, and how they compare to one another.
- The objective is to provide an overall ordering of options from the most preferred to the least preferred option.

Unit L: Clifton								
Pathway	Short term	→	Medium term	→	Long term	MCDA Score	MCDA ranking
PW 1	Renourishment	→	Managed Retreat	→	Managed Retreat	67	2
PW 2	Renourishment + Control Structures	→	Renourishment + Control Structures	→	Managed Retreat	59	3
PW 3	Renourishment + Control Structures	→	Renourishment + Control Structures	→	Renourishment + Control Structures	52	4
PW 4	Renourishment + Control Structures	→	Renourishment + Control Structures	→	Sea wall	43	6
PW 5	Sea wall	→	Sea wall	→	Managed Retreat	70	1
PW 6	Sea wall	→	Sea wall	→	Sea wall	49	5

5 steps in the MCDA process



2.4 Real Options Analysis (ROA)

The ROA process will provide two specific metrics:

1. A 'Cost + Loss' metric which is derived from two elements:
   - A total cost estimate (Capital and Operational) for the design, construction and maintenance of all elements in the full 100-year pathway sequences (this will be a discounted value).
   - A residual loss calculation – reflecting there may still be impacts due to uncertainties in climate science and engineering design.

   This could be a calculated loss figure from damage caused by events that exceed a 1 in 100-year chance of occurrence used in the hazard assessment.
2. A Value for Money (VFM) measure for each pathway.

   This compares the total cost estimate for each 100-year pathway sequence against its MCDA results (the weighted scores) to provide the cost of each MCDA point.

Unit L: Clifton										
Pathway	Short term →	Medium term →	Long term	MCDA Score	MCDA ranking	Cost + Loss[1] ($m)	Cost + Loss[1] ranking	VFM[2] ($'000/ point)	VFM[2] ranking	Short Term build costs[3] ($m)
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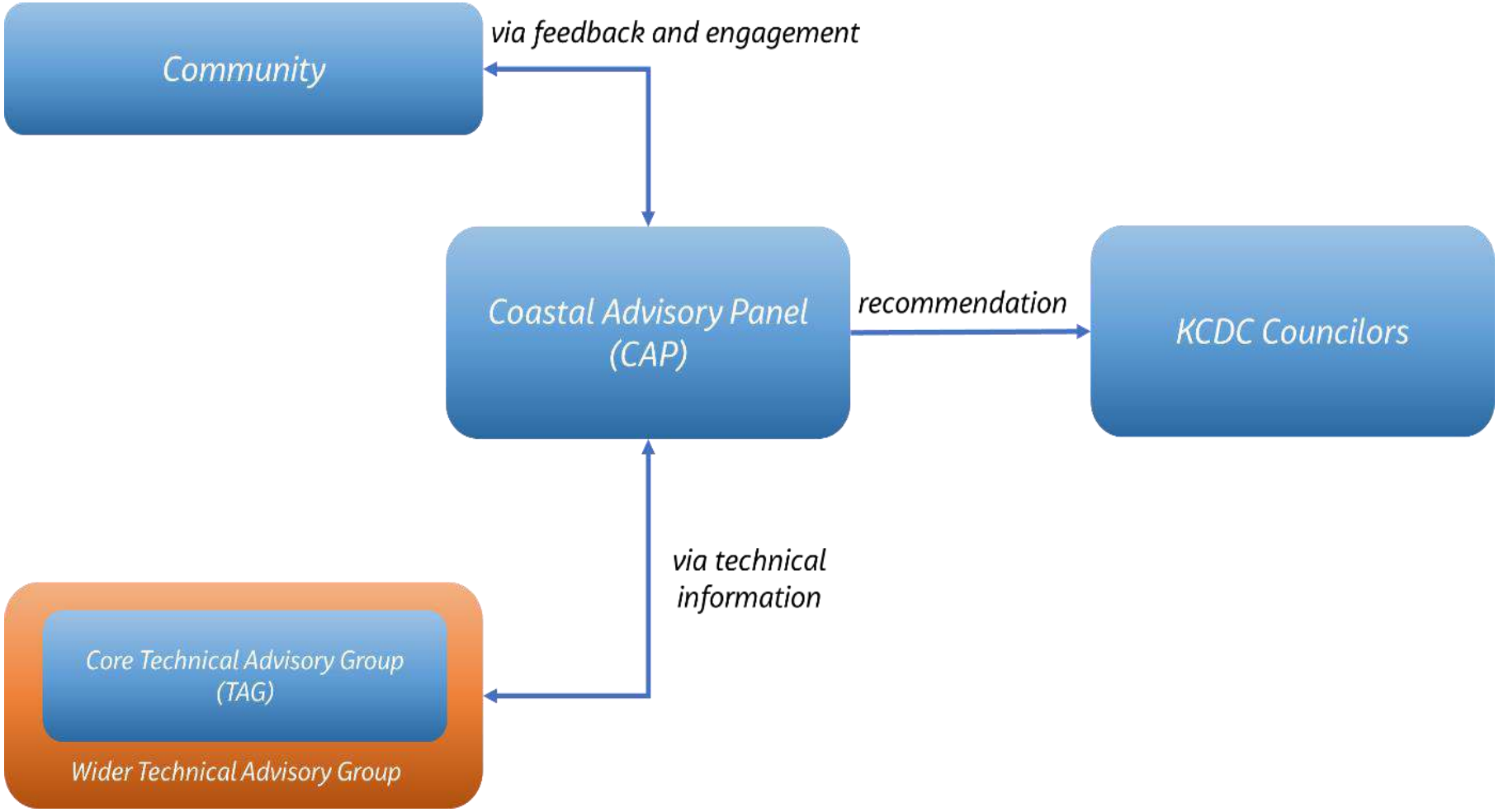
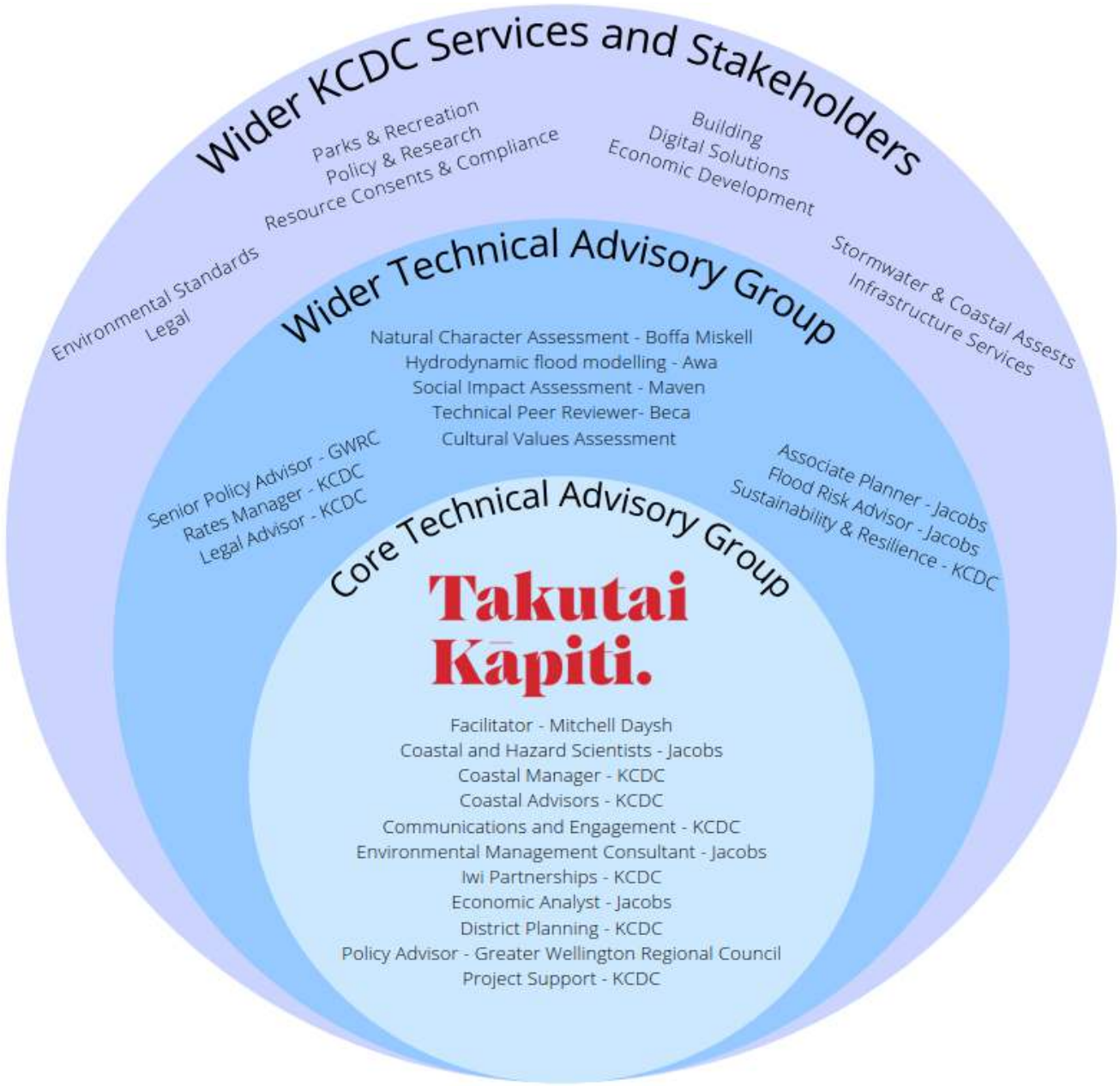
3.4 Relationship between CAP, TAG and Council



