



Meeting of the Clifton to Tangoio Coastal Hazards Strategy Joint Committee

Date: Friday 19 August 2016
Time: 10.00 am
Venue: Council Chamber
Hawke's Bay Regional Council
159 Dalton Street
NAPIER

Agenda

ITEM	SUBJECT	PAGE
1.	Welcome / Apologies	
2.	Conflict of Interest Declarations	
3.	Confirmation of Minutes of the Clifton to Tangoio Coastal Hazards Strategy Joint Committee held on 2 May 2016	
4.	Matters Arising from Minutes of the Clifton to Tangoio Coastal Hazards Strategy Joint Committee held on 2 May 2016	
5.	Stage 2: Draft Decision Making Framework	3
6.	Stage 2: Funding Model	37
7.	Ground Water and Sea Level Rise – Hazard Assessment	91
8.	Project Manager Update	95
9.	Communications Update	99
10.	Update of Protection Works at Whakarire Avenue	101
11.	Update on Proposed Revetment Works at Clifton	103
12.	Other Matters for discussion	

Friday 19 August 2016

Subject: STAGE 2: DRAFT DECISION MAKING FRAMEWORK**Reason for Report**

1. This report presents a draft Stage 2 Decision Making Framework prepared by Stephen Daysh from EMS (**attached**).

Discussion

2. The attached report has been prepared as part of the Stage Two work undertaken by Maven Consulting (Wayne Mills) and EMS (Stephen Daysh) dealing with a funding model for coastal hazard responses and a decision making framework respectively.
3. The decision making framework is required to turn what we now know about coastal hazards risks (as confirmed in Stage 1) into actionable responses.
4. Originally, the intention was to present a proposed decision making framework to this meeting for adoption. However, TAG have taken the view that presenting Mr Daysh's report as a draft at today's meeting is the preferred approach, for the following reasons:
 - 4.1. The draft report includes a range of important principles which TAG would like to confirm with the Joint Committee before finalising the proposed decision making framework, and in particular feedback is sought on the proposed recommendations in Section 4.0 of the report; and
 - 4.2. TAG have recently been approached by the Living at the Edge team (refer to the Project Managers report provided as Item 8 in this agenda for further information) to identify ways in which their work may be integrated into, and benefit, the Strategy. While a late development, there is significant potential value, particularly for Stage 2 and Stage 3, and TAG felt it prudent to provide scope for any learnings or proposals from the Living at the Edge team to be incorporated into the methodology for the Stage 2 decision making framework.
5. In today's meeting, TAG seeks an agreement from the Joint Committee to the principles and recommendations outlined in the draft report and direction on a range of key questions which will be presented by Mr Daysh. Support is also sought for TAG to consider opportunities to integrate input from the Living at the Edge team into the draft decision making framework.
6. Finally, TAG notes that a Stage 3 Implementation Plan is required to support the decision making framework. This will be developed by TAG to outline the logistics, process details, timing and resourcing to roll out the final decision making framework as a Stage 3 work programme. This, together with the final decision making framework, will be presented for adoption to the next Joint Committee meeting in December 2016.

Recommendations

That the Clifton to Tangoio Coastal Hazards Strategy Joint Committee:

1. Receives the draft report '**Clifton to Tangoio Coastal Hazards Strategy 2120 Stage Two Report: Decision Making Framework**'.
2. Supports TAG to consider opportunities to collaborate with the Living at the Edge team as part of finalising the decision making framework.

Authored by:

Simon Bendall
PROJECT MANAGER

Approved by:

**Mike Adye
GROUP MANAGER ASSET
MANAGEMENT**

Attachment/s

- 1 Stage Two Report: Decision Making Framework

Clifton to Tangoio Coastal Hazards Strategy 2120 Stage Two Report: Decision Making Framework



Environmental Management Services



Contents

1.0	Introduction	1
2.0	Multi-Criteria Decision Analysis (MCDA)	2
2.1	What is MCDA	2
2.2	Proposed MCDA Process for Clifton to Tangoio Coastal Hazards Strategy	3
2.3	Draft MCDA Methodology for Clifton to Tangoio Coastal Hazards Strategy	9
3.0	Benefit Cost Assessment (BCA)	12
3.1	General Overview	12
3.2	Townsville BCA Methodology	12
3.3	Further Development of BCA Methodology for the Clifton to Tangoio Strategy	13
4.0	Recommendations	14

1.0 Introduction

Hawke's Bay Regional Council (HBRC) Hastings District Council (HCC) and Napier City Council (NCC) have formed a Joint Committee responsible for the development of the Clifton to Tangoio Coastal Hazard Strategy 2120.

The Strategy is being developed in four stages:

Stage One: Define the Problem

Stage Two: Framework for Decisions

Stage Three: Develop Responses

Stage Four: Respond

Stage One work undertaken by Tonkin and Taylor has been completed and includes an assessment of coastal erosion, storm surge inundation and tsunami risks for each distinct part of the Clifton to Tangoio coastline.

Where hazards are identified, the technical assessment will also help to inform a management strategy for each cell which will likely involve one or more of the following adaptation options:

- Managed retreat - a retreat in the face of a coastal hazard, such as
 - Withdrawing;
 - Relocation; or
 - Abandonment
- Hold the line – defend / manage natural processes with protection works¹, and
- Maintain status quo – do nothing / monitor / private owner's responsibility

For decisions to be made between these options a structured framework is required in which, through a collaborative community stakeholder process, multiple criteria are established and weightings applied to arrive at an optimal management strategy. This is the subject of this **Stage Two** report where a Decision Making Framework Methodology utilising both "Multi Criteria Decision Analysis" (MCDA) and Benefit-Cost Analysis (BCA) is developed as part of the Stage Two report for which EMS / Maven have been contracted.

The other, and closely related, part of **Stage Two** involves the establishment of funding guidelines to determine how the costs of protection work, relocation or other strategies might be funded and allocated between beneficiaries. This includes the identification of some suitable process for economic assessment of social impacts arising from the risk management strategies. The guidelines also include the identification and evaluation of alternative forms of funding taking into account the long term nature of the project.

Those matters are the subject of a separate Stage Two report².

Stage Three will involve the convening of two "Cell Assessment Working Parties" whose members will have the task of evaluating and selecting practicable adaptation options that respond to the

¹ Note that in the Townsville coastal hazard study (referenced as a benchmark example in this report) the "Hold the Line" adaptation option was split into two i.e. "Defend" and "Accommodate" whereas for the Clifton to Tangoio Strategy these are described as "defend" or "manage" as part of a single overall "Hold the Line" adaptation option. The TAG and Joint Committee may wish to consider this distinction further prior to the start of Evaluation process to determine whether the "Hold the Line" should be split into two adaptation options?

² Stage Two – Clifton to Tangoio Coastal Hazards Strategy 2120: Hazards Response Funding Model, Maven & EMS Final Draft July 2016

identified coastal hazards risks in the various identified cells, using the decision-making framework outlined in this Report.

Finally, **Stage Four** will implement the selected adaptation option(s) in a coordinated and planned manner that will provide the best overall outcome for the Hawke's Bay community.

2.0 Multi-Criteria Decision Analysis (MCDA)

2.1 What is MCDA

There is a considerable amount of international literature and experience associated with multi-criteria decision analysis ("MCDA") as a tool for assisting with decision making. For example, the UK Government developed a manual entitled *"Multi-criteria analysis: a manual, Department of Communities and Local Government, 2009"* (the "UK Manual")³ which is key UK central government guidance on the application of multi-criteria analysis techniques. A well-known MCDA technique in New Zealand is the "Area, Corridor, Route, Easement or ACRE" process applied by Transpower in selecting new electricity transmission alignments.

Environmental Management Services Limited (EMS) has successfully applied MCDA as an option development / assessment tool for a wide range of projects in New Zealand, including in recent years the Te Ohaaki Marae Relocation Study, a Nuhaka to Opoutama Coastal Road Options assessment for Wairoa District Council, and in assisting Hastings District Council define the Whakatu Arterial Route.

The UK Manual summarises the MCDA approach as follows:

"MCDA is both an approach and a set of techniques, with the goal of providing an overall ordering of options, from the most preferred to the least preferred option. The options may differ in the extent to which they achieve several objectives, and no one option will be obviously best in achieving all objectives. In addition, some conflict or trade-off is usually evident amongst the objectives; options that are more beneficial are also usually more costly.

MCDA is a way at looking at complex problems that are characterised by any mixture of monetary and non-monetary objectives, of breaking the problem into more manageable pieces to allow data and judgements to be brought to bear on the pieces, and then of reassembling the pieces to present a coherent overall picture to decision makers. The purpose is to serve as an aid to thinking and decision making, but not to take the decision."

In the context of Coastal Hazards an MCDA approach was applied in 2012 as a Pilot Project for the Coastal Hazard Strategy for Townsville City Council in North Queensland, Australia. The Townsville Pilot Study was a collaborative exercise involving the Australian Government Department of Climate Change and Energy Efficiency, the Queensland Government, Griffith University, City of Townsville and the Local Government Association of Queensland, with GHD as consultants. This study provides an extremely useful example of the application of MCDA in developing a coastal hazard strategy for the Clifton to Tangoio coastline in Hawke's Bay.

The Townsville study report⁴ includes a useful table which summaries the generic MCDA process as Table 1 below:

³ This is a UK government document which focuses on an approach to support public expenditure for public works projects.

⁴ Coastal Hazard Strategy for Townsville City Council: Economic Analysis, GHD Report 41/24609/03, October 2012

Table 1 MCDA Process

Process	Description
Decision Criteria	Develop a set of social, environmental and economic criteria to score potential adaptation options
Scoring	Assess the expected performance of each option against the criteria. Then assess the values associated with the consequences of each option for each criterion.
Weighting	Assign weights for each of the criterion to reflect their relative importance to the decision.
Weighted Scoring	Combine the weights and scores for each option to derive an overall value.
Sensitivity Analysis	Conduct a sensitivity analysis: do other preferences or weights affect the overall ordering of the options?

One of the key points the UK Manual makes is the analysis can be framed in different ways, some more directly supporting the eventual decision, and some less so. The MCDA might be structured to:

- Show the decision maker the best way forward
- Identify the areas of greater and lesser opportunity
- Prioritise the options
- Clarify the differences between the options
- Help the key players to understand the situation better
- Indicate the best allocation of resources to achieve the goals
- Facilitate the generation of new and better options
- Improve communication between parts of the organisation that are isolated (e.g. finance, engineering, environmental); or
- Any combination of the above.

2.2 Proposed MCDA Process for Clifton to Tangoio Coastal Hazards Strategy

Two Assessment Cell Areas

EMS presented an evaluation of a range of potential assessment cell options at the 2 May 2016 meeting of the Clifton to Tangoio Coastal Hazards Strategy Joint Committee⁵. These options ranged from assessing all of sixteen coastal units in the study area defined by Tonkin & Taylor separately through to considering the whole study area as one Assessment Cell. The recommended option (which was approved at the meeting) – hereafter referred to as “Option V” involves two assessment cells described as “North / South” with the dividing line being the Port / Bluff Hill. This is shown as Figure 1 on the following page.

The reasons for our two Assessment Cell recommendation to the Joint Committee that the North / South Option to be utilised in the Stage 3 Multi-criteria assessment process were as follows:

Coastal Process Groupings and Linkages

In our opinion, Option V best groups areas of potential interrelated coastal processes for consideration in the detailed Stage 3 assessment and the associated decision making process on responses (e.g. the potential cause and effect linkages associated with the units south of the Port of Napier, and those associated with the units from the Port north).

⁵ EMS Letter to Mr Mike Adye dated 26 April 2016

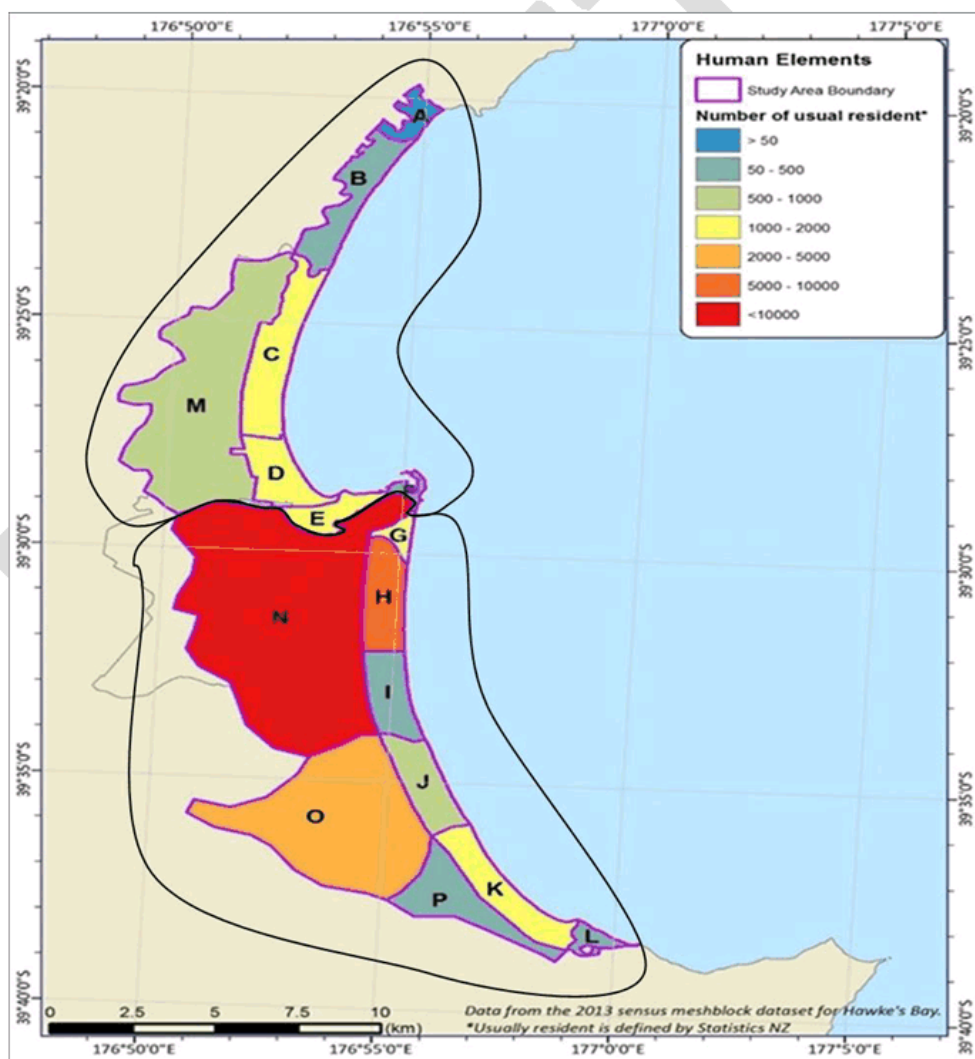
Involvement of all Three Councils

Option V involves both NCC and HDC in all assessments and the decision making process on responses (as these two Councils cover parts of both the North and South cells). It is considered that involvement of all Councils in all the assessment processes will aid in co-ordinated and consistent decision making and implementation; and

Effective Management of the Multi-criteria Cell Assessment process

Two Assessment Cells strikes a good balance between the administrative and process cost efficiency of the assessment process and the ability to involve the necessary range of relevant interests in the two Cell Assessment Working Parties. Successful multi-criteria assessment processes undertaken previously by EMS have included between ten and fifteen participants and this range is considered ideal. In our experience, if more than around fifteen participants are included the process can become unwieldy.

Figure 1 Recommended North/South Assessment Cell Option



It will be apparent from the above map that there are sixteen Coastal Units involved in the MCDA assessment. Of these, seven will be assessed in the northern cell process while the balance of nine will be assessed in the southern cell process.

Participation in MCDA Process

It is important that the various roles and responsibilities of those participating in an MCDA process is clearly defined. The starting point is to clearly set out the purpose and role of the two Assessment Cell Evaluation Panels who will undertake the MCDA assessment. The decisions made in the MCDA process will require long-term funding decisions by the three Partner Councils and also it is highly likely that statutory documents such as the Hawke's Bay Regional Policy Statement and Regional and District Plans, along with other Council documents such as Asset Management Plans will need to be updated to respond to the agreed Strategy. On this basis the Assessment Cell Evaluation Panels can only have a recommendatory function, as it is the function of the respective elected Councillors to make long term funding⁶ and statutory plan decisions.

Dealing with potential elected Councillor and HBRC Regional Planning Committee conflicts

Participation in collaborative stakeholder groups does present challenges for elected Councillors (and also in this case Mana Whenua representatives on the HBRC Regional Planning Committee). While full participation of elected Councillors and Committee members would add value to the Evaluation Panels, involvement in the Evaluation Panels may result in participating Councillors and RPC Committee members being compromised on a pre-determination basis, when the recommendations are taken to the Councils for ultimate decision making purposes. Potential conflicts between the evaluation / recommendatory roles and ultimate decision making roles relate to both future related Resource Management Act processes and decision making responsibility under the Local Government Act (e.g. Long Term Plans).

In the case of this strategy, the Clifton to Tangoio Coastal Hazards Strategy Joint Committee has been guiding the development of the Strategy for some eighteen months and elected members have expressed interest in being fully involved in the two Assessment Cell Evaluation Panels, but have sought advice from us on whether this would be appropriate or not.

HBRC has recently formally considered the role of Councillors in collaborative stakeholder processes in the context of the TANK stakeholder group at Regional Planning Committee (RPC) meeting on 20 April 2016. This included the tabling of a guideline document entitled "*Aligning and Clarifying Council and Collaborative Group Roles and Responsibilities*" which is included as **Appendix One** of this report. For the purposes of this Strategy the core clauses in the HBRC guideline are:

- Members of the RPC and Council may observe and participate in collaborative processes where this can assist in maintaining a good working relationship and mutual understanding between the RPC and Council and the Group.
- Members of the RPC and Council shall not participate in decision-making within collaborative groups when they are also to be statutory decision-makers on the group's outputs.

While these guidelines only apply to the HBRC members of the Joint Committee and only in relation to groups leading to changes in Resource Management Act Plans, it is considered that given that inevitable role that statutory plans prepared under the Resource Management Act will play in implementing the Coastal Hazards Strategy it is recommended that the same principles apply to elected members from Hastings District and Napier City Council. If the guidelines are followed then the options for Council members are:

1. Participate as full member on the Assessment Cell Evaluation Panels on the basis that this would mean the member could not act as a statutory decision maker on the group's recommendations; or

⁶ Such decisions will also be closely aligned to the adopted recommendations from the Funding Model developed in this Stage Two.

2. Participate in the Assessment Cell Evaluation Panels in an observer capacity, which would maintain the opportunity to act as statutory decision makers on the group's recommendations;

Our recommendation is that elected Councillors and RPC Committee Members participate as Observers only in the MCDA evaluation process. There may also be an opportunity for Councillors on the Joint Committee to act in the role of Chair, however as outlined below at present it is anticipated that an Independent Chair would be appointed for this role.