3.2 Technical Advisory Group (TAG)

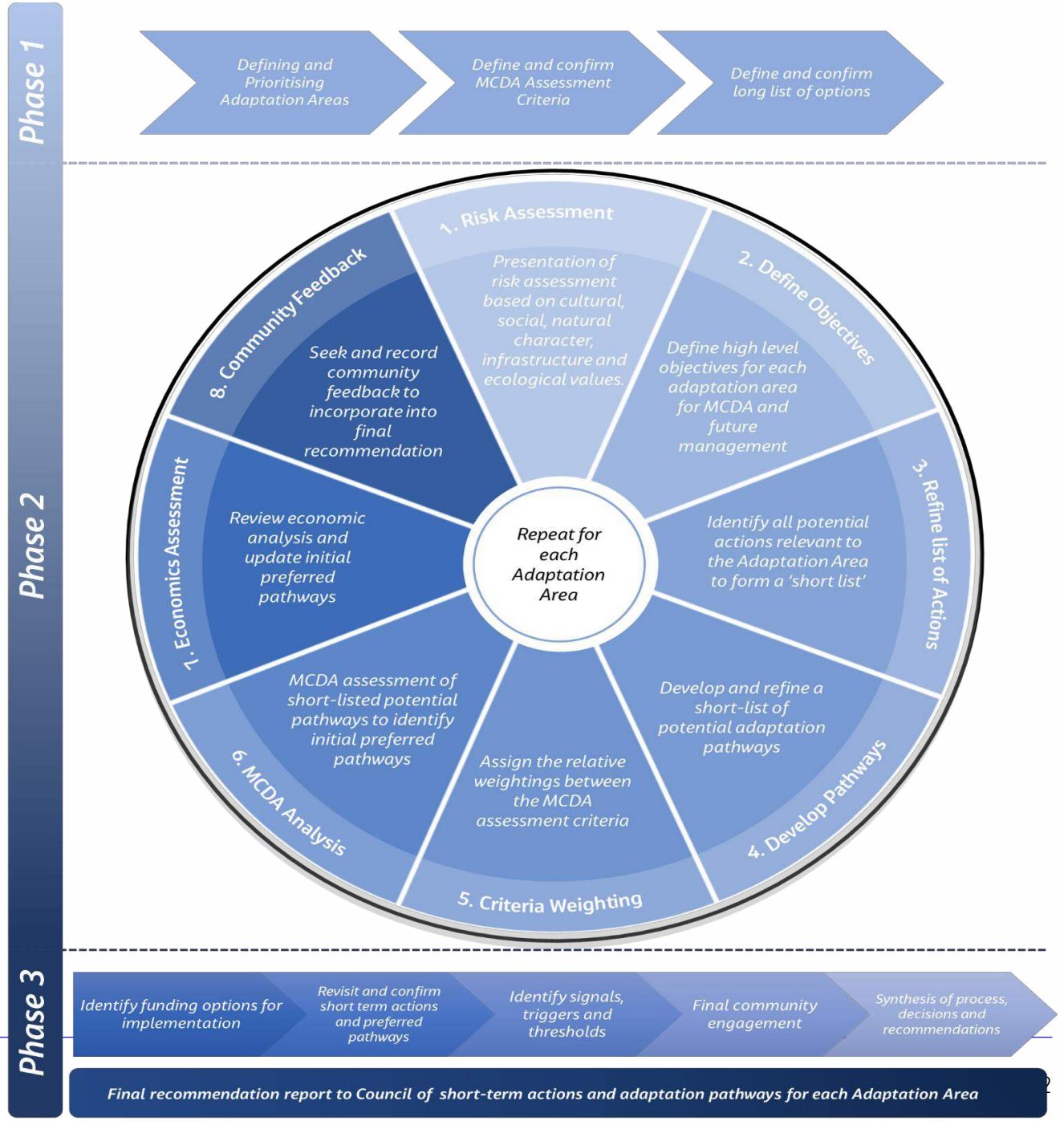


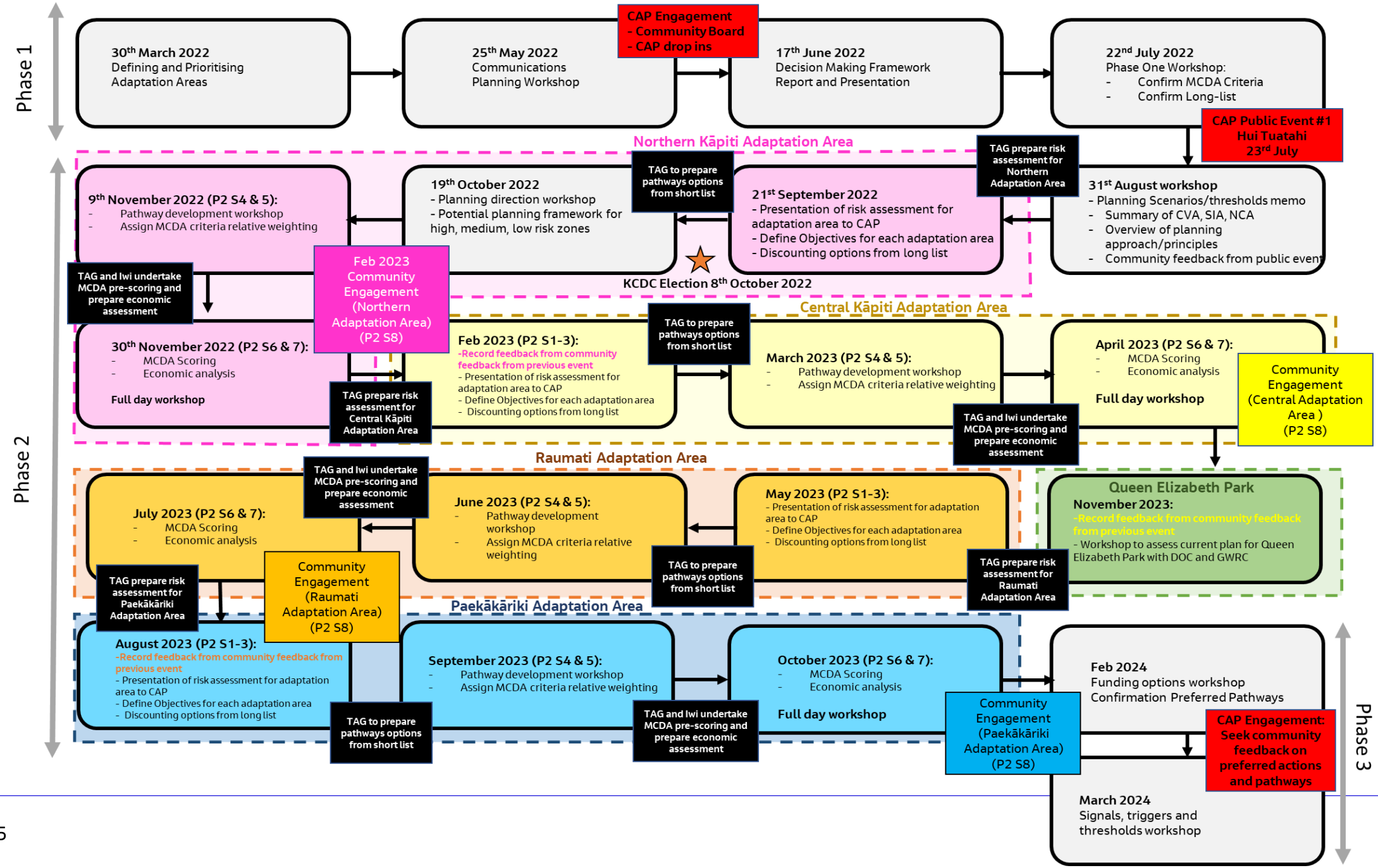
4.1.1 Technical information provided to CAP