Recommended Evaluation Panel Participants

In the 26 April 2016 EMS letter referenced above, advice was also sought on an initial list of parties for the two Assessment Cell Evaluation Panels. This advice (updated) is set out in Tables 2 and 3 below:

Table 2 Recommended Northern Cell Participants

Full Members able to participate in Scoring and Recommendations	Observer Participants	Support Roles
Tangata Whenua (3)	HBRC Councillor (1)	Independent Chair (1)
Whirinaki Community (1)	NCC Councillor (1)	Kaumatua (1)
Bayview Community (2)	HDC Councillor (1)	Facilitator (1)
Westshore Community (2)		Assistant Facilitator (1)
Ahuriri / Pandora Community (2)		Technical Advisory Group (6)
Recreational Interests (1)		
Port of Napier (1)		
Ahuriri / Pandora Businesses (1)		
NZTA / Lifelines (1)		
DoC (1)		
Total Voting (15)	To Determine Role based on Guideline	Total Non-Voting (10)

Table 3 Recommended Southern Cell Participants

Full Members able to participate in Scoring and Recommendations	Observer Participants	Support Roles
Tangata Whenua (3)	HBRC Councillor (1)	Independent Chair (1)
Clifton/Te Awanga Community (2)	NCC Councillor (1)	Kaumātua (1)
Haumoana Community (2)	HDC Councillor (1)	Facilitator (1)
East Clive Community (2)		Assistant Facilitator (1)
Marine Parade Community (1)		Technical Advisory Group (6)
Recreational Interests (1)		
Awatoto Businesses (1)		
Napier CBD Businesses (1)		
NZTA / Lifelines (1)		
DoC (1)		
Total Voting (15)	To Determine Role based on Guideline	Total Non-Voting (10)

It needs to be noted that these parties (and the suggested numbers) are recommendations only and need to be ratified by the Joint Committee. There should also be some flexibility as to the respective parties and ultimate numbers appointed to the panels, based on discussions with the various groups, but it is important to recognise that once voting members get over fifteen then the MCDA process can become unwieldy to manage.

With parties such as the Napier Port Company, NZTA and DoC, the process of nominating a representative will be straightforward through an approach to the senior management of these organisations.

There are a range of options for choosing the individuals to represent the various areas/interest groups, but this is not as straightforward. This needs to follow a clear process to ensure that the individual representing areas/groups is as fairly mandated as possible.

Possible approaches for residential and business areas are:

1. Representatives of the Joint Committee and TAG attend meetings of established resident and business associations/groups in the various areas where these are in place to explain the Strategy and MCDA process and to seek nominations for the individuals to sit on the panels on their behalf. **(Recommended)**
2. Where there is no established organisation, hold a series of advertised public meetings to explain the Strategy and MCDA process and seek “volunteers” outlining the areas and numbers where representation is sought, with the TAG and/or Joint Committee responsible for ultimately appointing the panels from the volunteers using their judgement to provide a range of interest groups and areas with effective representation. **(Recommended)**
3. The Partner Councils approach “known representatives” from the residential areas and business areas seeking advice as to who should sit on the panels. **(Not Recommended)**

In terms of Mana Whenua representatives possible approaches are:

1. Seek suggestions / nominations from the Mana Whenua representatives on the Joint Committee. **(Not Recommended)**

2. Hold a series of marae based hui in the study area to explain the Strategy and MCDA process and to seek nominations for the Tangata Whenua representative places. We have been advised by TAG that the marae within the study area are Tangoio, Petane, Pukemokimoki, Waiohiki, Matahiwi, Kohupatiki and Ruahapia. **(Recommended)**

In terms of process timing it is recommended that the Technical Advisory Group co-ordinate the selection process recommended above, with the aim of presenting the recommended Evaluation Panel membership to the Joint Committee for consideration and approval in November 2016 (after the local body elections).

Consensus Decision Making Approach and Draft Terms of Reference

Underpinning all successful MCDA approaches is a strong ethic of the need for consensus decision making which needs to be understood and adopted at the outset. This requires both strong chairing and facilitation skills and a clear Terms of Reference (including engagement and decision making rules) to be agreed as part of the first one or two meetings of the Panels.

Our experience is that the appointment of a kaumatua to assist the Chair and Facilitators through applying the principles of manaakitanga⁷ to the overall process is a very valuable approach and is recommended.

During the important weighting and scoring phases of the MCDA process the facilitators will apply a “negotiation” approach for the establishment of the weighting (of the criterion as between the various criteria) and scoring of the options (against the criteria). This approach engenders reasoning needing to be explained for the outcomes (which is also written down in the process to clearly explain the differences between the defined weightings and scoring).

In our experience, this negotiation / discussion / recording process is usually successful at arriving at an agreed weight / score (without the need for any voting process).

A Draft Terms of Reference is included as **Appendix Two** of this Report.

Clear Meeting Schedule and Output Required

A key to the MCDA process is to establish a clear Meeting Schedule and to “lock-in” meeting times and the process at the outset. This provides a clear process and commitment for members of the evaluation panel to sign-up to at the outset.

It is recommended that the MCDA process for the two Assessment Cell Evaluation Panels follows the same general path based on the following principles:

1. The process is completed in a 9 month timeframe
2. The first Workshop could include a talk from a “motivational” / high level speaker explaining the importance of the task (e.g. the Parliamentary Commissioner for the Environment)
3. Evaluation Panel Meetings occur on average every month (Maximum of eight sessions)
4. Most Sessions should occur between 6.00 p.m. and 8.30p.m. with a light supper to start
5. The key option scoring session will need to cover one (or possibly two) full days
6. A Working Party Report will be produced outlining the process and outcomes of the MCDA process.

⁷ 1. (noun) hospitality, kindness, generosity, support - the process of showing respect, generosity and care for others.

Figure 2 Draft MCDA Process Chart and Timeline



2.3 Draft MCDA Methodology for Clifton to Tangoio Coastal Hazards Strategy

Option Definition

The following broad adaptation options have already been defined for the Strategy and these will be ratified as part of the early Workshop sessions:

- **Managed retreat** - a retreat in the face of a coastal hazard, such as
 - Withdrawing;
 - Relocation; or
 - Abandonment
- **Hold the line** – defend / manage natural processes with protection works, and
- **Maintain status quo** – do nothing / monitor / private owner's responsibility.

Each of these options will be considered in the MCDA process for each of the sixteen Coastal Units, noting that through the assessment / option identification process the specific details of the adaptation option relevant to the particular coastal unit will need to be defined (e.g. what specific defend / manage method would be suitable for an area and how regulatory / policy responses might effectively be applied in the circumstance of an area).

Decision Criteria

The 2012 Townsville Study utilised the following nine Decision Criteria within four broad Categories and it is proposed to utilise these in the Clifton to Tangoio Study as they are considered to cover the relevant aspects for assessment of the Options. These will need discussion (and potential refinement and definition) in discussion with the Assessment Cell Evaluation Panels. For example the combined

“Impact on cultural heritage and landscape” criterion may need to be split into two distinct criterion, given the New Zealand context?

Table 4 Proposed Decision Criteria

Category	Criteria
Adaptation Effectiveness	1. Severity of inundation on humans as well as buildings and community infrastructure
Climate uncertainty	2. Flexibility to respond to unexpected climate outcomes (upside / downside)
Social and environmental impacts	3. Impact on access to coastal areas for recreation (e.g. camping, fishing, swimming) 4. Impact on natural coastal ecosystems 5. Indirect economic / industry impacts (e.g. tourism, fishing) 6. Impact on cultural heritage and landscape
Complexity and cost	7. Capital cost 8. Complexity of implementation (technical, stakeholder / social, institutional) 9. Operating and maintenance costs

MCDA Scoring

The Townsville Study initially used a simple five point scale to evaluate the options as follows:

- (1) Highly undesirable
- (2) Undesirable
- (3) Neutral
- (4) Desirable
- (5) Highly Desirable

This five point scoring scale is consistent with Option scoring for other MCDA processes undertaken by EMS. For the Townsville study this initial options screening also assigned “reason codes”, which again is consistent with our experience. Reasons need to be written down to record why certain scores have been assigned.

The Townsville scoring approach was more complex (and iterative) than our past use of MCDA approaches for decision making in that:

1. The initial scoring on the five point scale was undertaken by a technical team;
2. The initial five point scoring was only applied to a sample of the localities that were deemed typical of the remaining locations;
3. Scoring protocols were adopted for certain criteria (defined as “generic” or case by case “where they should be considered in the light of the specific circumstances pertaining to the location and adaptation option”;
4. The Townsville process subsequently applied what they called “relative preference scales” to produce scores. The most preferred option was assigned a preference score of 100 and the least preferred a score of 0, with scores in between assigned to represent differences in strength of preference;
5. Site-specific climate change information, and details of the proposed adaptation options, along with costs were factored in;
6. A Stakeholder Workshop was held to provide an overview and to provide feedback on adaptation options; and
7. The final Townsville scoring workshop and ranking appears to have been undertaken by the technical experts.

The key difference from the Townsville Study that we propose for the Clifton to Tangoio MCDA process is to utilise the two Cell Assessment Evaluation Panels to undertake the full scoring process (supported by advice, information and guidance from the Technical team), rather than the Technical Team doing the scoring and using a Stakeholder Group as a feedback mechanism.

There are pros and cons with the two approaches, but on balance it is considered that provided sound technical information and advice is available to the Evaluation Panels, using a multi-party stakeholder group to participate at the heart of the process (and not as a consultation process) will lead to more robust and accepted recommendations.

Also, we are currently uncertain as to the usefulness and effect of using both the five point scoring scale for the options (alongside specifying written reasons for the scoring choices) and then assigning the 0 to 100 point Preference Scale. We have not applied this statistical method before in MCDA assessments, and therefore EMS proposes to contact the Townsville Study co-ordinators to discuss the reasons why they added this step into their scoring method and its relevance to the MCDA process proposed in this report.

Weighting and Sensitivity Analysis

In the Townsville Study weightings between the nine assessment criteria were assigned on a percentage basis adding up to 100%. The range ultimately adopted was between 5% for the lowest weighted criteria and 25% for the highest weighted criteria. It is recommended that this weighting technique also be adopted for the Clifton to Tangoio process.

The Townsville team used proprietary sensitivity analysis software (Hi View™) to test / understand the sensitivity of individual criteria weightings on the overall results. The key application of the sensitivity analysis was used to determine the number of adaptation options (i.e. Retreat, Accommodate, Defend, Status Quo) to advance to the Benefit Cost Assessment (BCA) process described in the next section of this report.

In the Townsville study, for coastal areas where changing the criteria weightings by less than 15% had the effect of changing the preferred option, both options were input to the BCA. It is considered that this is a prudent measure and it is recommended that a similar approach be taken for the Clifton to Tangoio Coastal Hazard Strategy.

Detailed Information Required for Priority Areas

It is already evident from the hazard and risk assessment reports undertaken by Tonkin & Taylor that some of the 16 cells will have a higher priority than others in terms of when an adaptation response may be required.

As part of the MCDA process the Evaluation Panels will need to have detailed information available on actual adaptation response options and their costs and benefits for those coastal units that will likely need adaptation responses planned and implemented in the short to medium term (say in the next 20 year period). Other identified coastal units are unlikely to need adaptation over the life of the strategy, or there will be a long lead time before any changes will need to be determined and implemented.

It is therefore recommended that the necessary technical work is commenced as soon as possible to identify and cost a full range of potential adaptation responses for identified priority coastal units being Westshore, East Clive and Westshore/Te Awanga – Coastal Units D, J and K), so this information is available for consideration by the MCDA Evaluation Panels when they begin the process in February 2017. This should include consideration of the social impacts of the adaptation

choices using the SROI (or similar methodology) for these priority areas, as discussed below in Section 3.3 of this Report.

3.0 Benefit Cost Assessment (BCA)

3.1 General Overview

Given the timeframes involved with the strategy (which is looking ahead until 2120) and the uncertainty with climate change and sea level rise projections, an important element of the Decision Making Framework will be to assess the economic viability and optimal timing for undertaking the coastal adaptation strategies recommended in the MCDA process for each of the sixteen Clifton to Tangoio coastal units.

As is discussed in our associated Stage 2 funding model report, this process is also a key component in determining a contributory funding approach for capital works required at an identified future time.

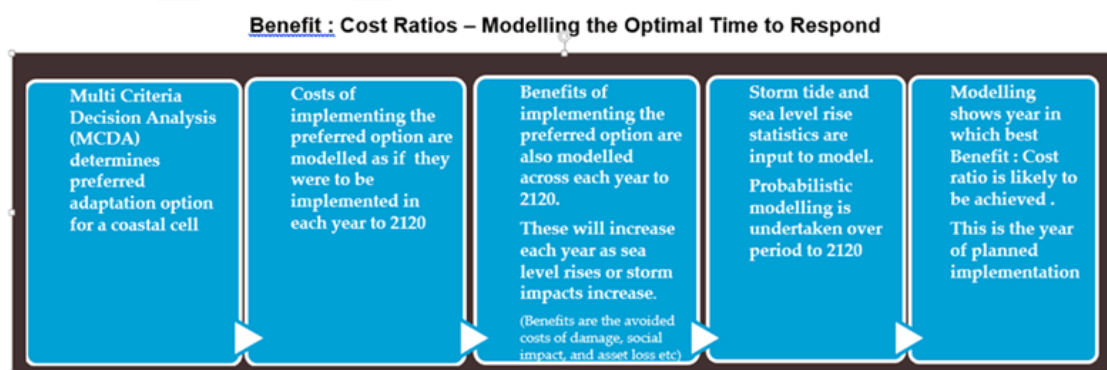
This step will occur after the completion of the MCDA process and again the Townsville Study previously referenced in this report provides a very useful template for undertaking a BCA assessment for coastal adaptation strategies for the Clifton to Tangoio Strategy.⁸

3.2 Townsville BCA Methodology

The Townsville approach utilised an Australian Government Department of Climate Change and Energy Efficiency (DCCEE) economic framework developed for analysing climate change adaptation options. It appears to be a logical and robust process for determining and testing the economic viability of preferred coastal adaptation strategies and for planning ahead for the optional timing of the implementation of the range of strategies that are planned.

A more technical analysis can be read in Section 3 of the Appendix B Economic Analysis - Townsville report referenced below.

The BCA process such as it might be applied in the Clifton to Tangoio study is diagrammatically presented in the companion Stage 2 funding model report, and for ease of reference is reproduced below.



⁸ Coastal Hazard Strategy for Townsville City Council: Economic Analysis, GHD Report 41/24609/03, October 2012 (Chapter 3)

3.3 Further Development of BCA Methodology for the Clifton to Tangoio Strategy

It is recommended that this methodology be further investigated by the Clifton to Tangoio Coastal Hazards Strategy Technical Advisory Group over the next few months.

We are also aware that there is a lot of work going on in this space in New Zealand with a team currently preparing an update of the 2008 Ministry for Environment Guidance Manual for Local Government: Coastal Hazards & Climate Change, due for release in November 2016. It is understood that part of that work is looking at applying a technique called “Dynamic Adaptive Pathways Planning” (DAPP) and there may be an opportunity to look at and apply that methodology (particularly if it is endorsed by the New Zealand Government) as part of the Stage 3 Evaluation phase.

Another important element which we consider requires further development (both in the MCDA and subsequent BCA steps) is how best to account for social impacts in the evaluation of costs and benefits. This aspect has been covered in our companion Stage 2 report⁹. That report discusses this issue in Section 6.5 as follows:

“In MCDA analysis, social impact is only one criterion amongst several that are identified and weighted according to importance. The weighting of these criteria, and the ‘scoring’ of each potential coastal hazard response option against them, ultimately confirms the preferred option.

Section 3.1 discussed how Benefit : Cost analysis would then be undertaken to determine the optimal year in which the preferred option should be implemented. This process is important under the funding model to determine a reasonable proportion of contributory funding required by current generation ratepayers up until the implementation of the adaptation option.

However, a challenge with integrating a measurement of social impact using SROI (or similar) in to an MCDA process designed to consider responses to coastal hazards over a 100-year timeframe is that the SROI methodology cannot realistically be undertaken until closer to the point in future at which a hazard response is deemed necessary to implement, because to do so now would require unreasonable speculation and assumption about a future state and value set.

To tackle this issue it is proposed to adopt a “two-tier” approach to evaluating social impact under the MCDA process. If a hazard response is likely to be required within the next five years, then a full-scale social impact measurement process using (say) SROI methodology would be undertaken so as to accurately weight this value in adaptation choices.

If a hazard response is more likely to be beyond five years, then in the MCDA process a simpler rating of social impact would be utilised on what is known now.

Since social impact measurement is primarily intended to be utilised as a means to objectively and fairly apportion adaptation cost between public and private benefit, accurate measurement closer to the time when the adaptation response is required should not alter the MCDA decision made on all criteria and current knowledge.

In the worst case, where social impact value eventually proves to be considerably in excess of any early rating estimate on which MCDA adaptation decisions were originally made, (such as to render, for example, engineered works more desirable than a managed retreat), then a review of the adaptation decision would be required at that time.

In a wider context, a review of adaptation decisions in future decades is likely to be necessary anyway as science improves and new technologies evolve for managing coastal hazard risk.

⁹ Stage Two – Clifton to Tangoio Coastal Hazards Strategy 2120: Hazards Response Funding Model, Maven & EMS Final Draft July 2016 (Chapter 6).

Finally, it should be stressed that measuring social impact is about value rather than money. It is not a methodology to determine compensation payable to any party. The social impact (such as it might be measured using SROI techniques) is simply an input to rank a range of adaptation responses that could be adopted, and how their benefit might be split between public and private interests”.

Again, it is noted that the review of adaptation decisions in future decades which is contemplated in the above extract from our Companion Report on the Funding Model, may also be consistent with the DAPP techniques that are referred to above.

The consideration for how social impacts are measured and factored in (both in the initial MCDA coastal adaptation option assessment phase and the subsequent BCA process) requires some further analysis over the coming months before Stage 3 gets underway with the Cell Assessment Evaluation Panels. A key consideration will be whether hazard responses are likely to be needed within five years (in which case a more systematic evaluation of outcomes and measurement should be possible) or beyond that timeframe in which case a more elementary rating of this social impact criterion will be used.