- Jacobs (2021) Kāpiti Coast Coastal Hazard Susceptibility and Vulnerability Assessment Volume 1 Methodology Report
- Jacobs (2022) Kāpiti Coast Coastal Hazard Susceptibility and Vulnerability Assessment Volume 2 Results Report
- Long-list of Coastal Adaptation Options and Actions (Appendix D and E of this document)
- Updated Flood Hazard Assessments (AWA)
- Social Impact Assessment (Maven)
- Cultural Values Assessment (Dr. Aroha Spinks)
- Natural Character Assessment (Boffa Miskell – for GWRC)
- Coastal Hazards District Planning Assessments (Jacobs)
- Ecological values (KCDC)

Section 4
Decision-making Framework for Takutai Kapiti Coastal Hazards Adaptation

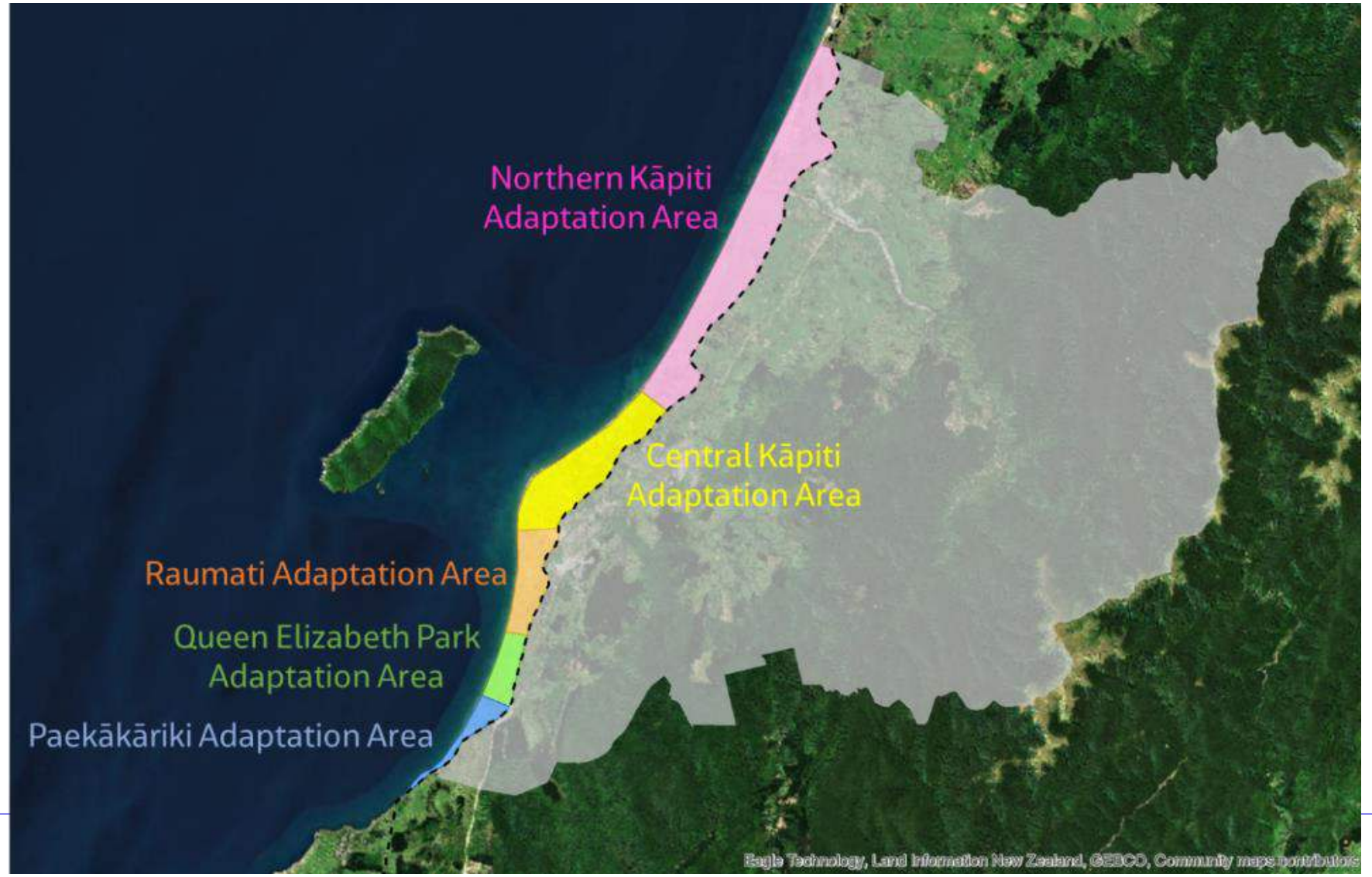
- 3 Phases each consisting of a number of task:
  - 1st phase are district wide tasks
  - 2nd phase tasks are repeated for each Adaptation Area
  - 3rd phase are again district wide tasks
- Final output: ***Coastal Hazards Adaptation Recommendation Report to Council***




Phase 1
30th March 2022
Defining and Prioritising Adaptation Areas
25th May 2022
Communications Planning Workshop
CAP Engagement
- Community Board
- CAP drop ins
17th June 2022
Decision Making Framework Report and Presentation
22nd July 2022
Phase One Workshop:
- Confirm MCDA Criteria
- Confirm Long-list
CAP Public Event #1
Hui Tuatahi
23rd July
Phase 2
Northern Kāpiti Adaptation Area
9th November 2022 (P2 S4 & 5):
- Pathway development workshop
- Assign MCDA criteria relative weighting
19th October 2022
- Planning direction workshop
- Potential planning framework for high, medium, low risk zones
TAG to prepare pathways options from short list
21st September 2022
- Presentation of risk assessment for adaptation area to CAP
- Define Objectives for each adaptation area
- Discounting options from long list
TAG prepare risk assessment for Northern Adaptation Area
31st August workshop
- Planning Scenarios/thresholds memo
- Summary of CVA, SIA, NCA
- Overview of planning approach/principles
- Community feedback from public event
KCDC Election 8th October 2022
TAG and Iwi undertake MCDA pre-scoring and prepare economic assessment
Feb 2023 Community Engagement (Northern Adaptation Area) (P2 S8)
Central Kāpiti Adaptation Area
30th November 2022 (P2 S6 & 7):
- MCDA Scoring
- Economic analysis
Full day workshop
TAG prepare risk assessment for Central Kāpiti Adaptation Area
Feb 2023 (P2 S1-3):
-Record feedback from community feedback from previous event
- Presentation of risk assessment for adaptation area to CAP
- Define Objectives for each adaptation area
- Discounting options from long list
TAG to prepare pathways options from short list
March 2023 (P2 S4 & 5):
- Pathway development workshop
- Assign MCDA criteria relative weighting
TAG and Iwi undertake MCDA pre-scoring and prepare economic assessment
April 2023 (P2 S6 & 7):
- MCDA Scoring
- Economic analysis
Full day workshop
Community Engagement (Central Adaptation Area) (P2 S8)
Raumati Adaptation Area
July 2023 (P2 S6 & 7):
- MCDA Scoring
- Economic analysis
TAG and Iwi undertake MCDA pre-scoring and prepare economic assessment
June 2023 (P2 S4 & 5):
- Pathway development workshop
- Assign MCDA criteria relative weighting
May 2023 (P2 S1-3):
- Presentation of risk assessment for adaptation area to CAP
- Define Objectives for each adaptation area
- Discounting options from long list
TAG to prepare pathways options from short list
TAG prepare risk assessment for Raumati Adaptation Area
Queen Elizabeth Park
November 2023:
-Record feedback from community feedback from previous event
- Workshop to assess current plan for Queen Elizabeth Park with DOC and GWRC
TAG prepare risk assessment for Paekākāriki Adaptation Area
Community Engagement (Raumati Adaptation Area) (P2 S8)
Paekākāriki Adaptation Area
August 2023 (P2 S1-3):
-Record feedback from community feedback from previous event
- Presentation of risk assessment for adaptation area to CAP
- Define Objectives for each adaptation area
- Discounting options from long list
TAG to prepare pathways options from short list
September 2023 (P2 S4 & 5):
- Pathway development workshop
- Assign MCDA criteria relative weighting
TAG and Iwi undertake MCDA pre-scoring and prepare economic assessment
October 2023 (P2 S6 & 7):
- MCDA Scoring
- Economic analysis
Full day workshop
Community Engagement (Paekākāriki Adaptation Area) (P2 S8)
Feb 2024
Funding options workshop
Confirmation Preferred Pathways
CAP Engagement: Seek community feedback on preferred actions and pathways
March 2024
Signals, triggers and thresholds workshop
Phase 3