4.0 Recommendations

The following recommendations are made:

1. That the Multi-criteria Decision Analysis methodology recommended in Section 2 of this report be implemented as part of Stage 3 of the Clifton to Tangoio Coastal Hazards Strategy 2010 including:
 - a. Appointment of two Assessment Cell Evaluation Panels on a North/South split covering the Coastal Units shown on Figure 1 of this report;
 - b. That the Assessment Cell Evaluation Panels have a “recommendatory function” with each panel being responsible for preparing an MCDA Evaluation Report for the three partner Councils recommending a preference for coastal adaptation strategies for each of the coastal units within their respective assessment cells;
 - c. That the Assessment Cell Evaluation Panels include the range of parties / representatives outlined in Tables 2 and 3 of this report, with appointments being made using the processes recommended on page 8 of this report, and with the proviso that the Joint Committee has the ability to amend the recommended composition of the two panels through the appointment process in order to ensure full and fair representation on the panels;
 - d. That Joint Committee members only act as observers on the Evaluation Panels, given the considerations outlined in the guidance note included as Appendix A of this report;
 - e. That a consensus decision making model be followed by the Assessment Cell Evaluation Panels based on the draft Terms of Reference attached in **Appendix Two**, noting that the Terms of Reference will need to be considered and ratified by the appointed panels at the start of the process;
 - f. That the draft MCDA process chart and timeline included in Figure 2 of this report be noted, on the basis that this needs to have some flexibility going forward;
 - g. That the Decision Criteria proposed in Table 4 of this report be noted as being those utilised in the Townsville City Council Study, and which are recommended to be applied to the evaluation of the Clifton to Tangoio Coastal Hazard Responses; and
 - h. That the recommended scoring and weighting process which is at the core of the MCDA process be undertaken by the two Cell Assessment Evaluation Panels (with advice and input as required by members of the Technical Advisory Group and independent experts).

- i. That the necessary technical work be commissioned to develop more detailed information on actual adaptation choices for the priority coastal cells of Westshore, East Clive and Haumoana/Te Awanga (Cells D, J and K) including definition of potential adaptation responses, and costs and benefits (including social aspects) so this information is available to the Evaluation Panels in February 2017 at the start of the MCDA process.
2. That after the completion of the MCDA process and preparation of the two Cell Assessment Evaluation Reports, a Benefit Cost Analysis be undertaken to provide information to the partner Councils on the economic viability and optimal timing for undertaking the coastal adaptation strategies recommended in the MCDA process and that a methodology for this BCA analysis be further developed over the coming months including consideration of:
 - a. The method utilised in the 2012 Townsville City Council Coastal Hazard Strategy Economic Assessment
 - b. Methodologies for accounting for social impacts in the both the choice of adaptation strategies and the benefit cost analysis.

APPENDIX ONE

Aligning and Clarifying Council and Collaborative Group Roles and Responsibilities

Aligning and Clarifying Council and Collaborative Group Roles and Responsibilities

Introduction

This list of principles and procedures provide the rationale and support for the staff recommendations for changes to the TANK terms of Reference. They also provide the basis for a regional decision making framework that guides the establishment and operation of collaborative plan development processes that might be considered by Council.

Clarification of roles

RPC

- The RPC oversees the review and development of regional policy statements and plans.
- It occupies a governance role which includes making statutory decisions about plan development processes.
- If collaborative processes are adopted to assist with plan development, the RPC will recommend to Council the appropriate support and resourcing of the group to ensure it can deliver the outputs sought in the timeframes specified.
- The RPC will take an active interest in the progress and interim outputs of the TANK group and provide guidance on matters where this is sought by the group.
- Any plan provisions developed by the consensus of a collaborative group will be provided to the RPC who will have particular regard to, and will make every effort to give effect to the consensus position reached by the group provided it complies with relevant acts and council plans and strategies where appropriate.
- RPC members will receive recommendations from any collaborative group with an open mind and appropriately weigh such recommendations with all other matters and views required by law.
- If any aspects of a consensus position are not adopted by the RPC, the committee will provide their reasons in writing to the group and provide them with an opportunity to address any issues raised.

Collaborative Groups

- A collaborative group can be established by the RPC and Council to provide advice and recommendations about resource management as part of a plan development process.
- Collaborative groups occupy an advisory role in relation to decisions about content and notification of plan changes.
- Members of the RPC and Council may observe and participate in collaborative processes where this can assist in maintaining a good working relationship and mutual understanding between the RPC and Council and the Group.
- Members of the RPC and Council shall not participate in decision-making within collaborative groups when they are also to be statutory decision-makers on the group's outputs.
- Collaborative groups may also be supported in assisting in the preparation and delivery of the implementation plan accompanying any plan change
- Membership of a collaborative group will be managed by council but must include people with sufficient expertise and knowledge about the values and issues at stake and capacity to be involved with the group. They will generally need to have an ability to work within a consensus decision making framework.
- Membership of any collaborative group will include representation from iwi that reflects the iwi and hapū interests in the management area being considered

Collaborative Group Processes

- Council will specify essential outputs, timeframes protocols and procedures for any collaborative group process. This may include that members be required to adopt a consensus approach to their decision making.
- Collaborative groups will determine any additional protocols and method of operating they deem necessary.
- A collaborative group can advise council on the ability of the group to meet specified outputs in the timeframes provided and whether they are feasible.

APPENDIX TWO

Draft Terms of Reference for Evaluation Panels

DRAFT



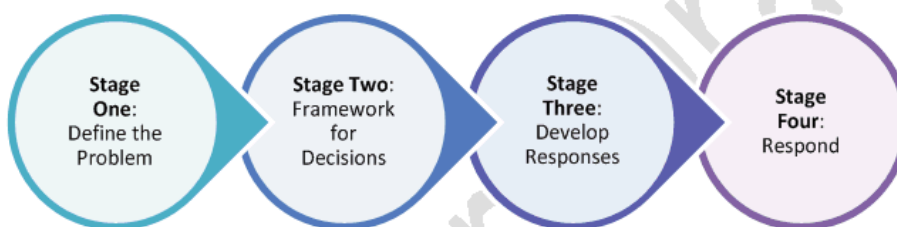
Clifton to Tangoio Coastal Hazards Stagey 2120

Assessment Cell Evaluation Panel Draft Terms of Reference

Background / Context

The Hawke's Bay Regional Council, Hastings District Council and Napier City Council ("Partner Councils") along with representatives from Maungaharuru-Tangitu Trust, Mana Ahuriri Incorporated and He Toa Takitini, have formed a Joint Committee responsible for the development of the Clifton to Tangoio Coastal Hazard Strategy 2120 ("Coastal Hazards Joint Committee").

The Strategy is being developed in four stages:



Stage One work undertaken by Tonkin & Taylor and includes an assessment of coastal erosion, storm surge inundation and tsunami risks for each distinct part of the Clifton to Tangoio coastline.

Stage Two work was undertaken by EMS and Maven Limited and sets out a process for making decisions around the risks identified by the Tonkin & Taylor work.

This Assessment Cell Evaluation Panel has been established to implement the decision making framework developed in Stage Two, and in doing so complete **Stage Three** of the strategy

Purpose

The purpose of the Assessment Cell Evaluation Panel is to provide informed recommendations to the Coastal Hazards Joint Committee on responses to coastal hazards risks within their assigned assessment cell areas (northern or southern).

The specific functions of the Assessment Cell Evaluation Panel are to provide the Coastal Hazards Joint Committee with input, advice and recommendations on the following matters:

1. In response to the information developed on coastal hazards risks, the prioritisation and programming of coastal hazards responses within each assessment cell;
2. The development of coastal hazard response options including consideration of alternative responses to the issues identified. These options might include:
 - a. Do Nothing;
 - b. Hard Engineering solutions;



- c. Soft engineering solutions (e.g. beach re-nourishment, beach crest stabilisation);
 - d. Managed retreat;
 - e. Land purchase;
 - f. Emergency Management planning;
 - g. District Plan provisions and internal Council policies.
3. Facilitating engagement with the broader community, affected persons and other stakeholders in relation to the risks posed by coastal hazards and the associated coastal hazard response options.
4. Championing preparedness and the development of resilience within our communities to the current and future effects of coastal hazards.
5. Open, objective and unbiased participation in a facilitated decision making process to select preferred coastal hazards responses options;
6. Preparation and delivery of recommendations to the Coastal Hazards Joint Committee regarding:
 - a. Priority areas for action;
 - b. Preferred coastal hazards responses; and
 - c. Programming and implementation.

Membership

Two Assessment Cell Evaluation Panels shall be formed:

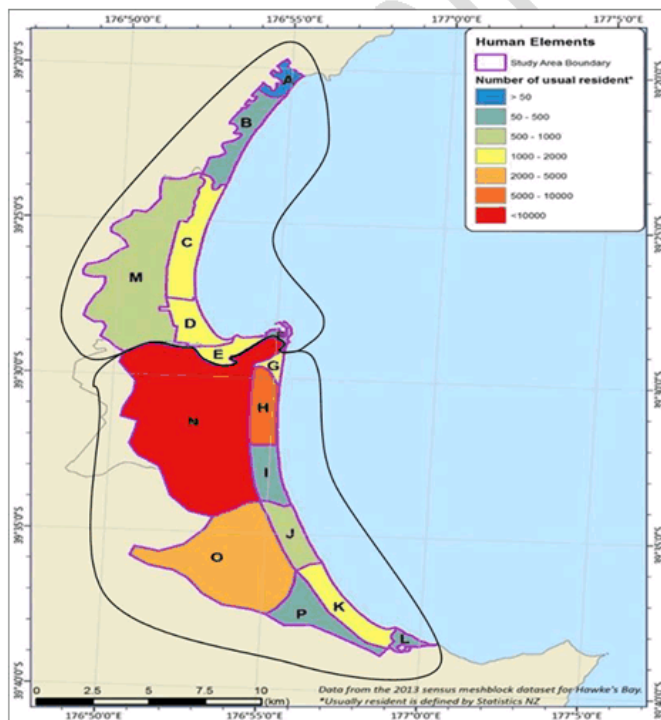


Figure 1: Assessment Cell Evaluation Panel areas

Northern Assessment Cell Evaluation Panel covering the area from Tangoio to the Port of Napier (inclusive), as represented by areas A, B, C, D, E, F and M in **Figure 1**.

Southern Assessment Cell Evaluation Panel covering the area from the Napier CBD to Clifton, as represented by areas G, H, I, J, K, L, N, O and P in **Figure 1**.



The assessment panels shall be comprised of the following members:

Northern Assessment Cell Evaluation Panel

Full Members able to participate in Scoring and Recommendations	Observer Participants	Support Roles
Tangata Whenua (3)	HBRC Councillor (1)	Independent Chair (1)
Whirinaki Community (1)	NCC Councillor (1)	Kaumatua (1)
Bayview Community (2)	HDC Councillor (1)	Facilitator (1)
Westshore Community (2)		Assistant Facilitator (1)
Ahuriri / Pandora Community (2)		Technical Advisory Group (6)
Recreational Interests (1)		
Port of Napier (1)		
Ahuriri / Pandora Businesses (1)		
NZTA / Lifelines (1)		
DoC (1)		
Total Voting (15)	To Determine Role based on Guideline	Total Non-Voting (10)

Southern Assessment Cell Evaluation Panel

Full Members able to participate in Scoring and Recommendations	Observer Participants	Support Roles
Tangata Whenua (3)	HBRC Councillor (1)	Independent Chair (1)
Clifton/Te Awanga Community (2)	NCC Councillor (1)	Kaumatua (1)
Haumoana Community (2)	HDC Councillor (1)	Facilitator (1)
East Clive Community (2)		Assistant Facilitator (1)
Marine Parade Community (1)		Technical Advisory Group (6)
Recreational Interests (1)		
Awatoto Businesses (1)		
Napier CBD Businesses (1)		
NZTA / Lifelines (1)		
DoC (1)		
Total Voting (15)	To Determine Role based on Guideline	Total Non-Voting (10)

Member Attributes and Protocol for Collaborative Deliberation

The Assessment Cell Evaluation Panels represent a community-driven collaborative stakeholder process with the aim of providing the Coastal Hazards Joint Committee with consensus advice and recommendations on a long term approach to build resilience to coastal hazards over the next 100 years.

For this process to be successful, members of the Assessment Cell Evaluation Panels will need to have the ability to explore, consider and deliberate on options and recommendations with an open mind, taking into account diverse views and interests (rather than simply advocating for a particular point of view). The following collaborative protocol is to be followed by all Assessment Cell Evaluation Panel members, observers and support roles:



- Members will participate co-operatively for the “long term benefit” of the region as a whole.
- All members agree to act in good faith. This means that members must commit to open, honest, constructive, robust and collaborative deliberations. To facilitate this end the Chatham House rule¹ will apply.
- Assessment Cell Evaluation Panel meetings are not open to the public; however the Chair can invite people such as relevant experts and interested parties to specific meetings, and open up certain meetings to the public and media representatives where it is considered appropriate.
- A regular public reporting forum and newsletter or similar mechanism should be adopted by the Assessment Cell Evaluation Panels to ensure the wider public are kept informed of their activities.
- Contributions made within the Assessment Cell Evaluation Panels will be “without prejudice”. That is, nothing said within the group may be used in a subsequent planning or legal process except for any recommendations and agreements reached by the group.
- Members agree to show respect for other members’ views when communicating with their wider networks.
- Members agree to refrain from discussion and debate through media channels (i.e. newspapers, radio, television, and blogs).
- Any public statement regarding advice or recommendations made by the Assessment Cell Evaluation Panels are to be agreed by the panel and made through the Chair. This also applies to researchers, council staff and others who may attend the meetings in support of the Assessment Cell Evaluation Panels
- Consensus shall be strived for in all decisions made by the Assessment Cell Evaluation Panels, and is defined as every member (i.e. 100%) of the group being in agreement.
- Where 100% consensus cannot be reached on a specific piece of advice or a recommendation, the reasons for disagreement will be noted, any alternatives defined, and the reasons for members positions on the alternatives recorded.
- If a meeting is missed by a member, whether or not a nominated substitute participates, members will not be able to “re-litigate” a piece of consensus advice or recommendation at a later time.
- If the group reaches a consensus, members will be expected to support that consensus in subsequent public discussion, or presentation to the Council,
- Any recommendations made by Assessment Cell Evaluation Panels must also take account of the requirements of the Local Government Act, New Zealand Coastal Policy Statement and other relevant legislation.

¹ When a meeting, or part thereof, is held under the Chatham House Rule, participants are free to use the information received, but neither the identity nor the affiliation of the speaker(s), nor that of any other participant, may be revealed.



Operational Protocols

The following protocols shall apply to the operation of the Assessment Cell Evaluation Panels:

- *[confirm arrangements for any remuneration of Panel Members and for meeting any costs of participation i.e mileage]*
- It is anticipated that the Panel will meet approximately every 4 to 6 weeks for a period of approximately 6 months to 8 months, however the group will set its own meeting programme and dates.
- The Partner Councils will be responsible for providing all the necessary support for the effective functioning of the group including the provisions of meeting venues, refreshments, and staff support for the preparation of agendas, minutes, communications etc.
- It is expected that the Assessment Cell Evaluation Panel meetings will be hosted by one of the Partner Council's, either in Council Chambers or other suitable venue for a group of this size.
- Panel Members are expected to commit to an agreed programme of meetings and make every effort to attend all meetings. While it is anticipated that some Panel Members will miss certain meetings through circumstances beyond their control, if a significant number of meetings are not attended by a Panel Member then at the discretion of the Chair their membership may be reviewed and a reappointment process triggered.
- Where a member is no longer available to continue participation on an Assessment Cell Evaluation Panel for any reason, a replacement will be nominated by the relevant agency or group.

Resources

At each meeting, the Assessment Cell Evaluation Panels will have access to a Technical Advisory Group (TAG) formed by senior staff from each of the Partner Councils. Independent technical advisors will also be engaged by TAG to assist with supporting the Assessment Cell Evaluation Panels, which may include expertise from the following areas:

- Coastal Process science and engineering
- Landscape
- Legal
- Economics
- Planning



Functional Relationships

At the conclusion of their process, each Assessment Cell Evaluation Panel will make final recommendations to the Coastal Hazards Joint Committee. Where financial decisions regarding the expenditure of public funds are required to be made, these will be recommended by the Joint Committee back to each Partner Council. This relationship is outlined in **Figure 2**.

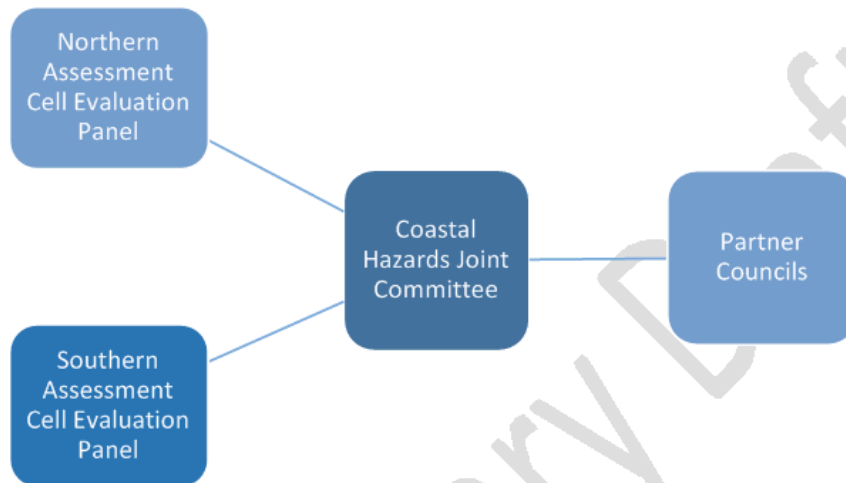


Figure 2: Functional Relationships



APPENDIX 1 – AGREED MEETING SCHEDULE

[to be developed and agreed by each Assessment Cell Evaluation Panel]

Preliminary Draft



APPENDIX 2 – NORTHERN ASSESSMENT CELL EVALUATION PANEL MEMBERS

[to be completed following appointment process]



APPENDIX 2 – SOUTHERN ASSESSMENT CELL EVALUATION PANEL MEMBERS

[to be completed following appointment process]

Preliminary Draft

Friday 19 August 2016

Subject: STAGE 2: FUNDING MODEL**Reason for Report**

1. This report seeks a resolution from the Joint Committee to endorse the proposed Stage 2 Funding Model prepared by Wayne Mills from Maven (**attached**) and to recommend that the partner Council's adopt the recommendations provided in that report.

Discussion

2. The attached report has been prepared as part of the Stage Two work undertaken by Maven Consulting (Wayne Mills) and EMS (Stephen Daysh) dealing with a Funding Model for Coastal Hazard Response and Multi-Criteria Decision Analysis methodology respectively.
3. The funding model is required to guide funding processes for responses to coastal hazards risks, once these responses are identified as part of Stage 3.
4. The report is provided in two parts – the first being a descriptive summary and recommendations for general use, while Part Two provides a more detailed analysis of the funding approach and rationale behind it.
5. The funding model has been developed in a consultative manner, including:
 - 5.1. The circulation of a first draft to TAG for review and feedback;
 - 5.2. A workshop with the Joint Committee on key concepts and approaches;
 - 5.3. A workshop with senior council executives (principally financial controllers and asset managers) and TAG to explore any implementation matters associated with the proposed model; and
6. In addition, discussions have taken place with a range of external parties, including staff from other regional councils, insurance companies, government agencies and others as part of the information gathering exercise undertaken in the development of the report.
7. Given that the Joint Committee does not have the delegation to adopt the proposed funding model on behalf of the partner Councils, a recommendation is sought from today's meeting, in order that members of TAG may present the proposed model and the series of recommendations it provides to each Council individually for adoption.
8. In aid of this process, TAG have called a workshop with all Councillors from the partner Councils on 29 August, 2016. This workshop will be used as a lead in to individual Council reporting and decision making.
9. Mr Mills will be present at today's meeting to introduce his final report and respond to questions from the Joint Committee.

Recommendations

1. That the Clifton to Tangoio Coastal Hazards Strategy Joint Committee endorses the report '**Stage Two – Development of Funding Model and Guideline, 19 August 2016**' and recommends that the following recommendations from Part One of that report be adopted by the Hawke's Bay Regional Council, Hastings District Council and Napier City Council:

That the partner Councils:

Recommendation One

Advocate for, and be part of, a Local Government Risk Agency-led forum to develop a public / private sector fiscal response to coastal adaptation caused by sea-level rise.

Recommendation Two

Adopt the principle of a collaborative approach between the partner Councils to future funding solutions for coastal hazard resilience projects, based on a whole-of-coastline perspective.

Recommendation Three

Endorse the concept of a Coastal Response Contributory Fund (CRCF) and request Council senior management to develop a draft Heads of Agreement for Councils to consider, covering matters including (but not limited to) governance, objectives, ring-fencing of funding, and future scope of operation.

Recommendation Four

Recognise that social impact on coastal communities arising from coastal resilience projects requires robust consultation, systematic identification of potential outcomes, and measurement of impact using recognised financial proxy methodologies and endorse the adoption of such an approach in future hazard evaluation.

Recommendation Five

Endorse the concept that the CRCF will, amongst other roles, co-ordinate detailed future applications and approaches to central government for fiscal assistance on specific projects.

Recommendation Six

Support in principle that larger infrastructure projects should be funded using debt instruments that broadly match the longer lifespan and intergenerational benefit of such projects in preference to relying on current ratepayers.

Recommendation Seven

Investigate the issue of long term resilience bonds that might be purchased by institutional investors who have a direct interest in coastal hazard management

Authored by:

Simon Bendall
PROJECT MANAGER

Approved by:

Mike Adye
GROUP MANAGER ASSET
MANAGEMENT

Attachment/s

- 1** Part One: Summary Report and Recommendations
- 2** Part Two: Main Report

Stage Two – Clifton to Tangoio Coastal Hazards Strategy 2120: Hazards Response Funding Model

Part One: Summary Report & Recommendations

“Big challenges need bold solutions...”



Environmental Management Services

maven

STAGE TWO – FUNDING MODEL AND GUIDELINES DEVELOPMENT **Summary Report & Recommendations**

Submitted: July 2016
Version: 1.0



Hawkes Bay Regional Council (on behalf of participating Councils)

Private Bag 6006
Napier 4142
NEW ZEALAND

Contact: Mike Adye
Asset Management Group Manager
P: (06) 835 9200



Maven Consulting Ltd

PO Box 11230
Wellington
NEW ZEALAND

Contact: Wayne Mills
Senior Project Consultant
P: (04) 801 6026



Environmental Management Services

Environmental Management Services

PO Box 149
Napier
NEW ZEALAND

Contact: Stephen Daysh
Director
P: (06) 834 4344

The Hazards Response Funding Model report prepared by Maven / EMS is in two parts. This part is a brief illustrative summary together with recommendations for consideration by the partner Councils. The second part is the main funding model report which provides further background and analysis to support the recommendations contained in this summary report.

It is considered that the collaborative approach taken to date by the partner Councils provides an excellent platform to continue through future stages of decision-making and implementation. In particular, the opportunity exists to adopt an innovative and far-sighted approach to addressing the funding of coastal hazard responses that resolves the many tensions and uncertainties that exist between the wide range of stakeholders involved in this important environmental issue of our time.

Why the need for a funding model?

Increasing coastal erosion, inundation and tsunami risks are a reality for the Hawkes Bay coastline over the next 100 years. Against a regulatory and policy backdrop, communities and local government will need to make difficult decisions between:



Managed retreat

A retreat in the face of a coastal hazard, such as withdrawing; relocation; or abandonment



Hold the line

Defend / manage natural processes with protection works, and



Maintain status quo

Do nothing / monitor / private owner's responsibility

These decisions will be based (among other things) on the importance of:

- the risk to life, safety, assets and infrastructure;
- the extent to which coastal communities will accept such risk;
- economic and social costs;
- public and private benefit; and
- inter-generational sharing of responsibility



The stakeholders in the funding model

Perceived Current Position

Private property owners	Partner Councils	Central Government	Insurance sector	EQC	Banks
<ul style="list-style-type: none"> Reluctance to accept that coastal erosion and increased inundation risk are realities. Primary responsibility to fund adaptation costs for privately owned assets. Dependent upon private insurance cover being available and affordable. Property prices continuing to rise despite coastal risks. 	<ul style="list-style-type: none"> Trend-setting, timely and innovative practical response to coastal risk with a collaborative approach. Primary responsibility for public infrastructure adaptation. Shared responsibility for some adaptation costs where social impact is high. Best agency to co-ordinate coastal community response. 	<ul style="list-style-type: none"> Will ultimately have to accept a fiscal role, but currently focussed on policy response Fiscal role raised by Parliamentary Commissioner for the Environment 2015. Tax efficiency – central government has more funding options than TLAs. Policy efficiency – national benefits may result from adaptation Policy focussed – but has agreed to fund 60% of infrastructure after major natural event, but; Looking for evidence 	<ul style="list-style-type: none"> Main source of cover for residential property. Does not see need to contribute to adaptation projects - they can simply withdraw from underwriting if risk becomes too great. Insurance premiums do not provide a timely signal to insured parties. Premiums are “smoothed” by EQC’s average pricing policy, 	<ul style="list-style-type: none"> Provides some “baseload cover” for natural disasters. By single pricing, regardless of risk, EQC is largely responsible for achieving >90% private residential insurance cover in NZ. Does not cover land or building damage caused by coastal erosion. Is “challenged” by claims for storm damage (which are covered) exacerbated by coastal erosion 	<ul style="list-style-type: none"> Are at risk of loss if mortgage lending is no longer protected by insurance cover. Could still seek debt recovery from property owner if insufficient residual value in property, but; May be brand and reputation risk. Likely to have substantial loss provisioning and fiscal impact would not be great.

STAGE TWO – FUNDING MODEL AND GUIDELINES DEVELOPMENT Summary Report & Recommendations




<ul style="list-style-type: none"> Perception that social impact is not properly understood or measured by local government. 	<ul style="list-style-type: none"> Immediate port of call by private property owners for assistance following any significant event 	<p>of prudent infrastructural asset risk management by local government, including that share of natural disaster costs is adequately insured.</p>	<p>and other levies.</p> <ul style="list-style-type: none"> Nevertheless concerned that wholesale withdrawal from insuring at-risk properties may damage reputation and brand. 	<p>(which is not covered).</p> <ul style="list-style-type: none"> EQC sets out to cover low risk / high cost natural disaster; but Sea level rise is a high risk (because it is actually happening) / high cost event. Cannot withdraw from insurance market like private participants. 	
---	--	--	---	--	--

What might they do in future?

Private property owners	Joint Councils	Central Government	Insurance sector	EQC	Banks
<ul style="list-style-type: none"> Strongly motivated to defer adaptation decisions unless someone else pays. Continue to pursue largely public-funded solutions to protect private property and lifestyle. 	<ul style="list-style-type: none"> Likely fragmentation of adaptation choices, timing and funding responses, unless a whole-of-coast collaboration can be achieved. Follow national guideline/standard if one is available 	<ul style="list-style-type: none"> Interested to develop a fiscal response but looking for standards and guidelines as a precedent. Will require strong funding case (especially showing regional benefits and community consultation and consensus). 	<ul style="list-style-type: none"> For various reasons industry is keen to be part of working group to find cohesive responses. Possible interest in purchasing long term debt instruments that are aimed at resilience funding. 	<ul style="list-style-type: none"> May be increasingly interested in directly funding resilience projects where imminent loss is likely. Possible funding channel for central Government by widening statutory mandate? 	<ul style="list-style-type: none"> Reputational risk - banking sector may be interested in participating in cohesive working groups to establish policy positions.

Funding Concepts

Who should pay?

Model	 Managed Retreat Withdrawal, relocation, abandonment	 Hold the line Walls, dykes, groynes, raising structures, beach nourishment, etc.	 Maintain status quo Do nothing, monitor, individual owners responsibility to act as required
Private Costs	<ul style="list-style-type: none"> • Direct costs borne by those who stand to benefit from expenditure • Existing house and land value • Relocation costs to higher ground 	<ul style="list-style-type: none"> • Share of costs borne by those who stand to benefit from hold-the-line expenditure 	<ul style="list-style-type: none"> • Temporary protection works (may be unconsented) • Repairs and maintenance • Eventual relocation
Public Costs	<ul style="list-style-type: none"> • Write down of existing water, sewerage, storm-water, roads, park infrastructure, public amenities • Replacement of essential infrastructure • Social impact – environmental, cultural and social costs • Ongoing costs of hazard monitoring and assessment • Co-ordination, facilitation, funding mechanisms and collection 	<ul style="list-style-type: none"> • Project management • Share of costs reflecting protection of existing infrastructure • Share of costs reflecting social impact - environmental, cultural and social costs • Ongoing costs of hazard monitoring and assessment. • Co-ordination, facilitation, funding mechanisms and collection 	<ul style="list-style-type: none"> • Adaptation costs, over time, of local services, water, storm-water, roads and parks, public amenities • Social impact – environmental, cultural and social costs. • Ongoing costs of hazard monitoring and assessment.

STAGE TWO – FUNDING MODEL AND GUIDELINES DEVELOPMENT **Summary Report & Recommendations**

Finding a balance	<ul style="list-style-type: none"> • More readily attributable to direct beneficiaries • Private / public share may reflect the ability to pay. (e.g. no insurance) 	<ul style="list-style-type: none"> • Often preferred by private owners because a strongly argued case for social impact can shift adaptation costs towards public funding. • Is perceived to avoid changes to current lifestyle. 	<ul style="list-style-type: none"> • Costs fall where they lie, but will lead to uncoordinated actions which may cause exacerbated coastal hazards / unsightly structures
-------------------	---	--	--

Funding response will be spread over decades

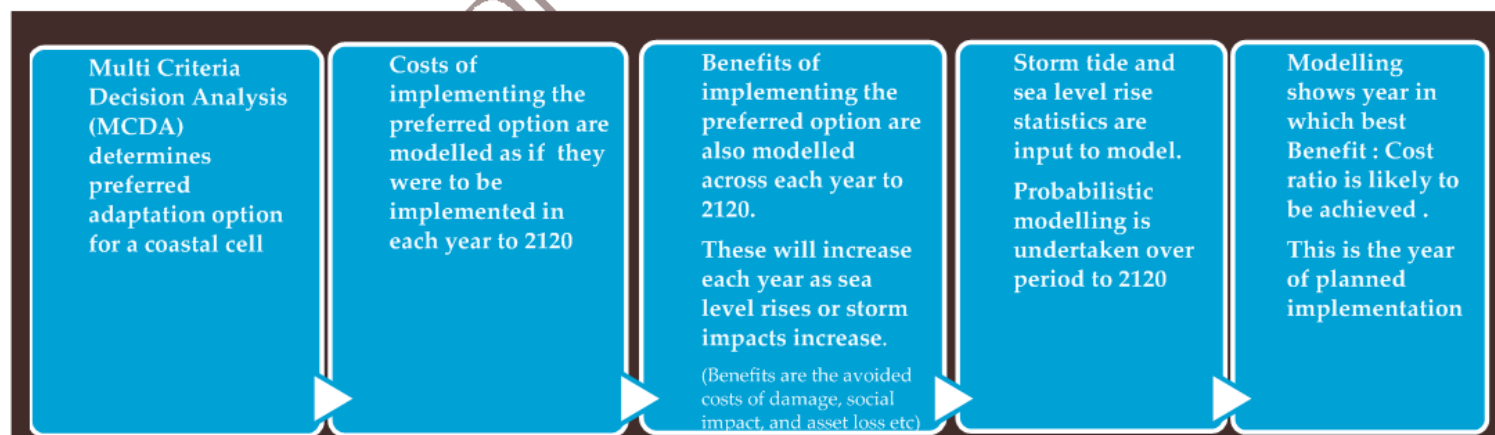
Managed retreat or protection works options are staged adaptation responses over several decades.

Timing of the response will depend on specialised Cost Benefit Analysis as shown in the following diagram.

The scope of this report does not include optimal timing assessment. But the methodology will be required as part of on-going work by the partner Councils.

Optimal timing delivers a termination date to allow for current generation funding under contributory funding schemes (which is discussed next) to be established.

Local Government Act infers a user-pays approach to cost allocation, but also provides considerable scope for Councils to consider and alleviate the burden of payment to reflect the ratepayers' ability to pay on principles of fairness and equity, (including the concept of intergenerational equity).

Benefit : Cost Ratios – Modelling the Optimal Time to Respond

Intergenerational spending

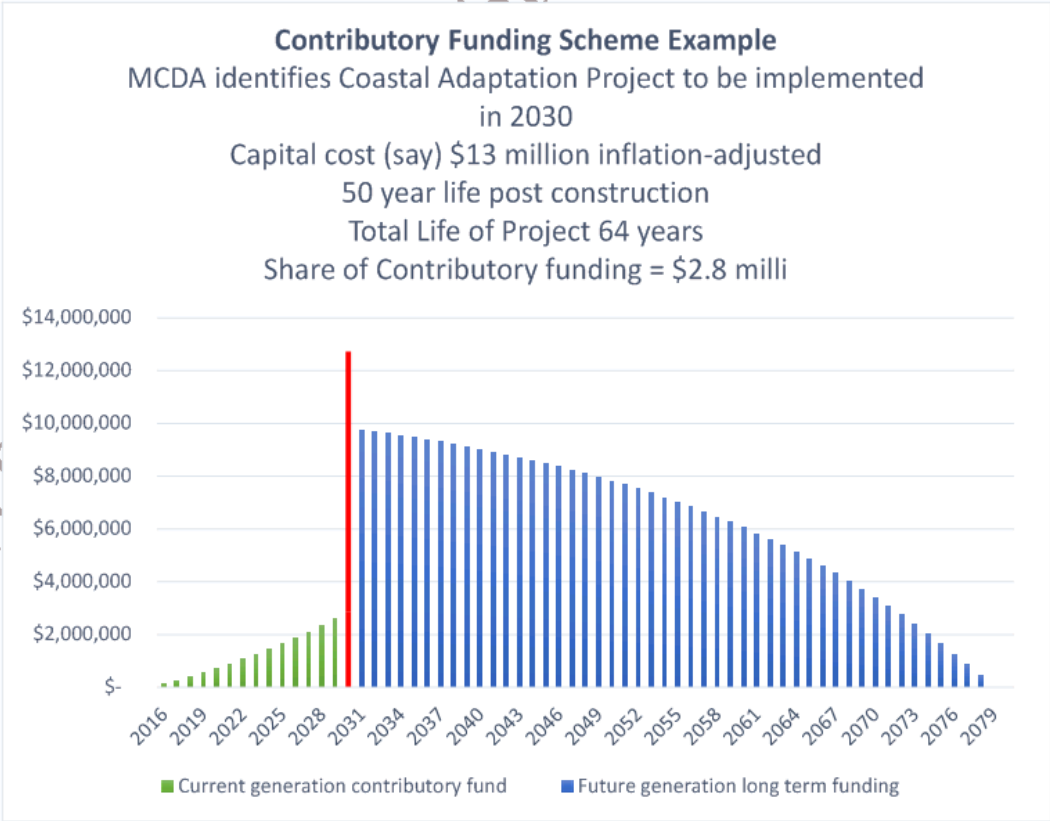
Adaptation costs for public infrastructure will have long-term benefits and are considered inter-generational in nature.

Consideration must be given to long term debt instruments that match the life of the relocated infrastructure or protection works. Ratepayers now, or at the time that spending is undertaken should not have to fund 100% of the expenditure.

Councils have very low term debt: fixed asset ratios and could comfortably leverage capital spending of this nature.

Current generations of ratepayers do however have some responsibility to fund part of future resilience projects, because they and their predecessors have contributed to the causes of coastal erosion. This could be achieved through the establishment of a contributory funding scheme, such as shown in the example.

Section 101(3) of the Local Government Act gives local authorities very wide discretion to choose different sources and methodologies for funding.



Public and Private Benefit

Aside from intergenerational cost allocation there is tension between allocating costs according to user benefits, and meeting equity and fairness principles through a system that reflects ratepayers' ability to pay.

For the purposes of this report, public benefit refers to things which have shared benefit at a societal level in a philosophical and political sense. In the context of what might apply to coastal hazard adaptation this list includes:-

- Environmental protection or enhancement
- Flood protection schemes
- Public infrastructure – water / roading
- Street lighting
- Improved air quality and land use
- Enhanced economic development

In contrast to “public” benefit, it is considered that “private” benefit means an advantage, privilege, right, financial gain (or avoidance of cost) accruing to an individual, or collective group with common pecuniary interests, rather than society as a whole.

In a practical sense, the funding flexibility and choice that is available to Councils under s101(3) results in opportunity for one council to apply the legislative criteria in an entirely different way to

another council. This flexibility provides scope for councils to respond differently to competing choices between aligning perceived “benefit received” with the amount of rates paid, and the community outcomes in terms of relative “ability to pay”.

This intra-council flexibility has the potential to create contentious cost allocation issues when dealing with an integrated approach to coastal hazard management. Private coastal property owners living in one district or region will naturally try to leverage adaptation responses in a neighbouring district which has adopted a greater share of public funding approach.

Coastal erosion and inundation does not respect local authority boundaries. This is also why a collaborative approach between councils is essential when dealing with adaptation issues that traverse such boundaries.

Measuring Social Impact

Social impact is the change that occurs as a result of a particular action or activity.



Protecting private property from flooding and inundation is the responsibility of the property owner supported by the insurance industry.

If the insurance provider withdraws, ensuing hardship is not the responsibility of local authorities. This is a fiscal risk to be resolved by central Government.



Social impact caused by coastal erosion and increasing inundation is recognised and should be factored into:
The extent to which a hold-the-line option is preferred over managed retreat; and
How much of the adaptation funding should be apportioned to public benefit.



Public infrastructure is a cost to be borne by the general ratepayer (less any insurance cover and /or agreed Government contribution) when repairs, relocation or replacement is required.
Costs should ideally be spread to reflect intergenerational nature of assets.