4.2 Phase 1: Pre-Assessment Defining and Confirmation

4.2.1.1 Task 1: Defining and Prioritising Adaptation Areas: Completed



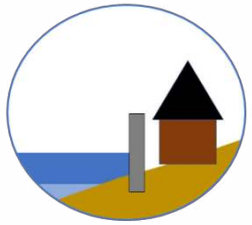
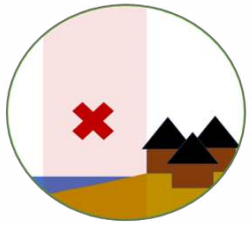
Section 4.2.2 Task 2: Confirm MCDA Assessment Criteria and Scoring Guide

- Develop a set of district wide standard criteria against which to score the different adaptation pathways in the MCDA assessment.
- Criteria cover the ability of the pathway to meet a number of principles across the four domains of:
  - Ability to manage the risks of coastal hazards to infrastructure, assets,& services, in a way that does not transfer hazards to other areas and can adapt to increasing risks through time
  - Impacts of the pathway on cultural values
  - Impacts of the pathway on community social values
  - Impacts of the pathway natural environments and ecological habitats.
- Note does no include any cost-based criteria as want the initial assessment to focus on the best outcomes from a core values perspective without getting bias by cost considerations.

MCDA example criteria from Hawkes Bay Strategy

Criteria		Description	Scoring Guide
Technical Assessment Criteria	Manages the risks of storm surge inundation	> Reduced exposure to risks from storm surge inundation > Meets objectives over long timeframes > Proportionate to the scale and nature of risk	5 – High / Good 4 – 3 – Mid 2 – 1 – Low / Bad
	Manages the risks of coastal erosion	> Reduced exposure to risks from coastal erosion > Meets objectives over long timeframes > Proportionate to the scale and nature of risk	5 – High / Good 4 – 3 – Mid 2 – 1 – Low / Bad
	Ability to adapt to increasing risks	> Readily responds to uncertain climate outcomes > Includes measures to support future adjustments	5 – High / Good 4 – 3 – Mid 2 – 1 – Low / Bad
	Risk transfer	> Exacerbation of hazard risk in other areas > The transfer of risk to others, including future generations	5 – Low / Good 4 – 3 – Mid 2 – 1 – High / Bad
Impact Assessment Criteria	Socio-economic Impacts	> Social effects e.g. > Effects on community safety > Loss of amenity value > Decline in recreational values, community facilities > Indirect economic / industry impacts (e.g. tourism, fishing)	5 – Low / Good 4 – 3 – Mid 2 – 1 – High / Bad
	Relationship of Maori and their culture and traditions with their ancestral lands, water, sites, waahi tapu, and other taonga	> Impacts on any cultural sites of significance > Maintains access to, and enables the carrying out of, customary activities	5 – Low / Good 4 – 3 – Mid 2 – 1 – High / Bad
	Natural Environments Impacts	> Impacts on natural coastal ecosystems > Impacts on the natural character of the coastal environment	5 – Low / Good 4 – 3 – Mid 2 – 1 – High / Bad

4.2.3 Task 3: Defining and confirming the long-list of adaptation options and actions

OPTIONS	ENHANCE	ACCOMODATE	PROTECT	RETREAT	AVOID
	We keep doing what we are doing, and do it better	We adapt where we are and learn to live with the hazard	We protect ourselves from the hazard	We move to safer ground	We avoid developing in places we know will be at risk in the future
					
ACTIONS	Dune reconstruction and regeneration Wind trap fencing Coastal wetlands and riparian management and creation Manage access (walkways and ramps) Maintain and strengthen existing structures Increase community education and risk awareness Emergency management Environmental monitoring	Flood-proofing buildings and infrastructure Adaptable and relocatable buildings Elevate floor levels of buildings	Soft engineering: • Renourishment • Beach scraping • Beach drainage Hard engineering: • Vertical sea walls • Rock revetments • Groynes • Stopbanks • Storm surge barriers • Culverts • Breakwaters • Flood gates • Gabion Baskets • Buried terminal walls	Land Acquisitions Buy outs Land swaps Leasebacks Future Interest Conservation easements Transferable development rights	Zoning Trigger-based or time limited land use consents Setback controls Building design – Adaptable, Relocatable, minimum floor levels Reducing intensification or development

Phase 2: Assessment of Pathways for Each Adaptation Area

4.3.1 Task 1: Presentation of Risk Assessment

Purpose: 1) To bring the CAP up to speed on all of the consequences to
- Infrastructure/assets,
- community services & values,
- cultural sites and values,
- natural character and ecology

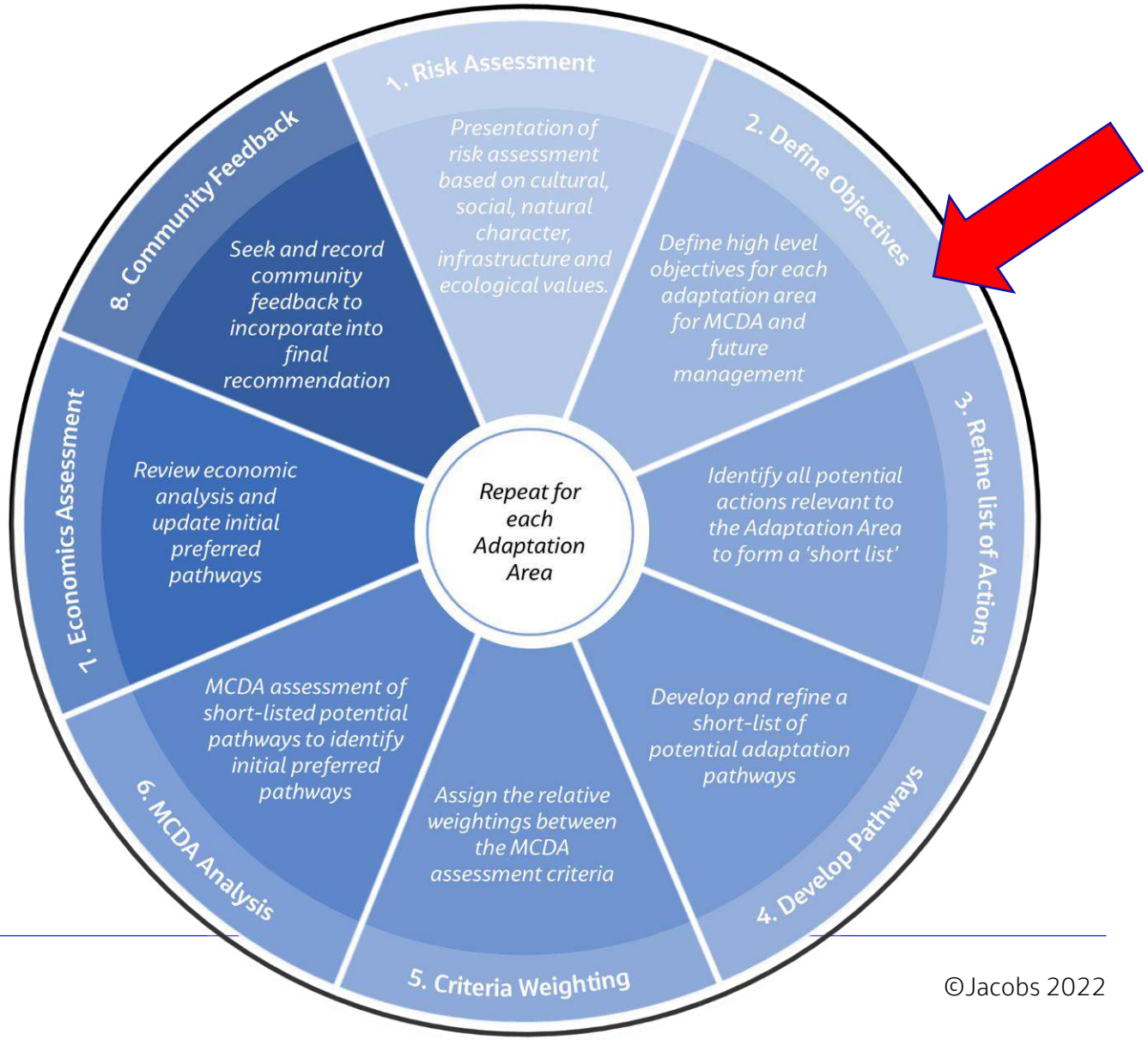
of coastal erosion and inundation hazards in that Adaptation Area.

2) To provide a baseline case for the consequences of failing to address SLR in order to test the success of their potential pathways against for the MCDA assessment (e.g. the 'do-nothing' option).

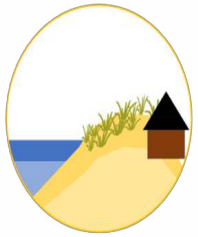
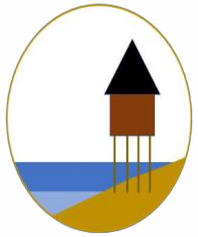
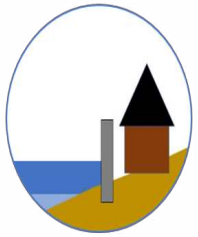
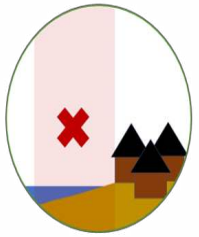
Outputs: Map overlays with hazard extent and commentary

4.3.2 Task 2: Define the objectives for Coastal Hazard Adaptation

- Objectives should be set with a focus on “what are we trying to achieve?” for each Adaptation Area based on the different nature of the current shoreline; the different exposure to hazards; the different assets, infrastructure, and property at risk; and the different social, cultural and environment values in each of the Adaptation Areas.
- The objectives are used to inform the weighting of each of the district wide criteria for that Adaptation Area.



4.3.3 Task 3: Discounting from long-list of actions

OPTIONS	ENHANCE	ACCOMODATE	PROTECT	RETREAT	AVOID
	We keep doing what we are doing, and do it better	We adapt where we are and learn to live with the hazard	We protect ourselves from the hazard	We move to safer ground	We avoid developing in places we know will be at risk in the future
					
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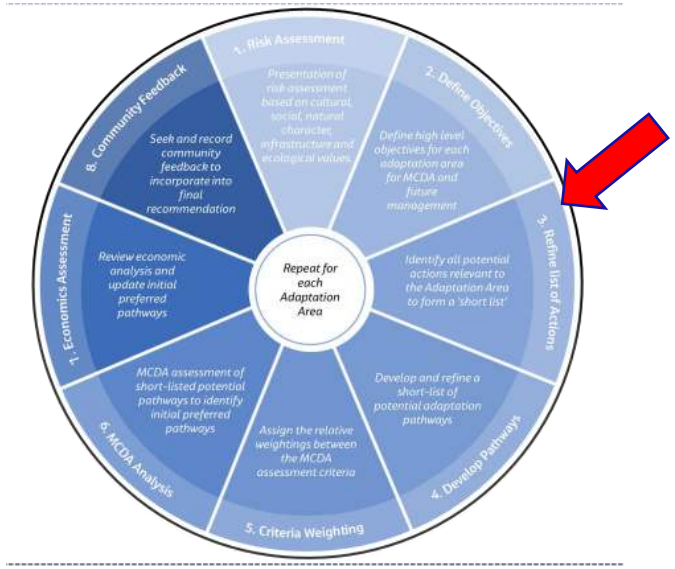


Reasons to discount Actions

A. Will not provide for the objectives defined by CAP

B. Does not have a good track record of being successful in this environment

C. Insufficient or limited space to implement the action

D. Not suitable for the environment is it being applied to

E. It is not a practical solution

F. Limited benefits

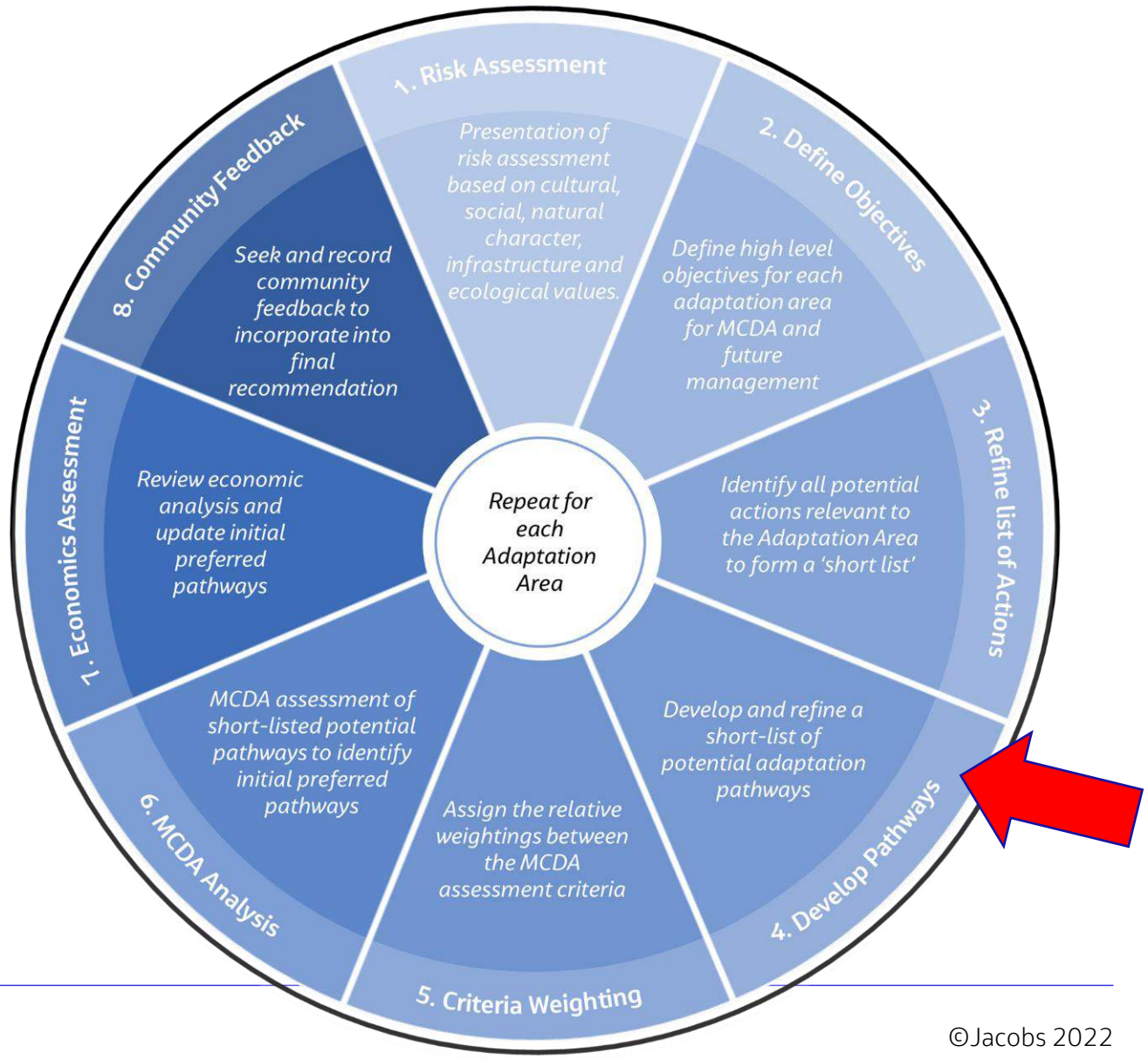
4.3.4 Task 4: Pathway Development of Potential Options.

Take the short-listed options and arrange into a number of potential pathways that meet the objectives established in Task 2.

Any action being included in a pathway should be:

- Technically feasible;
- Practical to implement;
- Realistic; and
- Has maximum adaptability.

The resulting potential pathways are those that go forward to be further assessed in the MCDA and economic assessments.



4.3.5 Task 5: Defining MCDA Weightings

Relative weightings are applied to each assessment criteria to determine the relative importance of that criteria to achieving the objectives for the Adaptation Area.