In a coastal community the social impact of coastal hazard risks might include such things as:

- Negative perception of the area as a place to live;
- Anxiety and stress caused by uncertainty;
- Effects on community safety;
- Loss of important environmental habitat;
- Loss of cycle trails and tourist attractions and consequential income for local business;
- Decline in local recreational values;
- Drop in play-centre roll; or
- Reduction in local fire services

maven

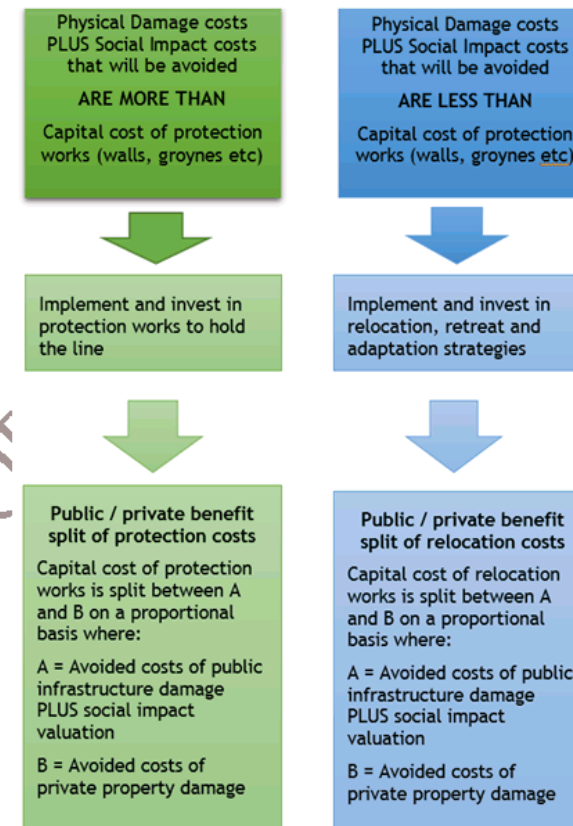
Social impact can be measured and quantified using emerging recognised techniques such as Cost Benefit Analysis (e.g. CBAX, which has been implemented by NZ Treasury) or Social Return on Investment (SROI) developed by the UK Cabinet Office). These measurement techniques assign financial proxies to social outcomes, in the latter case relying on a robust and transparent consultation process involving affected communities and other stakeholders.

Social impact valuation can then become an input to optimal economic decision-making around coastal hazard responses as well as allocation of public and private benefit as shown in the diagram.

However any decision on which mitigation option to choose would also depend on the much wider MCDA analysis which takes into account a number of criteria apart from just the capital costs and social impacts shown in the diagram. For example, it may be that protection works would not provide a permanent solution that might be available through the selection of another adaptation alternative.

Measuring social impact is about **value** rather than money. It is not a methodology to determine compensation payable to any party. Social impact (such as it might be quantified using, say, SROI techniques) is simply an input to determine a range of adaptation responses that could be adopted, and how their benefit might be fairly split between public and private interests.

STAGE TWO – FUNDING MODEL AND GUIDELINES DEVELOPMENT Summary Report & Recommendations



The final decision on a hazard response strategy will be determined by the outcome of the MCDA process.

The Funding Toolkit

A funding model requires finding an optimal balance between:

- Current and future funding stakeholders (eventually central Government and other industry sectors will need to become fiscally engaged);
- Public and private beneficiaries;
- Different timing (perhaps over several decades) of capital expenditure;
- The need to recognise liability falling equitably between current and future generations;
- Possible consequences of projects to address coastal issues in one area affecting another ; and
- The need for consistent and equitable approaches to funding as between Councils (to avoid setting undesirable precedents).

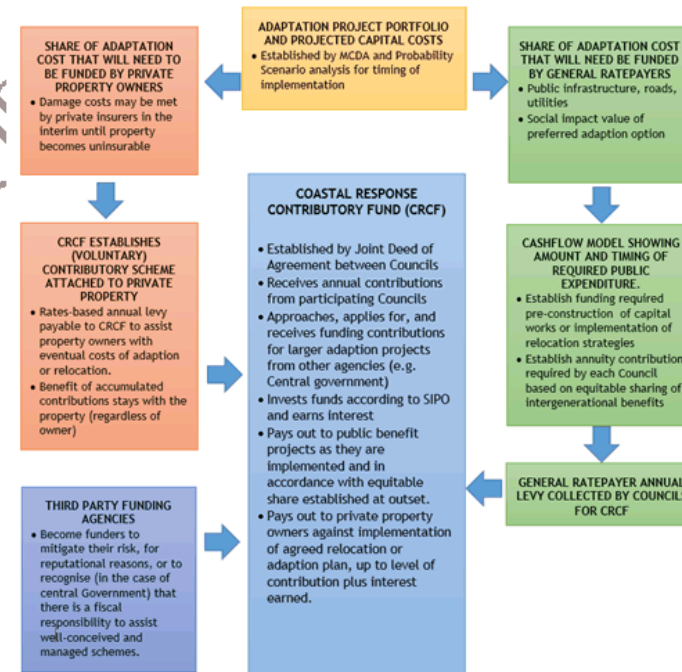
Taking all this together, collaboration on coastal adaptation funding responses is recommended, to be achieved through the establishment of a jointly owned Coastal Response Contributory Fund scheme.

The CRCF would become the central management agency for the purposes of funding coastal hazard responses. It would collate planned projects and strategies from the MCDA process, model all contributory cashflows to be received and invested to earn required target funding at the time the projects are planned for implementation.

The CRCF might also become a useful agency to positively assist private property owners to adapt by offering a (voluntary) contributory scheme like Kiwisaver in order to build a fund

attaching to private property that could be used by the future owner to defray the costs of an adaptation project to be undertaken.

Projects on a more immediate time horizon should be funded using funding sources contemplated under s101(3) of the Local Government Act. This might extend to purchasing property in at-risk areas and generating cost recovery revenue.



Five Principles of the Funding Model

1. Provided that ability to pay is not made manifestly unreasonable, the apportionment of costs to respond to natural hazards must fairly reflect the public / private benefit of each response; costs should be borne by those who benefit.
2. Social impact outcomes arising from different coastal hazard responses must be clearly understood and measured as part of any decision making process.
3. Current generations of ratepayers should bear a reasonable share of funding responsibility for future coastal hazard responses.
4. Collaboration between partner Councils will provide the optimal and most equitable funding model for coastal hazard responses.
5. Funding of infrastructure responses to coastal hazards should be matched as closely as possible to the long term nature of such expenditure.

Recommendations

It is recommended that the partner Councils:

Recommendation One

Advocate for, and be part of, a Local Government Risk Agency-led forum to develop a public / private sector fiscal response to coastal adaptation caused by sea-level rise.

Recommendation Two

Adopt the principle of a collaborative approach between the partner Councils to future funding solutions for coastal hazard resilience projects, based on a whole-of-coastline perspective.

Recommendation Three

Endorse the concept of a Coastal Response Contributory Fund (CRCF) and request Council senior management to develop a draft Heads of Agreement for Councils to consider, covering matters including (but not limited to) governance, objectives, ring-fencing of funding, and future scope of operation.

Recommendation Four

Recognise that social impact on coastal communities arising from coastal resilience projects requires robust consultation, systematic identification of potential outcomes, and measurement of impact using recognised financial proxy methodologies and endorse the adoption of such an approach in future hazard evaluation.

Recommendation Five

Endorse the concept that the CRCF will, amongst other roles, co-ordinate detailed future applications and approaches to central government for fiscal assistance on specific projects.

Recommendation Six

Support in principle that larger infrastructure projects should be funded using debt instruments that broadly match the longer lifespan and intergenerational benefit of such projects in preference to relying on current ratepayers.

Recommendation Seven

Investigate the issue of long term resilience bonds that might be purchased by institutional investors who have a direct interest in coastal hazard management.

Stage Two – Clifton to Tangoio Coastal Hazards Strategy 2120: Hazards Response Funding Model

Part Two: Main Report

August 2016



Environmental Management Services

Contents

1.0	Introduction	2
2.0	Identification of stakeholders in funding solutions	3
2.1	Central Government	3
2.2	Insurance sector	6
2.3	EQC	8
2.4	Banking Sector	10
2.5	Summary	10
3.0	Different funding concepts	12
3.1	Adaptation Options – Incidence and Timing of Costs	12
3.2	Intergenerational versus short-term expenditure	14
3.3	Sources of Funds available to Councils	16
4.0	Determining allocation principles for who should pay	17
4.1	Regulatory framework for funding	17
4.2	Summary of Regulatory Framework	20
5.0	Public and private benefit characteristics	21
5.1	Direct benefit versus ability to pay	21
5.2	Regional Council versus Local Authority Funding	22
6.0	Methodologies for measuring social impact	24
6.1	Why social costs and impacts are important	24
6.2	Current Practice	24
6.3	What is meant by “social impact”?	25
6.4	How is social impact measurement undertaken?	25
6.5	Utilisation of Social Impact Measurement under MCDA process	27
7.0	The funding toolkit and response methodology	29
7.1	Contributory funding under a collaborative governance structure	29
7.2	More immediate / short term coastal hazard responses - funding options	31
7.3	Coastal Response Long Term Bonds	32

1.0 Introduction

Hawke's Bay Regional Council (HBRC) Hastings District Council (HCC) and Napier City Council (NCC) have formed a Joint Committee responsible for the development of the Clifton to Tangoio Coastal Hazard Strategy 2120.

The Strategy is being developed in four stages:

Stage One: Define the Problem

Stage Two: Framework for Decisions

Stage Three: Develop Responses

Stage Four: Respond

Stage One work undertaken by Tonkin and Taylor has been completed and includes an assessment of coastal erosion, storm surge inundation and tsunami risks for each distinct part of the Clifton to Tangoio coastline.

Where hazards are identified, the technical assessment will also help to inform a management strategy for each cell which will likely involve one or more of the following options:

- Managed retreat - a retreat in the face of a coastal hazard, such as
 - Withdrawing;
 - Relocation; or
 - Abandonment
- Hold the line – defend / manage natural processes with protection works, and
- Maintain status quo – do nothing / monitor / private owner's responsibility

For decisions to be made between these options a structured framework is required in which multiple criteria are established and weightings applied to arrive at an optimal management strategy. This is referred to as "Multi Criteria Decision Analysis" (MCDA) and a template for this process forms part of the Stage Two report for which EMS / Maven have been contracted.

The other, and closely related, part of Stage Two involves the establishment of funding guidelines to determine how the costs of protection work, relocation or other strategies might be funded and allocated between beneficiaries. This includes the identification of some suitable process for economic assessment of social impacts arising from the risk management strategies. The guidelines also include the identification and evaluation of alternative forms of funding taking into account the long term nature of the project.

These matters are the subject of this report.

2.0 Identification of stakeholders in funding solutions

While it is seemingly apparent that the primary fiscal liability for coastal hazard responses will fall on private property owners and local authorities, it is important to consider whether other stakeholders have a financial interest in the management of responses to the extent that they might also participate in some way with the funding of resilience options, and in doing so reduce the local fiscal burden.

This section considers the range of potential stakeholders in future coastal hazard responses and the potential role they might have in contributing to the financial cost of mitigation. The analysis below is based on relevant research as well as conclusions reached from interviews with key people in the various sectors.

2.1 Central Government

General Overview

A report by the Parliamentary Commissioner for the Environment (PCE)¹ in November 2015 included some commentary on the fiscal risks associated with managing sea level risk around coastal New Zealand.

In that report the PCE noted:

“Little thinking has been done on how to implement a managed retreat strategy. The critical factor is scale – with scale will come the uprooting of entire communities and the associated financial cost. But the alternative to managing an inevitable retreat will be leaving people living in homes that become uninsurable and then uninhabitable.

New Zealanders have an expectation that central government will provide financial assistance for those affected by natural disasters. Local Government New Zealand has suggested that a financial mechanism similar to the Earthquake Commission fund could be created to assist with managed retreat.

It is not too soon to consider the economic and fiscal risks of sea level rise, and include the forward liability into planning and investment decisions. This will require input from representatives of a range of interests – local government, coastal residents and landowners, the insurance and banking industries, and infrastructure providers”.

The PCE concluded with a recommendation on fiscal risk - to establish a working group to assess and prepare for the economic and fiscal implications of sea level rise.

A further reason for central government to assist in funding local authorities (on a more general scale than coastal hazard management) comes from a 2007 discussion paper by Covec². The report noted there are efficiency reasons for grants from central government to local authorities including:

- Tax efficiency – because central government has access to sources of revenue that are not available to local authorities (e.g. fuel tax, income tax), and in some cases it may be more efficient to use these than rely (or rely more heavily) on local sources (such as general ratepayer base).
- Policy efficiency – to reflect the fact that some central government policies impose costly obligations on local government and where central government is obliged to pay grants to

¹ Preparing New Zealand for rising seas: Certainty and Uncertainty - November 2015

² Non-rates funding options available to Local Authorities – July 2007 – John Small - Covec Limited

local authorities for the implementation of such policies there is likely to be more discipline on policy makers.

Ultimately, whether central government would accept a role in funding a share of coastal hazard management is likely to be underpinned by two key drivers.

Firstly, central government involvement is more likely if the required expenditure has national benefit. Covec's 2007 analysis suggests that by far the largest percentage of central government grant to local authorities is paid to fund roading and transport³.

LGNZ has taken the co-funding argument further with its suggestion that "The Transport Agency co-funding model could provide a blueprint for sharing costs between central and local government in other areas with national and local benefits, for example water infrastructure"⁴.

National benefit that arises from active coastal hazard management could occur if, for example:

1. An environmental habitat of national importance was threatened by sea level rise or increased storm damage potential;
2. Significant international tourism attractions might be compromised by inaction; or
3. Where infrastructure, though locally sited, is available to be used by everyone.

A further dimension that shifts momentum to central government funding is where a smaller local authority has potential coastal hazard management costs that are well beyond its ability to fund from a small ratepayer base. This principle is addressed in road funding through the application of a "financial assistance rate" (FAR). Areas with high costs and low rate bases receive a differential FAR benefit from central government.

The extension of FAR methodology to some central government funding for coastal hazard management may well be justified for smaller local authorities in the Hawke's Bay region. But first, there is a need for central government to accept that it has a funding role to play.

Secondly, and as the PCE suggests, if sea level rises and increased storm damage result in the threat of significant personal financial losses on a national scale (mainly because the private sector underwriting has become prohibitively expensive or non-existent), then there is an expectation that central government will step in, perhaps via a specific underwriting scheme through EQC. This possibility is discussed further below.

Recent Government Policy - Observations

In the past few years, Government has been working on a National Environmental Standard⁵ for natural hazards but progress has been limited. . The Minister for the Environment has recently decided that a National Policy Statement⁶ (NPS) is instead required for all natural hazards, but nothing is likely to happen until the RMA Reform Bill has been passed (i.e. later in 2016). The NPS will then need to go through two stages of consultation – whether the NPS is itself the right tool for the purpose, and secondly what should be contained within it. The scope of the NPS has not yet been worked out but it will focus on things like risk, hazard, property damage and who is going to pay.

³ Ibid – Page 7.

⁴ Local Government Funding Review – A discussion paper – February 2015 – LGNZ – Page 39

⁵ A NES focus is on technical standards and requirements for the wording of plan provisions.

⁶ A NPS has the purpose of stating objectives and policies for matters of national significance for planning provisions.

However an NPS can only direct through RMA instruments such as regional and district plans, and land use consents. It is primarily a forward planning tool, rather than dealing with current situations.

Councils are quite able to customise new land use consents. They can, for example, issue time-limited land use consents or make relocation a permitted activity if structures need to be shifted within certain distances, or require bonds to facilitate payment for future works. However at a political level this is often difficult to do.

The history of central Government initiatives in relation to coastal and flood hazard risk is marked by previous abandoned attempts. For example, a 2000 NES on sea level rises, and a 2008 NPS on flood risk management never proceeded to approval stage. MFE has issued two documents (both in 2008) that are of relevance (non statutory guidelines) covering Coastal Hazard and Climate Change, and Flooding and Climate Change. The first is currently being amended and will be issued as a new guidance statement later in 2016. It will address three additional matters:

- The IPCC assessment down-scaled to NZ and set across different time periods – 2040 / 2090;
- The NZ Coastal Policy Statement that was introduced in 2010; and
- The PCE's 2015 report and recommendations.

This history suggests that Government progress has been high-level focussed with limited guidance in relation to a risk management approach. The current challenge for central Government is considered to be stepping through a technical hazard assessment and providing a more constructive approach to decision making / regulatory controls especially looking at issues based on a national perspective and experience.

In the context of funding coastal hazard responses, in 1993 central Government agreed to fund 60% of the infrastructure rebuild after a major natural event. In June 2015 Government established a Panel to investigate and report (inter alia) on how local government is managing and mitigating its risk before any such event occurs. Sector comment suggests that the management of this risk is likely to come under the Local Government New Zealand promulgated Local Government Risk Agency which (it is understood) will receive government funding, and commence activity in 2017.

Although central Government has not yet committed to any funding of resilience work for coastal hazard management, our impression is that it would be receptive to a hazard response funding proposal from a local authority consortium provided the following elements were clearly demonstrated:-

- Evidence of strong community engagement and consultation in selecting the preferred option. (I.e. that there were "no regrets" – perhaps borne out of the Christchurch experience where stakeholder opinion on rebuild has been extremely divided). In MFE's view the consultation process would likely be an extremely critical factor in any central Government funding support.
- Regional development benefits. The current Government has assigned a high priority to reinvigorating under-performing regional economies.
- Strong evidence of technical and scientific assessment including multi-criteria decision analysis and trigger point analysis (i.e. why is this being done now rather than later); and
- Funding disciplines that have been exercised, and why central Government support is also required.

Strong due diligence and collaborative approaches on the above criteria, in support of a funding application for resilience projects, would also help Government in setting standards and guidelines for other regions looking for similar support.

2.2 Insurance sector

General Overview

A useful discussion of the effect on the insurance industry in meeting claims for natural hazard events is in a 2014 publication by LGNZ⁷. The authors note that:

“over the past 30 years, the insurance industry has paid out \$28.3 billion (or, on average, \$913 million per year) for damage caused by major natural hazard events. The data is, of course skewed by the enormous Canterbury earthquake pay-out (and projected pay-out) of \$26.6 billion (including \$12 billion from EQC). Excluding that event, the pay-out is still \$1.66 billion (or \$53.5 million per year). In seven of the past 30 years the annual insurance pay-out had exceeded \$100 million. Four of those seven \$100 million plus pay-outs have occurred since 2005. Other costs would be associated with uninsured items.

Second [ranking] in terms of insurance payment (after earthquakes) is flooding with a combined total (for about 60 flood major events) of approximately \$865 million since 1969 (in 2011 dollar terms).”⁸

These claim costs arise from unforeseen natural hazard events. Where the potential for natural hazard events is exacerbated by foreseeable occurrences (e.g. sea level rise which worsens the effects of storm damage on private property and infrastructure), then the insurance industry acts to mitigate its claim exposure.

Appearing before the Local Government and Environment Select committee in February 2015, the PCE commented:

“the response from the insurance industry to sea level rise will be the same as what we are seeing in Christchurch. With increased frequency of flooding you get premiums being raised as a first step, then you get higher excesses in policies and then you get ‘no, we are not going to insure you at all because this flooding is just happening too often’. So there are very real economic impacts associated with this.”⁹

In a perfect market, owners of private property and public infrastructure assets would respond to the price signals of insurance companies in relation to underwriting flood and damage risk from increasing coastal hazards. However the Insurance Council of New Zealand has made the point that a large part of any insurance premium on a residential property is not related to the actual risk present at the property. Well over one third of the cost is the Fire Service Levy and the EQC levy with GST on top of those costs¹⁰.