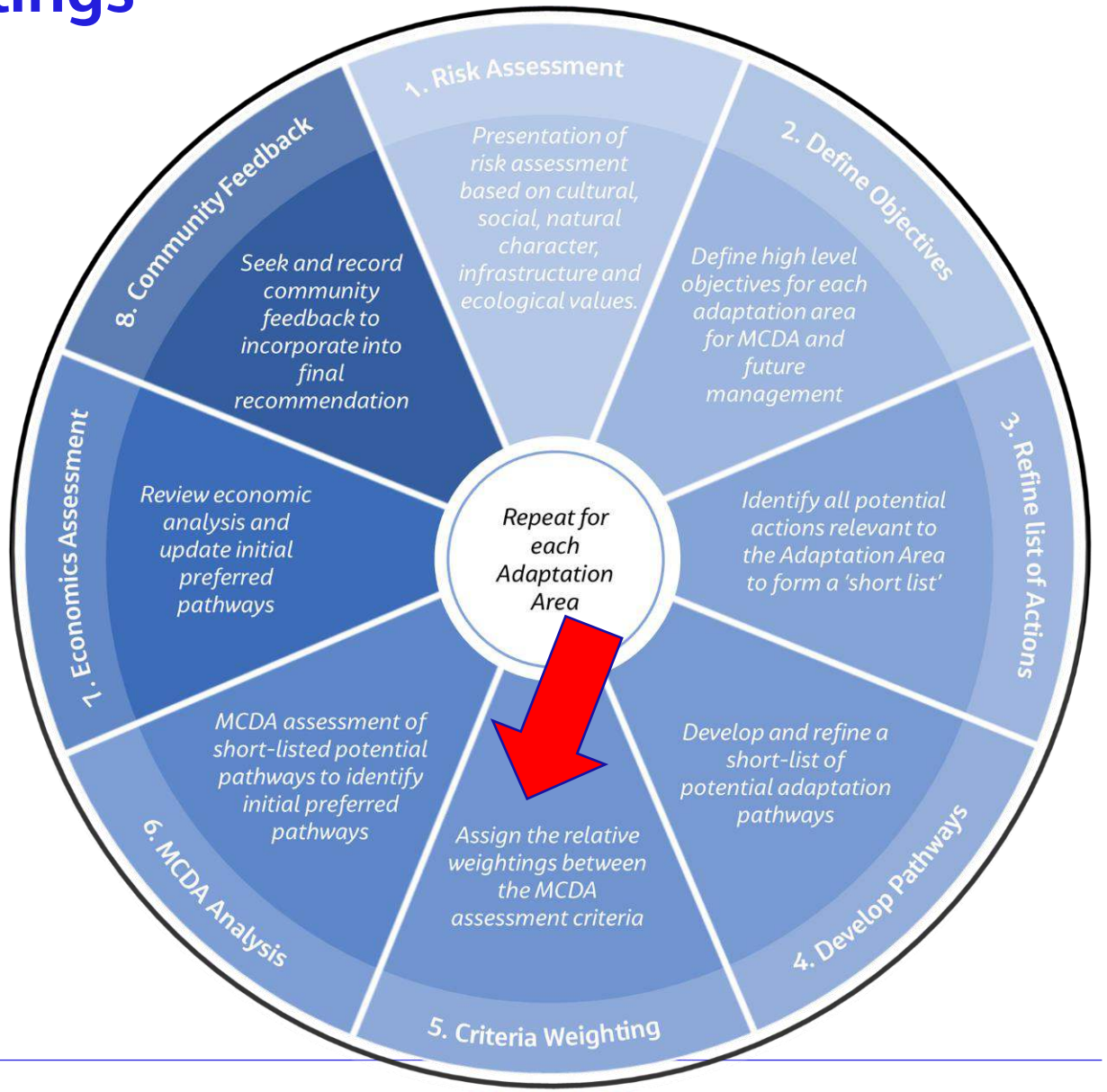
All criteria will be weighted on a scale of 1 to 3:

3 - Critical

2 – Very important

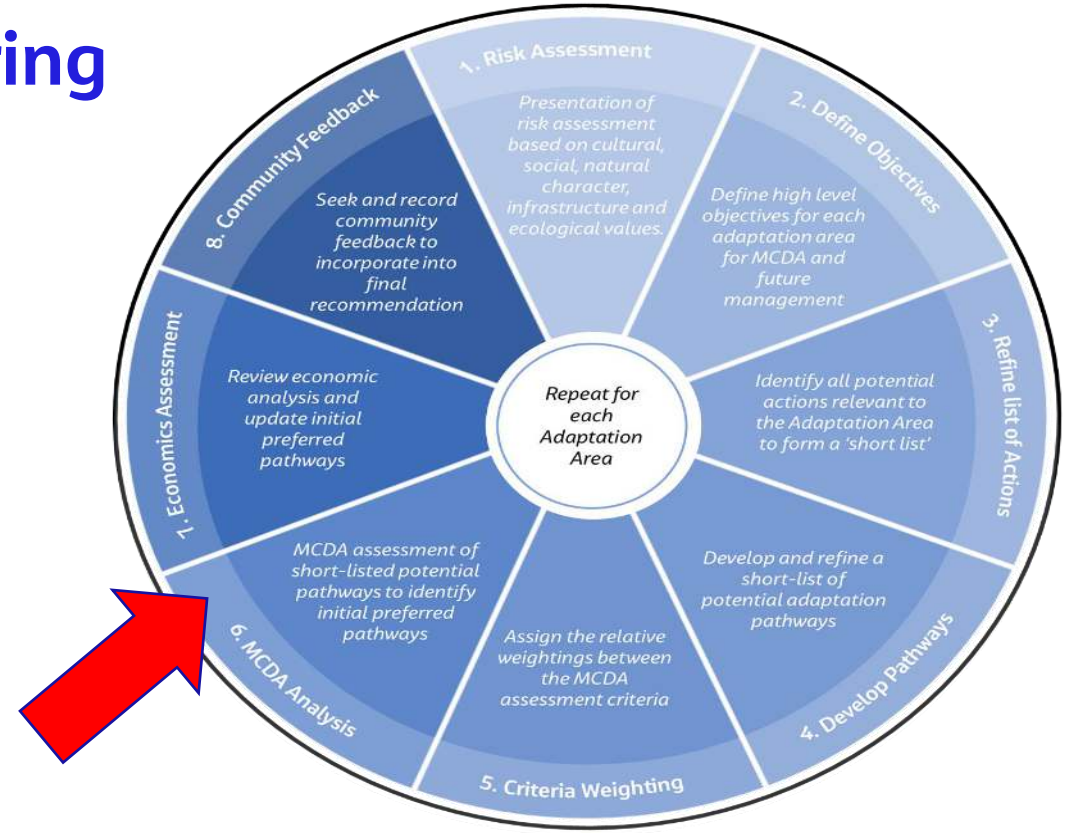
1 – Important

These weightings reflect that while all criteria are important, they may not have equal importance for defining an adaptation pathway.



4.3.6 Task 6: MCDA Assessment and Scoring

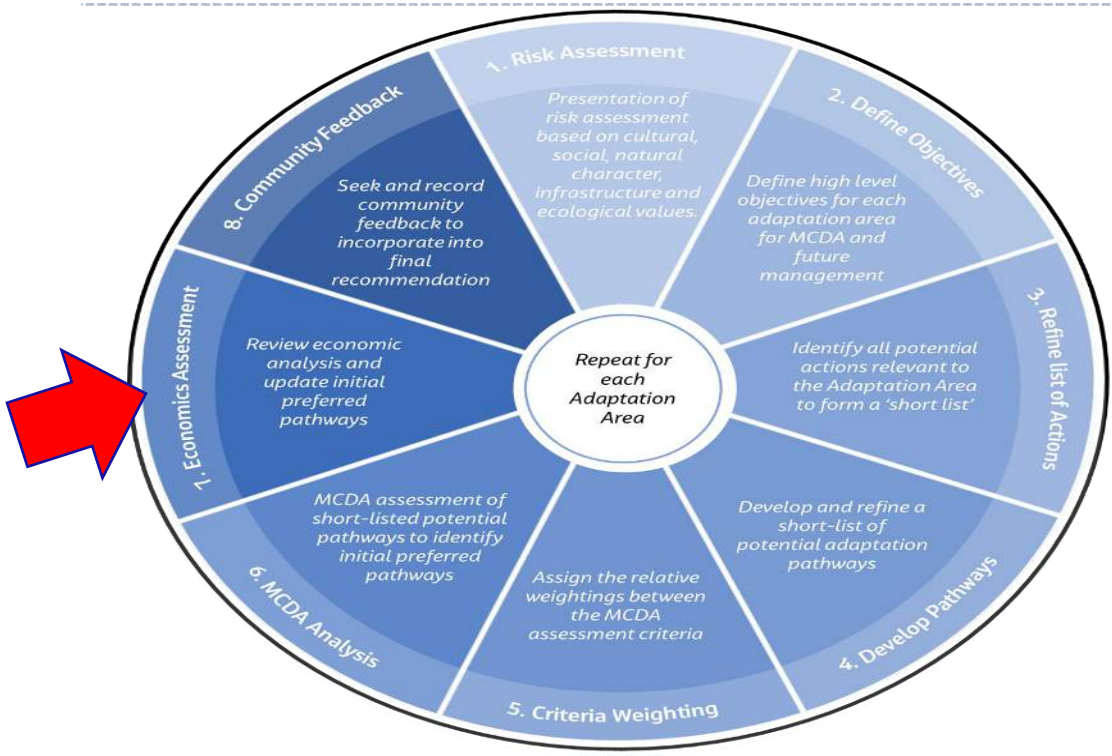
- Using the confirmed set of criteria, scoring guide, criteria weightings to determine a MCDA score for each short-listed pathway within the Adaptation Area.
- TAG and iwi representative undertake a pre-scoring exercise.
- The CAP consider pre-scoring in developing their final MCDA scoring for each short-listed pathway.
- Reasons for each score are recorded.
- Sensitivity testing is undertaken to determine whether the outcomes of the MCDA vary drastically when the criteria weightings are adjusted.
- Initial preferred pathways are chosen based on the MCDA scores.



Unit L: Clifton								
Pathway	Short term	→	Medium term	→	Long term	MCDA Score	MCDA ranking
PW 1	Renourishment	→	Managed Retreat	→	Managed Retreat	67	2
PW 2	Renourishment + Control Structures	→	Renourishment + Control Structures	→	Managed Retreat	59	3
PW 3	Renourishment + Control Structures	→	Renourishment + Control Structures	→	Renourishment + Control Structures	52	4
PW 4	Renourishment + Control Structures	→	Renourishment + Control Structures	→	Sea wall	43	6
PW 5	Sea wall	→	Sea wall	→	Managed Retreat	70	1
PW 6	Sea wall	→	Sea wall	→	Sea wall	49	5

4.3.7 Task 7: Incorporation of Economic Assessment

- Bringing the economic tools in to the process after the MCDA analysis has been completed allows for the CAP to explore all options from a core values perspective, ensuring that pathways are not discounted initially from a cost perspective.
- The ROA economic assessment complements MCDA and the application of the DAPP approach.
- The economic metrics that will be provided from the ROA to allow the CAP to understand the cost implications of all short-listed pathways are:
  - Cost + Loss value
  - Cost + Loss ranking
  - Value for Money measure
  - Value for Money ranking
  - Short term build costs
- The initial preferred may be changed as a result of the economic assessment.



Unit L: Clifton										
Pathway	Short term → Medium term → Long term			MCDA Score	MCDA ranking	Cost + Loss[1] ($m)	Cost + Loss[1] ranking	VFM[2] ($'000/ point)	VFM[2] ranking	Short Term build costs[3] ($m)
PW 1	Renourishment	→ Managed Retreat	→ Managed Retreat	67	2	12.20	6	173	5	7.12 (0.44 / yr)
PW 2	Renourishment + Control Structures	→ Renourishment + Control Structures	→ Managed Retreat	59	3	10.47	5	159	4	6.25 (0.40 / yr)
PW 3	Renourishment + Control Structures	→ Renourishment + Control Structures	→ Renourishment + Control Structures	52	4	9.60	3	156	3	6.25 (0.40 / yr)
PW 4	Renourishment + Control Structures	→ Renourishment + Control Structures	→ Sea wall	43	6	10.29	4	205	6	6.25 (0.40 / yr)
PW 5	Sea wall	→ Sea wall	→ Managed Retreat	70	1	8.83	2	110	1	5.23 (0.38 / yr)
PW 6	Sea wall	→ Sea wall	→ Sea wall	49	5	7.65	1	126	2	5.23 (0.38 / yr)

4.3.8 Task 8: Consideration for Community Feedback

At these engagement sessions, the CAP should aim to:

- Provide context to the community of the process they have gone through in Phases 1 and 2
- Provide information around the initial preferred pathway, with reasons as to how they arrived at this point.
- Be able to outline to the community what other pathways they considered and why they are not the initial preferred pathway.
- Seek feedback from the community on whether their preferred actions and pathways are aligned with the communities values and expectations, including:
  - Impacts of the pathway on levels of protection and social, cultural, and environmental values
  - Expectations around how the pathway would be funded
- Consider the Community feedback in decision on whether need to alter initial preferred short-term actions and preferred pathways.

Phase 3: Final Recommendations to Council

4.4.1 Task 1: Identify funding options for implementation

TAG will provide the CAP with:

- An overview of funding principles and requirements
- Assessment of public/private benefits – including baseline assessments for each action and detailed assessments for each Adaptation Area
- Financial model showing indicative rating impacts

Examples from Hawkes Bay Strategy

Private/Public Split

Ahuriri Recommendations

	Base Case		Ahuriri		
Option	Private	Public	Private	Public	
Status Quo	0%	100%	0%	100%	No rationale to do different than base case
Renourishment	50%	50%	30%	70%	Only benefits small part of unit as existing sea wall is in place, very popular beach, substantial public benefit to maintain
Renourishment + Control Structures	60%	40%	40%	60%	Only benefits small part of unit as existing sea wall is in place, very popular beach, substantial public benefit to maintain
Sea Wall	80%	20%	60%	40%	Only benefits small part of unit as existing sea wall is in place, very popular beach, substantial public benefit to maintain
Retreat the Line	90%	10%	90%	10%	No rationale to do different than base case

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Ahuriri – pathway 1

Summary of programme								
Years	Short Term 0 to 20 years 20	Medium Term 20 to 50 years 30	Long Term 50 to 100 years 50		Share of private benefit	No. Properties	Total (incl public good) ex GST	
	Status Quo	Retreat the line	Managed Retreat					
Cost Midpoint				Area 1	0%	87	$0.28	
Capital	42,800	963,750		Area 2	0%	246	$0.28	
One off			TBC	Area 3	0%	834	$0.28	
Annual Maintenance	12,200	4,800						
				Local		26,000		
				Regional	100%	56,200	$0.28	$15,781
Intergenerational				National	0%			
Loan period	20 years				**100%**			**$15,781**
		TAG Group						
Private benefit	0%	0%						
Public benefit	100%	100%						