LGNZ considers that “masking of real risk is also exacerbated by EQC which is obliged to offer near universal, non-risk based residential cover, muting any price signals that would otherwise incentivise

⁷ Managing natural hazard risk in New Zealand – towards more resilient communities. A think piece for local and central government and others with a role in managing natural hazards. October 2014

⁸ Ibid Page 13

⁹ <http://www.interest.co.nz/property/74139/commissioner-warns-property-owners-banks-and-insurers-are-focusing-more-risks-rising>

¹⁰ Protecting New Zealand from Natural Hazards – Insurance Council of New Zealand – October 2014

risk responsive behaviour by property owners". The EQC's position on coastal hazard risk is discussed further below.

LGNZ notes that mortgage lenders ought also to have some financial interest in the future viability of property assets, but appear to be reliant upon the owner having adequate insurance as their prime security for recovery of loans in the event that a property asset is seriously compromised or destroyed by a natural event.

Current Perspective on Industry

At first glance, it is tempting to consider that the insurance industry is exposed to coastal hazard and resulting flood risk and might therefore consider bearing some of the adaptation cost to reduce that risk and potential claims. However the insurance industry as a whole is not aiming for *elimination* of risk but rather the *transfer* of risk from one party to another. As risk transfer becomes more difficult, premiums increase to incentivise the transferee to accept that risk. Where risk becomes too great to transfer, then the sector has the absolute right not to insure. In the end, it is a voluntary market. Thus, at least on pure financial logic there is no incentive to fund adaptation projects when the industry could simply withdraw from underwriting property risks in vulnerable areas.

However the private insurance sector is also concerned with public perception and reputational risk. Triggering exit clauses in private property insurance is likely to be seen as a last resort to be best avoided by pre-emptive co-operation. The industry is therefore motivated to find ways in which private property owners in affected coastal areas can react in a timely way. So a challenge for the industry is to participate in a conversation with communities without alarming them unnecessarily, causing panic, and /or causing tainting effects on property values.

One way to achieve this is for insurance companies to provide more timely pricing signals to insured property owners such as to encourage positive adaptation responses.

However, in the competitive insurance industry, pricing signals that would act as triggers for relocation or adaptation are likely to be somewhat attenuated. Typically, pricing and risk is a function of scaling such as can be seen in the following example.

- AEP is 1:100 - pricing and excesses remain as they are;
- AEP is 1: 50 - premium may increase;
- AEP is < 1: 50 - higher excesses will come into play;
- AEP is 1:20 or below - insurer might refuse to insure for specific events – i.e. flooding / inundation but will provide cover on others.
- In a worst case insurer might cease to insure for any type of cover.

As previously noted, insurance pricing is not a timely signal for adaptation response in any event because it is also smoothed by EQC and Fire levies, and the effect of GST.

A typical insurance pricing strategy might also encompass the following elements:-

- Competitive pressure remains important – i.e. maintain market share;
- There has been a change in the way that building insurance is priced, away from the purpose for which the buildings are used, towards the type of construction standards that have been, or are being, used; and (importantly),
- Insurers are increasingly more interested in hazard lines – pricing on zones rather than AEP type risk. The industry is probably 5-10 years away from adopting this changed approach to pricing flood inundation insurance risk.

Our impression from dialogue with participants is that the industry is a substantial investor in debt securities and (given its appetite to become involved in coastal adaptation issues), would be attracted to “resilience bonds” or climate bonds as an interest-bearing financial instrument designed to fund future adaptation works and strategies. In other words, as long as there is the prospect of a reasonable earnings stream, the purpose of the bonds would be philosophically comfortable for insurance companies as an investment option.

The insurance industry appears willing to take a more active role in helping to manage fiscal risks associated with coastal hazards and adaptation. Some participants saw merit in bringing together a working group of key stakeholders to consider a possible scope such as:

- How stakeholders could develop a cohesive position on their interest in incentivising, accelerating and implementing resilience projects (with a particular focus on managed retreat);
- The identification of specific roles and interests for each party;
- What financial tools or other incentives were available to each party to facilitate and encourage the process of transitioning; and
- How the engagement process could be rolled out to affected communities.

The working group concept appears to have real merits in the context of meeting co-ordinated adaptation and fiscal challenges, and is a project that should be taken further, perhaps led by LGNZ. This idea is included in this report’s recommendations.

In summary, the response from the private sector insurance industry to the management of fiscal risk and funding of coastal hazard mitigation is generally positive, though it is difficult to see any direct funding coming from that sector. On the other hand, it appears the industry has a strong interest in furthering a discussion around signals and incentives to encourage property owners to make adaptation decisions that are both timely and rational. Additionally, funding mechanisms for future resilience works (such as the raising of interest bearing infrastructure bonds) would likely be positively supported and subscribed for by insurance companies. Long term funding is discussed later in this paper under Section 7.

2.3 EQC

Working in partnership with private insurance companies, the EQC provides homeowners with a significant block of insurance cover against natural disasters that is both affordable and costs the same nationwide. This keeps total premiums for insurance covering these perils affordable for most homeowners. A consequence of the EQC scheme is that New Zealand has one of the highest rates of private residential insurance cover (>90%) in the world.

The EQC scheme currently provides EQC cover for insured residential property damaged by earthquake, volcanic eruption, hydrothermal activity, landslip, tsunami or fire caused by natural disaster. Maximum cover for each event is up to \$20,000 + GST for personal property (contents) and \$100,000 + GST for each dwelling. EQC land cover is complex but primarily relates to land under and within 8 metres of an insured dwelling and any appurtenant structures (such as garages), as well as certain retaining walls, bridges and culverts. Land cover also includes damage caused by a storm or flood.

The commission’s insurance cover does not include land or buildings damaged by coastal erosion, land slips or other subsidence. Damage caused by sea level rise is also not covered, but tsunami damage is specifically identified as a natural hazard that is covered.

EQC is increasingly challenged by how to deal with the occurrence of storm or flood damage that is exacerbated by sea level rises. The commission is bound by statutory requirements in the EQC Act and, under current law, re-insurers would likely have regard to whether it had acted outside statute in paying out on claims for storm or flood damage that were exacerbated by sea level rise. So far as we are aware, the issue of a claim to EQC being made under these circumstances has yet to be tested.

As noted above, the flat rate pricing used by EQC and embedded in insurance premiums has the effect of smoothing any triggers for retreat or relocation in properties that are at higher risk of inundation. Thus EQC's involvement is a double-edged sword in that price signals for insurance cover for coastal properties are muted by the flat-rate EQC premium, which then does not cover damage from coastal erosion or sea level rise anyway.

A Treasury-led review of the EQC Act is currently in progress. It seems unlikely that this will lead to any change in the flat-rate approach to pricing. The primary reason is that if differential pricing was introduced, insurance would become unaffordable to people in some areas and ultimately the consequences of a natural disaster would fall back on the Crown to fund¹¹.

On the positive side, EQC is actively supporting research and education and is directly funding some of the cost associated with the investigation and establishment of the proposed Local Government Risk Agency.

Social policy – high risk / high cost challenges

In developed countries particularly, there is a social policy issue around how to keep insurance affordable and accessible to private property owners. As noted above, this is the primary role of EQC in New Zealand, but another interesting example in the context of flooding is the Flood RE¹² scheme in the UK. The insurance industry depends on the core principle of "many paying for the few". In the case of the UK there is an increasing problem with floods in low lying areas, and the many / few principle does not work because those on high ground do not wish to pay for flood insurance (because they simply do not need it). The only people who want insurance protection against flooding events are those prone to its occurrence. The Flood RE scheme is sponsored by the UK government such that there is a levy on all household insurance which is used to fund / subsidise the cost of insurance for those in low lying areas.

This kind of subsidy insurance is not thought to be sustainable in the long term. As flood claims increase, the amount of the subsidy to all insurance payers will become more and more unaffordable, and those without exposure to flooding risks will become increasingly unwilling to contribute to the scheme. So any Flood RE scheme has to be finite, and coupled with an adaptation programme.

Our impression from discussions with the Commission is that EQC is increasingly aware of sea level rise and potential consequences for coastal communities. One central problem is that the EQC's statutory framework is designed to provide insurance cover for low risk / high cost natural disasters. Sea level rise (and related consequences) are actually high risk (because, even though long-dated in nature, the risk is already a reality in more vulnerable coastal areas) / high cost events. These are the same risk characteristics that are evident in the UK's Flood RE scheme described above which is not thought to be sustainable in the longer term.

¹¹ Another reason is it is almost impossible to assess differential risks through catastrophe modelling. If, historically, EQC had had geographically risk-based premiums, EQC premiums for Christchurch would have been about a quarter those of Wellington. Yet claims from the Canterbury earthquakes will entirely exhaust the Natural Disaster Fund.

¹² RE stands for reinsurance

EQC – Potential Stakeholder

In other areas of central government there is growing recognition that it will need to look at fiscal risk and insurance cover for the consequential effects of storm damage, flooding and coastal erosion caused by rising sea levels. It is possible that the review of the EQC Act may provide an opportunity to widen the scope of EQC's insurance cover. If that happened, then, because it is a mandatory participant in the insurance industry (unlike the voluntary market that exists for private insurers), EQC may become incentivised to participate in preventive management of such risk through contribution to funding of resilience projects.

In fact, EQC has in the past been involved in funding construction projects such as retaining walls where there is "imminent loss" arising from natural land slips or earthquakes.

Another theme is the possibility proffered in the Treasury review that the Government wants EQC to explore alternative risk financing instruments, where these offer a more efficient approach. To explicitly provide for this, the Government proposes that the new EQC Act will state that EQC may purchase other types of risk financing instruments.

The potential position of EQC in relation to insuring and mitigating coastal hazards is important for future reference, and it is apparent that EQC itself has an interest to be involved in working groups considering mitigation issues such as those discussed above.

2.4 Banking Sector

At first glance, if insurance cover is cancelled for a property that is the subject of existing mortgage lending, a Bank may find itself exposed to total loss (since the affected property is, by then, likely to have close to zero market value). But realistically, larger banks would easily be able to withstand a small number of property losses given the total size of their loan portfolio and loss provisioning. The issue for banks is more likely to be a reputational one, especially in the event that the bank then sought to recover its loss by pursuing the affected property owners personally, as unsecured debtors or guarantors.

For new mortgage applications, Banks will take a long term view of the coastal hazard risk and whether, at some point in the future (and prior to final repayment of a mortgage loan), the property will become uninsurable. This may lead to at-risk coastal property values declining in a market where only buyers who do not need to borrow (or need only short-term loans) will be present.

Since the banking sector has choice as to whether it lends against at-risk coastal properties, and has the financial strength to absorb losses on current mortgage lending should they arise, it is difficult to envisage any reason why the sector should take any fiscal interest in adaptation responses.

Nevertheless it is anticipated that the banking sector will be a significant participant in ongoing stakeholder discussions around the management of coastal hazard responses.

2.5 Summary

Taken as a whole several points emerge from this section on potential stakeholders in the development of a funding model.

- The issue of mitigating fiscal risk arising from sea level rises and increased storm damage to coastal areas is both live and topical for central Government (as at the date of this report). The discussion has gained momentum in the past twelve months with ongoing policy work by the Ministry for the Environment, ex post facto reviews of the Christchurch disaster response, the recent report of the PCE, and general worldwide attention focussed on climate change.




- The machinery of government is responding in a typical way - focussing initially on policy responses, analysis of the problem, monitoring and compliance. Focus has not yet really turned to fiscal risk and responsibility, which means that local authorities and private property owners remain the first port of call for funding solutions in the immediate future. There is the possibility however that a well-conceived and strongly supported (through robust consultation) mitigation scheme would be positively considered for partial funding by central government. As with any fiscal scheme that is leading-edge for central government, it would likely involve a significant amount of due diligence and negotiation, taking many months to process through affected agencies.
- The insurance and banking sectors are beginning to consider mitigation but are not inclined to invest in pre-emptive responses, either because theirs is a voluntary market and can be withdrawn from, or the effect of future losses is immaterial in a wider loan or insurance portfolio context. They can be absorbed within overall loss provisioning.
- Within the insurance sector, EQC is something of an exception because it is a disaster relief insurance scheme underpinned by statute, and ultimately guaranteed by the Crown. Through flat-pricing, it acts to moderate insurance premiums that might otherwise be unaffordable in higher risk areas. EQC cover does not apply to coastal erosion or sea level rises, but there is an emerging problem where flooding and inundation from storm events is exacerbated by sea level rises.
- All the stakeholders spoken to expressed an interest in working collaboratively on managing fiscal risk and mitigation responses, perhaps under the aegis of the Local Government Risk Agency that is expected to be formed (with government funding support) in 2017.

3.0 Different funding concepts

Notwithstanding the potential for involving funding stakeholders to reduce local fiscal burden, effectively responding to coastal hazards risks will inevitably result in substantial cost to Councils and their rate payers. This section considers the sources of funding that are available to Councils to utilise as a means to finance coastal hazard management options.

3.1 Adaptation Options – Incidence and Timing of Costs

Available adaptation options and associated costs fall into three broad categories as shown in the following diagram:

Model	 Managed Retreat Withdrawal, relocation, abandonment	 Hold the line Walls, dykes, groynes, raising structures, beach nourishment, etc.	 Maintain status quo Do nothing, monitor, individual owners responsibility to act as required
Private Costs	<ul style="list-style-type: none"> • Direct costs borne by those who stand to benefit from expenditure • Existing house and land value • Relocation costs to higher ground 	<ul style="list-style-type: none"> • Share of costs borne by those who stand to benefit from hold-the-line expenditure 	<ul style="list-style-type: none"> • Temporary protection works (may be unconsented) • Repairs and maintenance • Eventual relocation
Public Costs	<ul style="list-style-type: none"> • Write down of existing water, sewerage, storm-water, roads, park infrastructure, public amenities • Replacement of essential infrastructure • Social impact – environmental, cultural and social costs • Ongoing costs of hazard monitoring and assessment 	<ul style="list-style-type: none"> • Project management • Share of costs reflecting protection of existing infrastructure • Share of costs reflecting social impact - environmental, cultural and social costs • Ongoing costs of hazard monitoring and assessment. • Co-ordination, facilitation, funding 	<ul style="list-style-type: none"> • Adaptation costs, over time, of local services, water, storm-water, roads and parks, public amenities • Social impact – environmental, cultural and social costs • Ongoing costs of hazard monitoring and assessment.

	<ul style="list-style-type: none"> Co-ordination, facilitation, funding mechanisms and collection 	mechanisms and collection	
Finding a balance	<ul style="list-style-type: none"> More readily attributable to direct beneficiaries Private / public share may reflect the ability to pay. (e.g. no insurance) 	<ul style="list-style-type: none"> Often preferred by private owners because a strongly argued case for social impact can shift adaptation costs towards public funding. Is perceived to avoid changes to current lifestyle. 	<ul style="list-style-type: none"> Costs fall where they lie, but will lead to uncoordinated actions which may cause exacerbated coastal hazards / unsightly structures

The status quo option results in largely unplanned and reactive spending when encroaching water levels and storm events provide no alternative. Such costs would be incurred by affected parties on an ad-hoc / as required basis. Ultimately, relocation is likely to become the only available response for some properties / assets.

Managed retreat and hold-the-line options are staged responses over a longer time frame. Timing of the response would be based on Benefit : Cost Analysis where:

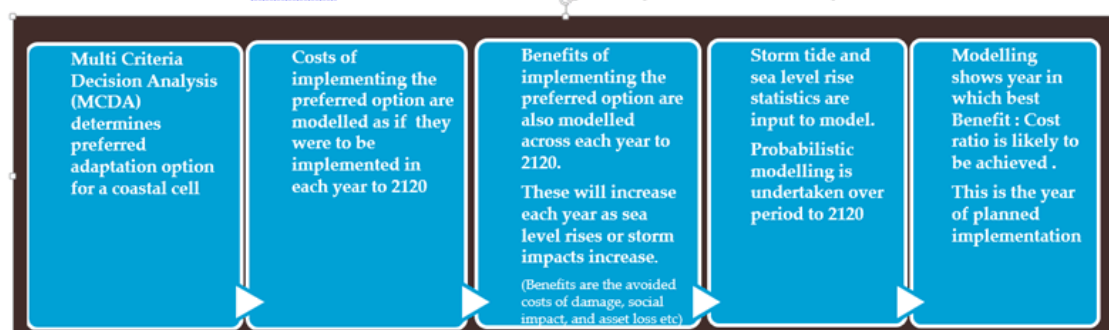
- Cost is the actual cost of undertaking an option – i.e. retreat / relocation / defend. The cost is an estimate of physical works and /or adaptation costs.
- Benefits are the damage costs avoided by adopting a preferred option. These costs are estimated based on modelled hazards risks and their interaction with property / assets along the coast. It follows that actual damage costs are also equated with a Do Nothing strategy.

Damage costs would be assessed across various hazard event and sea level rise projections¹³.

Assessment includes monte-carlo simulation via specialised software to run thousands of scenarios across (say) 100 year period. These scenarios are then probability weighted and expressed as net present values to determine the best point at which to undertake the preferred option.

The probability model is designed to enable the local authorities (acting collaboratively) to determine the optimal time at which to execute Preferred Management Option strategies.

Benefit : Cost Ratios – Modelling the Optimal Time to Respond



¹³ It is noted that Tonkin and Taylor's Stage One Coastal Hazard Assessment (May 2016) already includes some damage assessment for each cell identified in that report.

The selection of preferred responses and the identification of optimal timing to implement those responses will occur in later stages of this strategy and is therefore not addressed further in this report. It will be ongoing work by the Technical Advisory Group, because it forms an important part of how the funding model should be constructed.

3.2 Intergenerational versus short-term expenditure

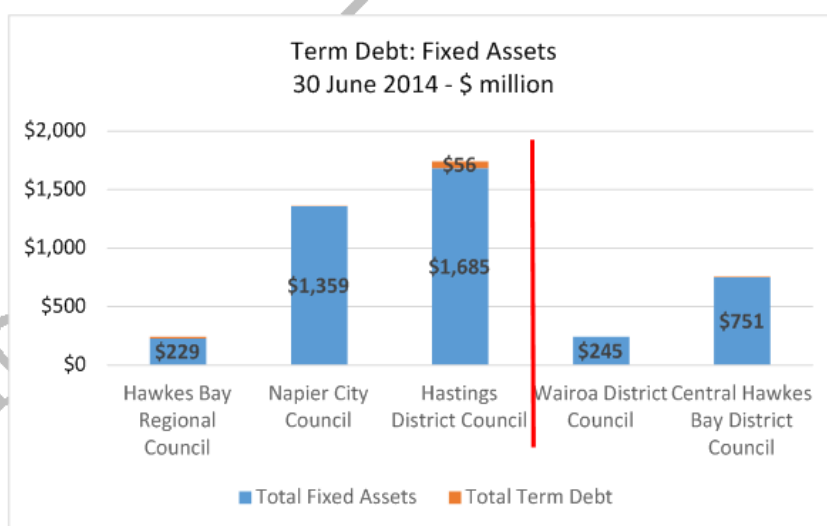
The share of costs that will be incurred by the local authorities to fund (for example) infrastructure relocation or their share of protection works for coastal hazard mitigation, is, by nature, intergenerational expenditure. It is not unreasonable to expect such mitigation projects to last for several decades and to benefit future, as well as current generations.

An issue for consideration therefore is whether the local authorities should be funding intergenerational expenditure like this from current sources of funding (typically the general ratepayer base).

A 2013 review of local government infrastructure efficiency¹⁴ noted:

“the complexity and risks inherent in funding, financing and charging for infrastructure. Reliance on rates for funding infrastructure does not necessarily lead to optimal outcomes, as these assets are by nature long life and rely on long term stable planning and funding. There is a wide range of options which councils need to comprehensively and carefully consider.....”

A very low level of debt gearing (as an alternative to immediate funding from general ratepayer base) to finance longer-term infrastructure was identified in the 2013 review across all local authorities. This can be seen in the following graph which relates debt funding to fixed assets for local authorities in the Hawke's Bay area. Only Hastings District Council had debt funding of any significance, and even then, still only 3.3% of total fixed assets.



Source: Statistics New Zealand - Local Authority Financial Statistics

In the context of coastal hazard mitigation, there is a solid argument to be made for funding that could be developed through the use of longer term debt instruments.

The Clifton to Tangoio Coastal Hazards Strategy 2120 aims to develop a coastal hazard strategy through to 2120 – a period spanning 104 years. Throughout this period hazards will reach a trigger

¹⁴Report of the Local Government Infrastructure Efficiency Expert Advisory Group March 2013

point where adaptation responses are necessary. Further scenario modelling based on the technical assessment by Tonkin and Taylor, and MCDA analysis discussed above, will allow the Councils to plan for optimal years in which adaptation work should occur.

In considering hazards as they will emerge over the next 100 years, the fiscal liability for adaptation management will need to adopt an inter-generational approach. It is not equitable for today's generation of ratepayers to pay for all of the cost of adaptation infrastructure that will last many decades into the future, and which may not need to be implemented for some decades yet.

Nevertheless, today's generation has developed the science and engineering skills that enable us to analyse, recognise and respond to an emerging problem to which we (and our predecessors) have anthropomorphically contributed to through climate change and intervention in coastal processes, with resultant adverse effects.

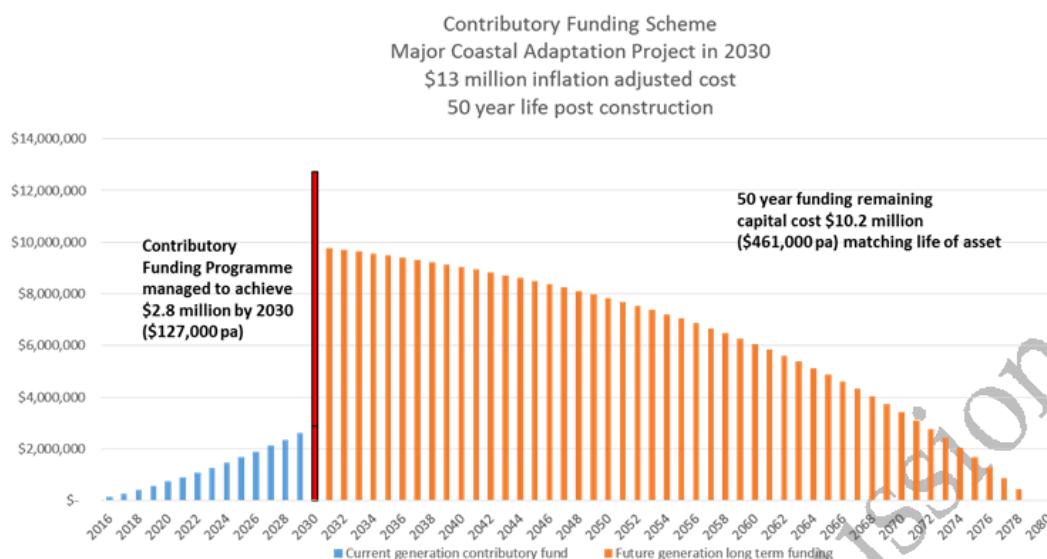
This sharing of responsibility between generations suggests a contributory funding approach to accumulate an equitable share of the future capital costs of an adaptation project, the balance of which would then be funded by future generations of ratepayers (or debt funded as the case may be). This approach is clearly contemplated by s101(3)(a)(iii) of the Local Government Act, discussed in Section 4.

The question is how much of the future funding liability for coastal hazard management should be absorbed by current ratepayers. One way to think about this is the total lifespan of a hazard response project.

For example, suppose that scenario modelling (referred to earlier) suggests an optimal time of 2030 for new roads to be relocated further inland, to replace existing roads that will no longer be sustainable because of the cumulative effects of coastal erosion. The project will cost \$10 million in today's dollars. Once constructed, the new roads will then have a working life of fifty years. Although current ratepayers have only a limited prospect of benefiting from the new infrastructure to be built in fourteen years' time, they are at least in part responsible for the capital spending that will be required because they have contributed to current and historical actions that have led to the coastal erosion problem.

The total lifespan of the project is 64 years (fourteen years to 2030, plus the fifty year life of the new infrastructure). Therefore current ratepayers might equitably contribute 14/64ths of the future cost. If we assume that, after inflation, the new roading built in 2030 will cost \$13 million, the funding of the project would require a contributory fund to raise \$2.8 million by that date (14/64ths of \$13million).

This funding concept can be presented in the following diagram.



We return to contributory funding as a financing tool under the Section 7 of this report – Funding Toolkit and Methodologies.

3.3 Sources of Funds available to Councils

S102 of the Local Government Act describes the requirements for funding and financial policies, included in which is a Revenue and Financing Policy. The section requires an explanation, in terms of the matters required to be considered under section 101(3), why the local authority has determined to use these funding sources to meet the expected total cost of capital expenditure.

Revenue and Financing Policy is further prescribed under s103 in which a local authority is required to declare its funding policy for both operating and capital expenditure. The sources from which funding can be derived give local authorities very wide discretion. They include (but are not limited to):

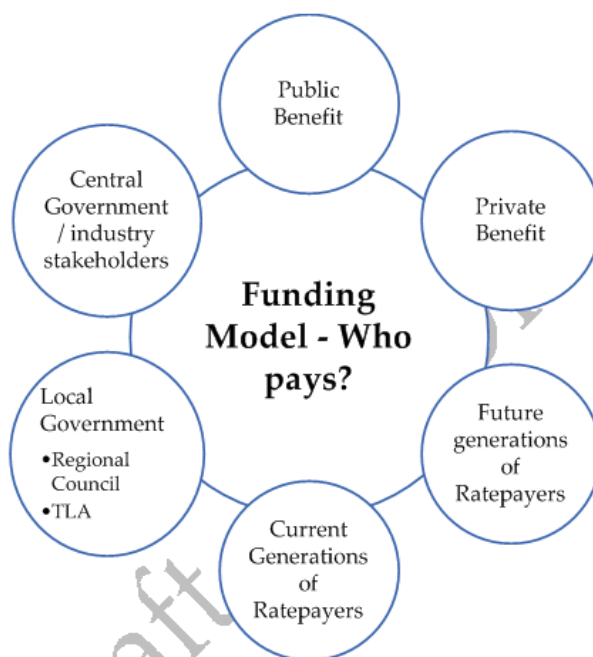
- General and targeted rates
- Lump sum contributions
- Fees and charges
- Asset sales
- Borrowing
- Development and financial contributions
- Grants and subsidies
- Any other source

Development and “financial contributions” are similar in nature, being those usually associated with a private sector funded project that generates a demand for reserves, network infrastructure, or community infrastructure. Financial contributions appear to be used in connection with resource consent applications where they are specifically defined in s108(9) of the Resource Management Act 1991.

4.0 Determining allocation principles for who should pay

Thus far we have identified an inter-generational aspect to coastal hazard adaptation work and the need to achieve equitable sharing of costs between generations using a contributory funding approach.

Another aspect of the funding challenge is the distinction between public and private benefit.



4.1 Regulatory framework for funding

The starting point for considering the allocation of coastal hazard management adaptation costs between public and private beneficiaries is the regulatory framework by which Local Authorities are bound in relation to financial management. Allocation principles are described in s101(3) of the Local Government Act 2002.

General considerations - Section 101(3)(a)

s101(3) requires that “funding needs must be met from those sources that the local authority determines to be appropriate, following consideration of¹⁵:-

The community outcomes to which the activity primarily contributes (s101(3)(a)(i)

Community outcomes describe the more general aspirations of local authorities for their specific districts or regions. For example, a thriving local economy, environmental goals, or the facilitation of community engagement that provides for social and cultural wellbeing.

Who benefits (s101 (3) (a) (ii))

¹⁵ Explanatory notes under each of the s101(3)(a) clauses are taken from Taupo District Council 2015 Revenue and Financing Policy, which is considered a fairly typical interpretation of the clauses used by local authorities generally.

Where there is a direct benefit to a user, the primary benefit is to individuals. Where a number of people or specific groups benefit then the primary benefit would be attributed to those groups. Where there is a benefit to the majority of persons or properties across a local authority district then the primary benefit is attributed to the community.

Generally speaking, if only individuals receive the benefits of an activity, some type of user-pays system would typically be considered. Alternatively, if the whole community or a large group within the community benefits then an appropriate funding option for that activity might be the general rate or a targeted rate respectively.

Intergenerational equity (s101 (3) (a) (iii))

Local authorities must consider the period over which the benefits of an activity are expected to occur. The aim is to ensure that costs are shared fairly between today's beneficiaries and future beneficiaries. This is often referred to as intergenerational equity. For operating costs the period of benefit for the rates share is generally ongoing as Local Authorities regularly provide the service.

Benefits from the use of capital facilities and equipment are deemed to occur over the lifetime of the assets and as such will determine the type of funding that Council applies to the activity. Fees and charges recognise that the benefit is generally restricted to the period of use.

An added complication is the allocation of costs for intergenerational "infrastructure assets" that will be built at some point in the future (such as coastal hazard protection works). This is discussed below.

Who contributes to the need for the activity? (s101 (3)(a)(iv))

In choosing the appropriate funding mechanism for an activity, Councils must be mindful of the extent to which the actions or inaction of particular individuals or a group contribute to the need to undertake the activity. Where possible, a contribution from those individuals might appropriately be sought.

Distinct funding (s101 (3) (a) (v))

Councils must think about the costs and benefits of funding an activity distinctly from other activities, including consequences for transparency and accountability. Distinct funding means considering whether it is appropriate to have a separate rate, fee or charge for an activity or service. This is assessed on a case-by-case basis and includes considering the cost and efficiency of collecting separate revenues, the overall complexity of the rating system and the impact on transparency and accountability.

Overall impact of the Method of Funding (s101 (3)(b)) – Flexibility Issues

At the heart of any local authority rating system is the tension between allocating costs according to user benefits, and meeting equity and fairness principles through a system that reflects ratepayers' ability to pay. This is achieved by using capital values of property as an imperfect, but reasonable indicator of ability to pay rates.

Section 101(3)(b) expands the criteria councils are to consider significantly, to include the overall impact of any allocation of liability for revenue needs on the current and future social, economic, environmental, and cultural well-being of the community¹⁶. While s101(3)(b)(a)(iv)¹⁷ may indicate a user-pays type of consideration, the requirement to consider the "overall impact" on current and future aspects of community well-being, particularly the economic and social aspects, could be read as a justification for councils to consider a ratepayer's relative ability to pay when setting rates.

¹⁶ This wording aligns the LGA 2002 with similar wording in the Resource Management Act 1991

¹⁷ S101(3)(b)(a)(iv) - the extent to which the actions or inaction of particular individuals or a group contribute to the need to undertake the activity.

A good example in this context might be swimming pools which, if fully user-funded, would result in higher charges that many people would be unable to afford. Therefore, councils typically tend to fund pools from general rates.

S101(3)(b) is an important regulatory backdrop when considering allocation of local authority costs in relation to coastal hazard management options. It provides a degree of flexibility for local authorities to exercise judgement about user benefits, versus ability to pay.

Further flexibility is also contained in s101(3)(a). While funding “must be met” with appropriate funding methods, councils are only required to consider these; there is no prescription for how this consideration should be applied and no prescription for how certain activities are to be funded. Rather there is a set of factors for councils to consider, presumably with intent to allow councils sufficient autonomy and flexibility to reflect each one.

In a practical sense, these factors result in opportunity for one council to apply the legislative criteria in an entirely different fashion to another council. They provide scope for councils to respond differently to competing choices between aligning perceived “benefit received” with the amount of rates paid, and the community outcomes in terms of relative “ability to pay”. This intra-council flexibility has the potential to create contentious cost allocation issues when dealing with an integrated approach to coastal hazard management.

Infrastructure Assets

It is also relevant to consider the impact of s101B which was an amendment to the Act introduced in August 2014 and deals with Infrastructure Strategy that must be included in the Long Term Plan¹⁸. Coastal hazard management responses are included in the provisions of this section by virtue of s101B(6) where infrastructure assets are defined to include (iv) *flood protection and control works* and.....(b) *any other assets that the local authority, in its discretion, wishes to include in the strategy*.

The main provisions of s101B require the establishment of an infrastructure strategy for at least 30 consecutive years. It requires that issues be identified, along with options for their management. Management options must cover (inter alia) the renewal or replacement of assets, planned increase or decrease in levels of service provided through those services, the improvement of environmental outcomes or mitigation of adverse effects. Importantly s101B also requires a Council to “*provide for the resilience of infrastructure assets by identifying and managing risks relating to natural hazards and by making appropriate financial provision for those risks* (emphasis added)”.

In relation to financial matters, s101B(4) requires that Councils:

“(a) show indicative estimates of the projected capital and operating expenditure associated with the management of those assets—

(i) in each of the first 10 years covered by the strategy; and

(ii) in each subsequent period of 5 years covered by the strategy; and

(b) identify—

(i) the significant decisions about capital expenditure the local authority expects it will be required to make; and

(ii) when the local authority expects those decisions will be required; and

¹⁸ This amendment appears to be one of the outcomes from the work of the Local Government Infrastructure Efficiency Expert Advisory Group report in March 2013.

- (iii) for each decision, the principal options the local authority expects to have to consider; and
- (iv) the approximate scale or extent of the costs associated with each decision;”

This section does not, of itself, require the disclosure of how the amount of future costs will be shared under the principles of s101(3), but s101B(4)(b)(i) at least requires local authorities to record that significant decisions will need to be made on this issue. s101B(4)(b)(iii) might also be deemed to require that some general principles and guidelines around cost allocation be disclosed at the same time.

4.2 Summary of Regulatory Framework

From the above discussion it is concluded that Councils have a reasonably high degree of flexibility in determining how large infrastructure capital costs will ultimately be allocated under a rating system. Taken as a whole, s101(3) infers a user-pays approach to cost allocation, but also provides considerable scope for Councils to consider and alleviate the burden of payment to reflect the ratepayers’ ability to pay in principles of fairness and equity, including the concept of intergenerational equity. S101B requires a high level of transparency and disclosure in relation to planned expenditure and the funding of longer term infrastructure assets. Sections 102 and 103 identify the need for a revenue and financing policy to be disclosed including explanation for how s101(3) has been interpreted, as well as a wide range of funding sources that are available to local authorities to access for their financing needs.

So far as we are aware, there is no formulaic, or bright-line test to arrive at a balance between the two objectives – user benefits, and ability to pay. A 2012 study on rating equity¹⁹ suggests that

“...while councils do consider “ability to pay” considerations, they largely apply a “benefit received” framework when allocating rates, at least initially, by considering the relative incidence of benefit from each activity.”

The study added that there is no objective blueprint for the application of rating principles, and some complexity in the range of considerations relevant to questions of rating equity.

¹⁹ Rating Equity in New Zealand’s Local Government – David Cooper, University of Otago, December 2012 (Thesis paper)

5.0 Public and private benefit characteristics

5.1 Direct benefit versus ability to pay

Public good and public benefit, are terms that are often used interchangeably. Public goods have precise economic definitions around non-exclusivity and non-rivalry, but for the purposes of this report, we have preferred the terms “public benefit” and “private benefit”. Public benefit is intuitively easier to understand than the more rigorous economic criteria required for a “public good”, though many public benefits are of course delivered by public goods.

For the purposes of this report, public benefit refers to things which have shared benefit at a societal level in a philosophical and political sense. In the context of things that might apply to coastal hazard adaptation this list includes:-

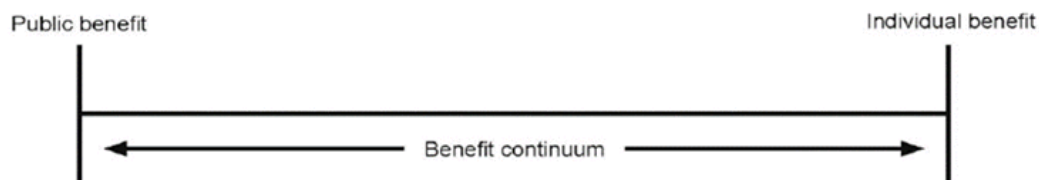
- Environmental protection or enhancement
- Flood protection schemes (but see next comments)
- Public infrastructure – water / roading
- Street lighting
- Improved air quality and land use
- Enhanced economic development

In contrast to “public” benefit, it is considered that “private” benefit means an advantage, privilege, right, financial gain (or avoidance of cost) accruing to an individual, or collective group with common pecuniary interests, rather than society as a whole.

The previous section discussed the degree of regulatory flexibility available to local authorities in making cost allocation decisions, and the tension that exists between user-benefit and ability to pay.

A further dimension to this allocation decision is the balancing of expenditure between public and private benefit. What is the incidence of benefit? Who actually receives the benefit?

Cooper²⁰ describes the distribution of benefit across a continuum:



The local government benefit continuum. The “benefit received” approach is useful for those activities towards the “individual benefit” end of the spectrum; the “ability to pay” approach is more useful for those activities towards the “public benefit” end of the spectrum.

He goes on to note that

*“...where the benefit of an activity is isolated to one group of ratepayers, it is arguably more equitable that a portion, or all, of the associated costs are paid by those particular ratepayers. For instance, **in the council provision of flood protection over a geographical area, where the benefit of the flood protection is largely for those in the immediate area.*** [emphasis added]

A second instance would be where a council takes on the responsibility of promoting commercial interests in a manner that will result in increased business and profits for identifiable sectors of a community. It would arguably not be equitable, for example, for a

²⁰ Ibid

retired couple on restricted incomes and a relatively valuable house to contribute to these activities, given that the activities largely provide direct benefit which accrues to individual ratepayers.

While in both examples used above there is some “wider public benefit” to other ratepayers, it is the relative split between indirect and direct benefit that is important.

.....this is essentially what is required of councils already under S 101 (3) of the Local Government Act (2002). Under this provision councils are to consider the relevant funding tools to reflect this relative incidence of benefit, for each activity.”²¹

It is considered that Cooper’s summary of public and private benefit, the incidence of benefit and ability of users to pay, provides a simple but robust theoretical framework for considering the allocation of coastal adaptation costs.