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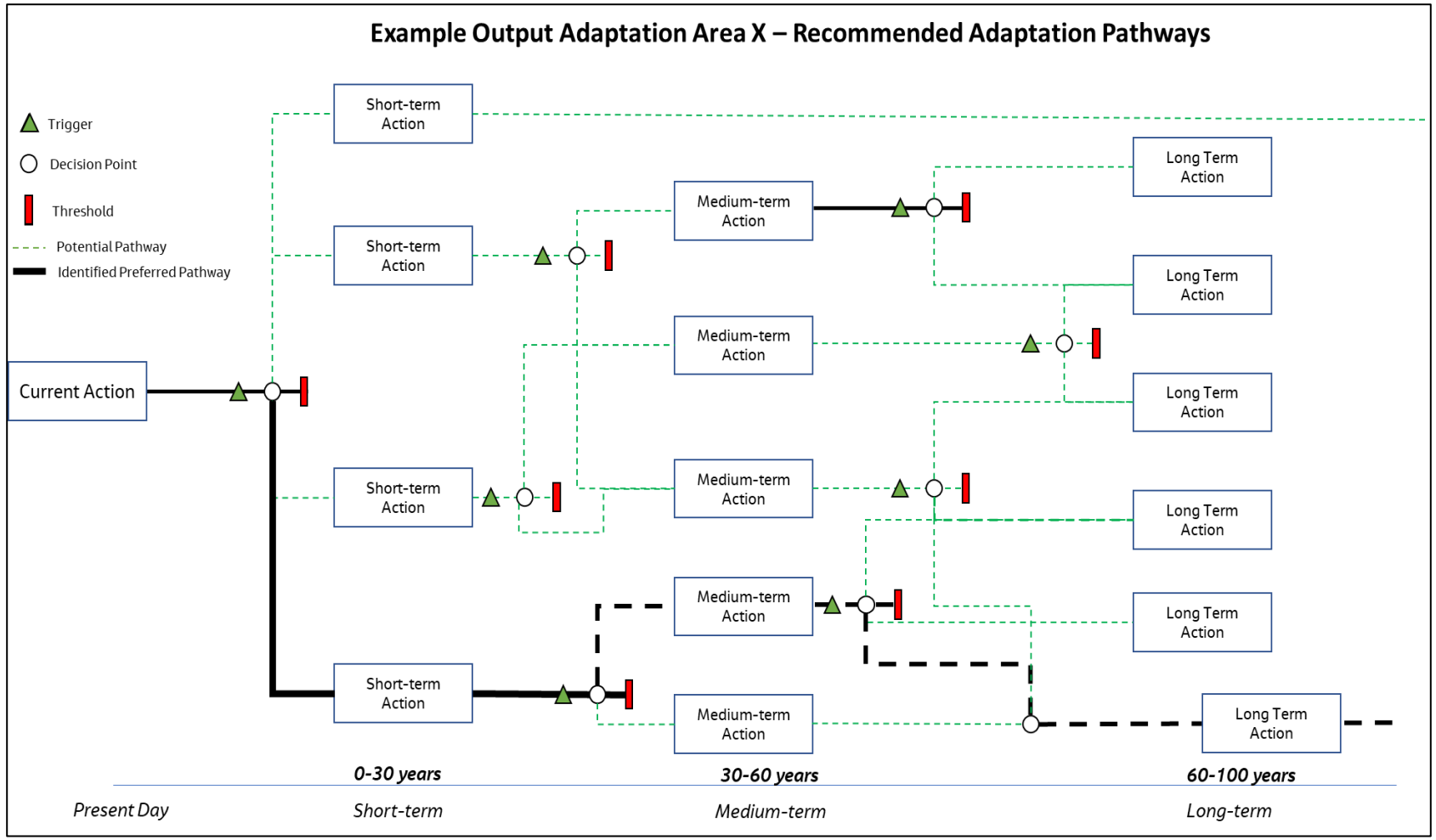
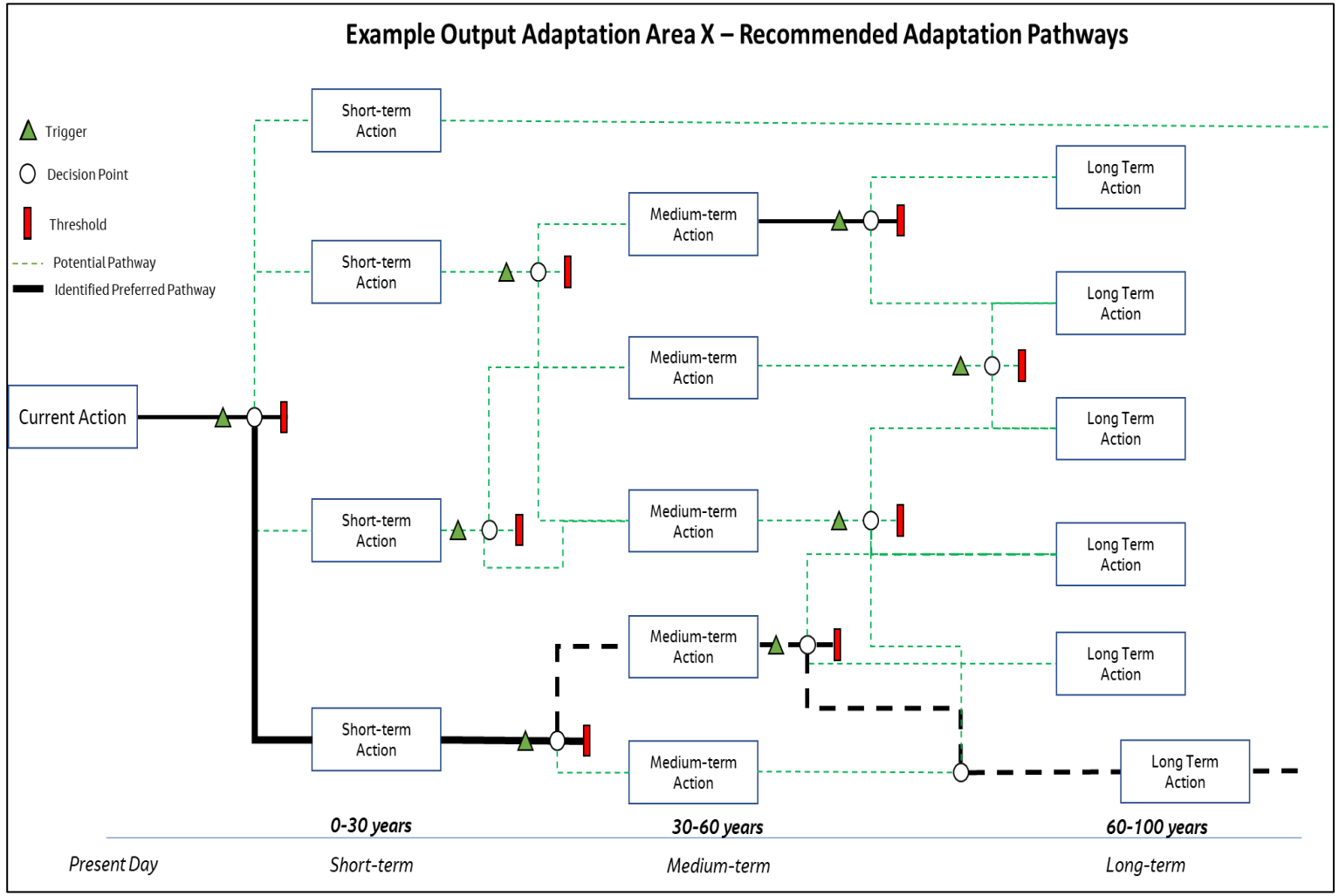
4.4.2 Task 2: Confirmation of preferred short-term actions and medium-long term pathways



Identify any cross boundary inconsistencies and issues with the preferred pathways, which would require in alterations to the pathways for any part of an Adaptation Area.

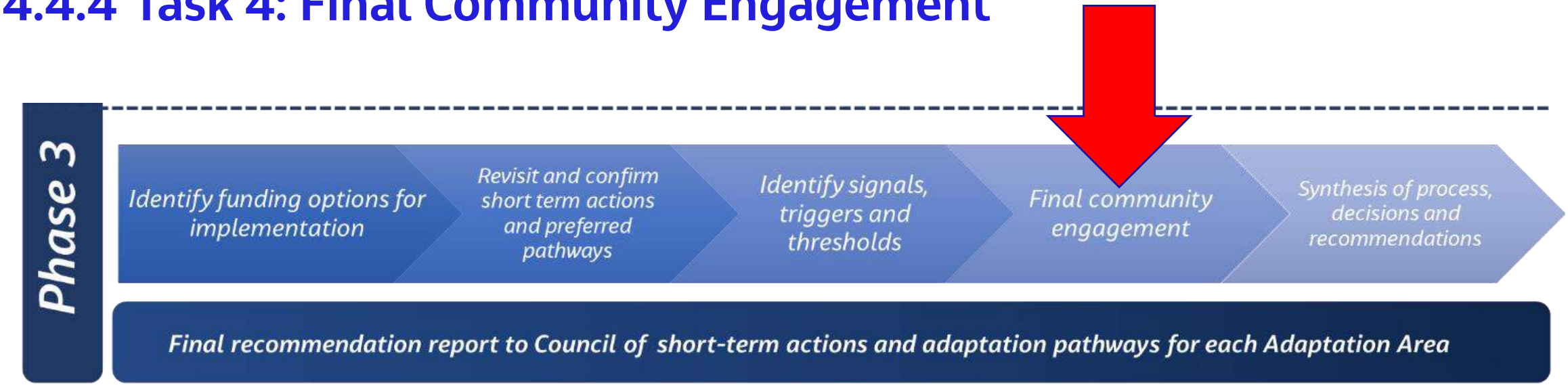
4.4.3 Task 3: Development of Signals, Triggers and Thresholds



- **Signal** - early warning to signal that a trigger (decision point) is approaching in the near to medium term and should prompt thinking and initial engagement processes on the next steps or any changes to the trigger.
- **Trigger** - A derived indicator value(s), which when reached, provides sufficient lead time to cover community engagement, consenting, construction and funding arrangements, to ensure a new pathway or adaptation action can be implemented before the adaptation threshold is reached.
- **Threshold** - When agreed objectives, community values, risk exposure, or levels of service are no longer being met or start to fail, requiring an alternative adaptation action or pathway to be in place before this occurs.

Could be: Physical Responses
Social/Cultural Factors
Economic Factors

4.4.4 Task 4: Final Community Engagement



CAP will seek feedback on whether their final preferred short-term actions, preferred medium to long term pathways; signals, triggers and thresholds, and funding options are aligned with aligned with the community values and expectations.

4.4.5 Task 5: Coastal Hazards Adaptation Recommendation Report

- An overview of the CAP process and the methodology they have used to arrive at their decision
- A summary of the key decisions made at each step of the process
- Outcomes of the community engagement and feedback in Phase 2 Task 8 and Phase 3 Task 4
- The final recommendation of:
  - Preferred short term actions for each Adaptation Area;
  - Signals, triggers and thresholds for the short-term actions and movement to medium term action;
  - Identified preferred pathways in the medium-long term for each Adaptation Area.
- Recommendations of what monitoring should be undertaken to inform (a) our understanding of the environment; (b) when signals and triggers are being approached.
- Recommendations of when to review the pathways (e.g. 5-10 year basis) based on the monitoring data, trigger points being reached, and new information.
- Recommendation of review of economics and funding of pathways.
- Any other recommendations that the CAP would like to make to the Council in regards to the management of coastal hazards.

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