5.2 Regional Council versus Local Authority Funding

Where coastal hazards affect communities that traverse a number of local authority jurisdictions, it is considered essential that the partner Councils respond collaboratively and consistently.

Inconsistent approaches between jurisdictions will also create challenges. There is a real risk that allocation of costs that err on the side of general ratepayers (perhaps using indirect benefit or ability-to-pay type rationale) will be used as a precedent by direct beneficiaries in a neighbouring jurisdiction who may be subject to a targeted rate, and who perceive that they are being disadvantaged.

A related issue concerns the proportions of Regional Council and Local Authority funding that should be applied to costs associated with coastal hazard responses. At first glance, it might be considered that jurisdictional boundary lines would determine where costs should lie.

The Hawke’s Bay Regional Council (in its Regional Coastal Environment Plan) assumes planning jurisdiction over the “coastal environment” which includes areas to the landward side of the Coastal Marine Area (as defined in s2 of the RMA). These areas include land which might be affected by coastal flooding or erosion, tidal foreshores, dunes and beaches, coastal cliffs, marshes, wetlands, and areas where activities that occur might have a direct connection or impact on the coast.

For their part, the District Plans (Hastings and Napier) each note that their coastal boundary extends to the landward side of the Coastal Marine Zone. Hastings District Plan also refers to HBRC’s use of a “coastal environment” definition for its RCEP, and that an integrated approach is required where there is overlap with the RCEP²². Napier District plan notes that (under s75(1) RMA) its plan must address issues where there is crossover in territorial boundaries, and in particular, observes jurisdictional matters can become confused in the case of Napier Port²³.

For the Clifton to Tangoio coastline therefore, district plans and the RCEP have a degree of territorial cross-over, and, other than where hazard responses clearly fall within one boundary or another, are not particularly helpful as to which authority should pay for what.

Furthermore, (and especially in the Hawke’s Bay context), jurisdictional boundaries do not necessarily reflect the beneficiaries of a particular hazards response where benefits accrue to coastal stakeholders from a much broader geographic area. Cross-jurisdiction sharing of cost can make responses more affordable (on a cost-per-ratepayer basis) and more fairly reflect those that actually stand to benefit.

²¹ Ibid – see page 55.

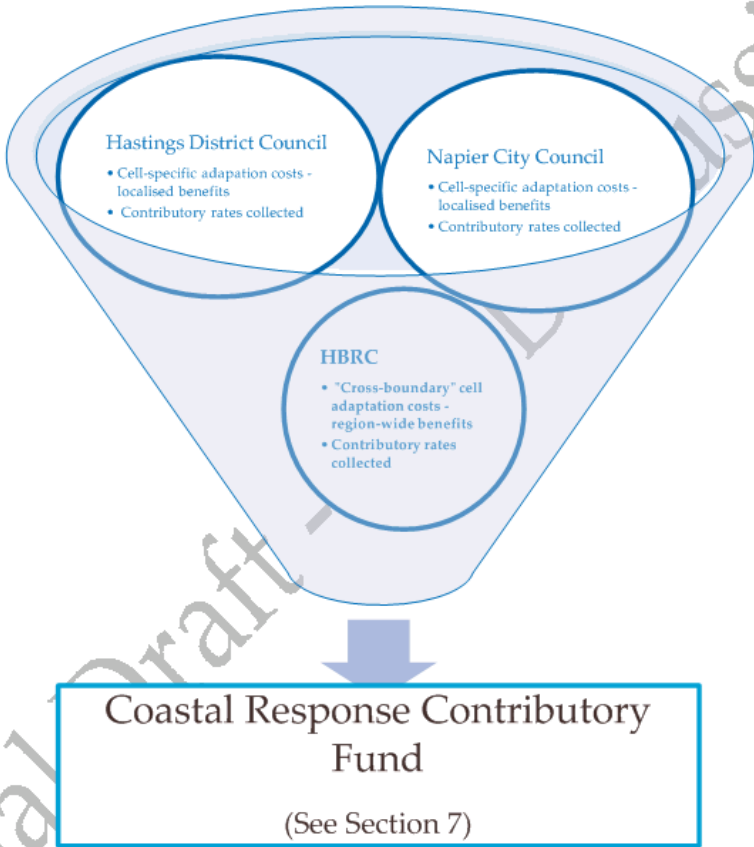
²² See Hastings District Plan (notified) September 2015 – Section 2.7.1

²³ See Napier District Plan – Section 1.12

Moreover, earlier sections of this report suggests that over time, other agencies should (and will) be engaged in fiscal contributions to the coastal hazard response.

Just as there is increasing focus on a single integrated plan for coastal planning instruments²⁴ it is considered a similar approach is required to the funding of coastal hazard responses.

As discussed later under Section 7 of this report, if partner Councils collaborate under a contributory fund approach towards future adaptation costs, the collection of rate levies etc will be largely subsumed by a single authority. Such an approach will ensure consistency of cost allocation across jurisdictions, and allow 'smoothing' of costs between jurisdictions to address factors such as ability to pay and fair allocation of costs to beneficiaries.



²⁴ See discussion - <http://www.qualityplanning.org.nz/index.php/planning-tools/coastal-land-development/methods-for-managing-coastal-land-development-impacts>

6.0 Methodologies for measuring social impact

6.1 Why social costs and impacts are important

At the outer edges of the benefit continuum discussed above it is relatively easy to determine how private and public benefit should be apportioned. However, as Cooper notes, it is the relative split between indirect and direct benefit that is important.

The costs of protecting a private property from flooding and inundation caused by natural events such as coastal erosion and sea level rises should not fall to the general ratepayer to fund. This is the proper role of the insurance industry supported by EQC premiums which make property insurance more affordable²⁵. While eventually, insurance companies may withdraw from underwriting properties at extreme coastal hazard risk, it is not the role of local authorities to then step into the shoes of the private insurance sector. This is a fiscal risk that the Parliamentary Commissioner for the Environment has suggested more probably lies with central Government.

Similarly, public infrastructure is readily identifiable as a cost to the general ratepayer when repairs, relocation or replacement are required.

Less obvious on the continuum is how social impact should be determined and measured, and whether such impact would lead decision makers to:

- Prefer a “hold the line” adaptation response to a coastal hazard because to relocate a community, or cause the destruction of an important site of cultural significance would be too high a social cost to pay; or
- Shift the allocation of costs of funding an adaptation further along the continuum between private and public benefit.

Since coastal communities are likely to want to remain where they are, and affected private property owners want to minimise their own potential liability for adaptation, it is likely that collectively they will seek to escalate the perception of social impact caused by a managed retreat strategy so as to encourage protection works and shift the cost to the general ratepayer.

A transparent and objective methodology for measuring social impact is therefore an extremely desirable tool to resolve this tension.

6.2 Current Practice

In Benefit-Cost Analysis (BCA) sometimes the costs of “negative externalities” or “public good” that would arise from the implementation of hazard management options are recognised. In a report prepared on Coastal Hazards at Haumoana for example²⁶, a pro-forma 10% benchmark of actual costs is attributed to this public good (or disbenefit) in the absence of any more accurate way of measuring the impact.

This benchmark approach is trying to recognise and acknowledge that an adaptation strategy will affect social, environmental and cultural wellbeing but it is very difficult, if not impossible to measure.

In the same report Hastings District Council noted

²⁵ EQC advised that 90% of NZ’s properties are insured – one of the highest ratios in the world.

²⁶ See the discussion on valuing public good in Sustainable Long Term Solutions to Coastal Hazards at Haumoana – Hastings District Council report 2012 – Page 48 et seq

*“While other impacts and costs such as social distress, which will be experienced by owners as a result of Council instituting a managed retreat policy, are acknowledged as a ‘cost’ to the community, these social impacts are difficult, if not impossible to quantify or put a value on. It is noted that many of the social networks around schools/kindergartens, sports and cultural clubs and other community groups will be negatively impacted and the strong sense of community people hold for Haumoana will be detrimentally affected as managed retreat, over time, could lead to the breaking down of the community and seriously affect people financially and emotionally”.*²⁷

6.3 What is meant by “social impact”?

In the past decade there has been an increasing focus on measuring social impact using monetised values. The main reason for this is that organisations (especially local and central governments) are increasingly focussed on whether expenditure on social enterprise is yielding an acceptable outcome for society. Monetising social impact enables a familiar value system to be used for calibrating and communicating the worth of outcomes.

One methodology that has a growing international affiliation of practitioners is “Social Return on Investment” (SROI). Another methodology has been adopted by NZ Treasury (called CBAX) which sets out to measure public spending against social benefits (outcomes) achieved. SROI also values outcomes from the perspective of the stakeholder and therefore requires intensive consultation with them for that purpose. Outcomes for stakeholders often take unexpected turns, and can involve expressions of things like “hope” or “independence”, which might be valued by revealed preferences, stated preferences or other techniques.

Social Impact agencies using SROI define ‘social impact measurement’ as “understanding the effects on various people that happen as a result of an action, activity, project, programme or policy. The ‘impact’ of this action or activity can be positive or negative, and can be intended or unintended, or a combination of all of these. An activity can have immediate and direct impact on certain people, but it can also have a more far-reaching effect on people, organisations, institutions and entities which are not directly engaging with it. They might not even know they are being affected at all, but the ‘impact’ of the action might be very significant to them”.²⁸

A common way to think about social impact, from a measurement point of view, is to consider it as the change that happens for people as a result of an action or activity. Since local authorities (and central government for that matter) are concerned with making positive changes happen for people and society, understanding the amount of change created by an activity can be very important when (in this case) implementing coastal adaptation strategies.

Hastings District Council for example, (in its Haumoana study referred to earlier), identified social impact in its description of effects on schools, kindergartens, cultural clubs and other community groups, as well as the breaking down of the community and potentially serious effects on people financially and emotionally.

6.4 How is social impact measurement undertaken?

To explain this process it is perhaps useful to consider SROI methodology. The foundation of SROI measurement is extensive engagement and interaction with stakeholder groups. This is because it is essential to discover what will change as a result of the proposed activity (in this study, either a managed retreat, the building of defensive structures, or the maintenance of a status quo).

²⁷ Ibid – Page 32.

²⁸ See <http://www.socialimpactscotland.org.uk/understanding-social-impact/what-is-social-impact/>

There are five questions asked in SROI:-

- Who changes as a result of our activity?
- How do they change?
- How do we prove it has / will change?
- Which changes are (most) valued?
- Is it all down to us?

SROI measures social change. As its name suggests, it sets out to value social change and ultimately to provide an “SROI ratio” which is the return that society will achieve for every dollar that is invested in a particular enterprise or undertaking.

In the case of the Clifton to Tangoio Coastal Hazard Strategy 2120, the SROI ratio is not an important end goal. What is more relevant to the study and future mitigation responses is the methodology that is used to identify stakeholders, map outcomes, evidence them and give them a value. The use of financial proxies (for which there is a growing international database) is an important tool in valuing social impact under SROI.

The methodology uses conventional financial discounting of values over time. It also seeks to modify social costs or benefits that, for example, would have happened anyway (deadweight) or that have decreasing effect over subsequent years (drop-off).

The methodology also enables the input of positive social outcomes such as, for example, the building of new schools, or amenities in a managed retreat example.

Establishing a social impact in monetary terms would provide greater certainty for the evaluation of options, and greater accuracy in determining the allocation of costs between public and private benefits. While SROI methodology would not necessarily provide a perfect answer to measuring social impact, it should provide a transparent basis for decision-making that is demonstrably superior to an arbitrary percentage calculation. Additionally, it is by nature a very consultative process which means robust and meaningful engagement with stakeholders that are directly affected by social change.

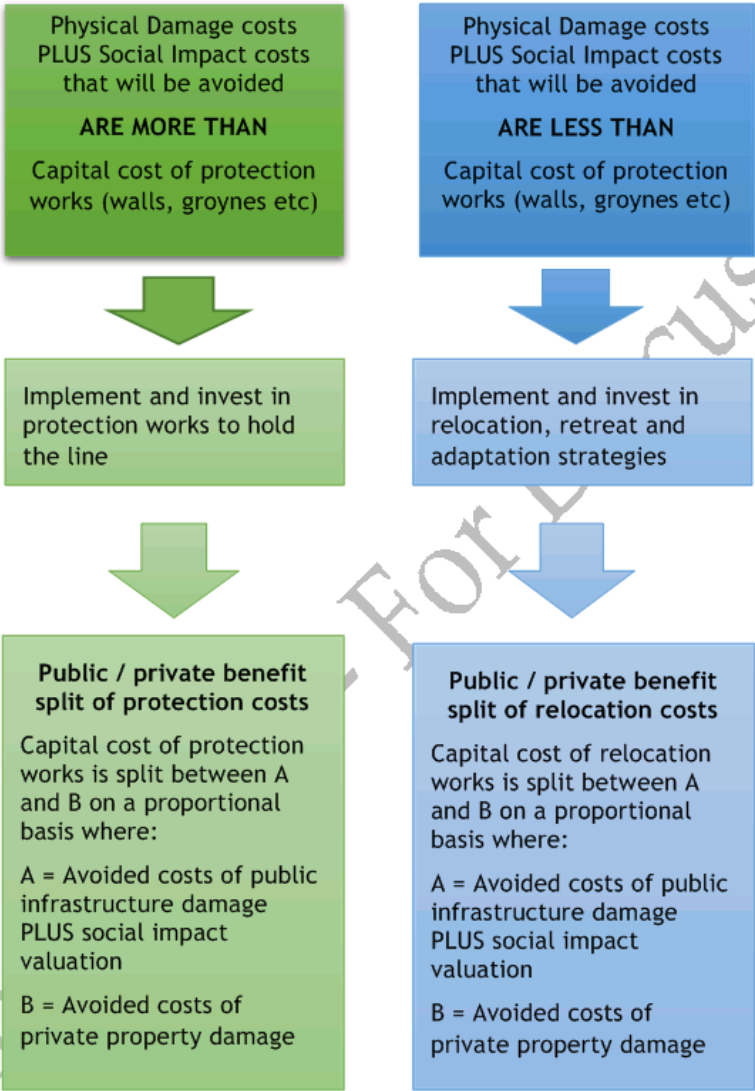
An illustrative example of SROI valuation methodology as it might be applied to coastal management options is attached as Appendix One. In this example, a social impact is assessed by comparing a relocation or retreat strategy, against the construction of protection works and defending the line.

In the example, a number of hypothetical social impacts are identified through the execution of robust consultation with the affected community. They include assigning financial proxies to outcomes such as:

- Negative perception of the area as a place to live;
- Anxiety and stress caused by uncertainty;
- Effects on community safety;
- Loss of important environmental habitat;
- Loss of cycle trails and tourist attractions and consequential income for local business;
- Decline in local recreational values;
- Drop in play-centre roll; and
- Reduction in local fire services

Each impact is assigned a financial proxy and a net present value of social impact (in this illustrative example) is assessed at \$2.8 million.

The social impact valuation can then become an input to decision-making and allocation of public and private benefit as shown in the following table.



6.5 Utilisation of Social Impact Measurement under MCDA process

As noted in Section 1 of this report, for decisions to be made between potential coastal hazard response options, a structured framework is required in which multiple criteria are established and weightings applied to objectively arrive at an optimal management strategy. This is referred to as “Multi Criteria Decision Analysis” (MCDA) and a template for this process forms part of this Stage Two work programme²⁹.

²⁹ Refer to the companion Stage Two Report Clifton to Tangoio Coastal Hazards Strategy 2120: Decision Making Framework by Environmental Management Services Limited.

In MCDA analysis, social impact is only one criterion amongst several that are identified and weighted according to importance. The weighting of these criteria, and the 'scoring' of each potential coastal hazard response option against them, ultimately confirms the preferred option.

Section 3.1 discussed how Benefit : Cost analysis would then be undertaken to determine the optimal year in which the preferred option should be implemented. This process is important under the funding model to determine a reasonable proportion of contributory funding required by current generation ratepayers up until the implementation of the adaptation option.

However, a challenge with integrating a measurement of social impact using SROI (or similar) in to an MCDA process designed to consider responses to coastal hazards over a 100-year timeframe is that the SROI methodology cannot realistically be undertaken until closer to the point in future at which a hazard response is deemed necessary to implement, because to do so now would require unreasonable speculation and assumption about a future state and value set.

To tackle this issue it is proposed to adopt a "two-tier" approach to evaluating social impact under the MCDA process. If a hazard response is likely to be required within the next five years, then a full-scale social impact measurement process using (say) SROI methodology would be undertaken so as to accurately weight this value in adaptation choices.

If a hazard response is more likely to be beyond five years, then in the MCDA process a simpler rating of social impact would be utilised on what is known now.

Since social impact measurement is primarily intended to be utilised as a means to objectively and fairly apportion adaptation cost between public and private benefit, accurate measurement closer to the time when the adaptation response is required should not alter the MCDA decision made on all criteria and current knowledge.

In the worst case, where social impact value eventually proves to be considerably in excess of any early rating estimate on which MCDA adaptation decisions were originally made, (such as to render, for example, engineered works more desirable than a managed retreat), then a review of the adaptation decision would be required at that time.

In a wider context, a review of adaptation decisions in future decades is likely to be necessary anyway as science improves and new technologies evolve for managing coastal hazard risk.

Finally, it should be stressed that measuring social impact is about value rather than money. It is not a methodology to determine compensation payable to any party. The social impact (such as it might be measured using SROI techniques) is simply an input to rank a range of adaptation responses that could be adopted, and how their benefit might be split between public and private interests.

7.0 The funding toolkit and response methodology

So far, this report has discussed:

- The range of stakeholders who have a potential or existing interest in sharing fiscal responsibility for coastal hazard management;
- Funding sources and methodologies that local authorities are statutorily empowered to utilise;
- Integrated planning instruments and the need for a similar collaborative approach to funding;
- Finding an appropriate balance between public and private benefit in order to apportion costs fairly and equitably; and
- Assessing the value of social impact using an example of a current valuation methodology (SROI).

It has been noted that hazard management and responses in the Tangoio to Clifton coastal area are likely to be spread over a number of decades and that next stages of this project will involve simulation and probability analysis to arrive at the optimal future economic timing for expenditure to be incurred to avoid potential physical damage.

This Benefit : Cost modelling will allow for an equitable allocation of mitigation costs between current and future generations, as the example in Section 3.2 sets out. Expenditure that is required in the near term will largely be funded by current ratepayers over a period of future years, while longer-dated expenditure will be increasingly funded by future generations of ratepayers, with current ratepayers contributing a decreasing proportion of that future liability.

The funding model also needs to allow for allocation of costs to those who stand to benefit most from the expenditure. This principle of user-pays might be ameliorated by their actual ability to pay, along with the recognition that social impact on any coastal community is a cost that might be more fairly attributable to the general ratepayer base.

Finally, the possibility of other stakeholders becoming involved in fiscal contributions has been discussed. Though the burden of financing will fall on local authorities to manage in the short term, there is increasing prospect that other agencies will eventually need to contribute.

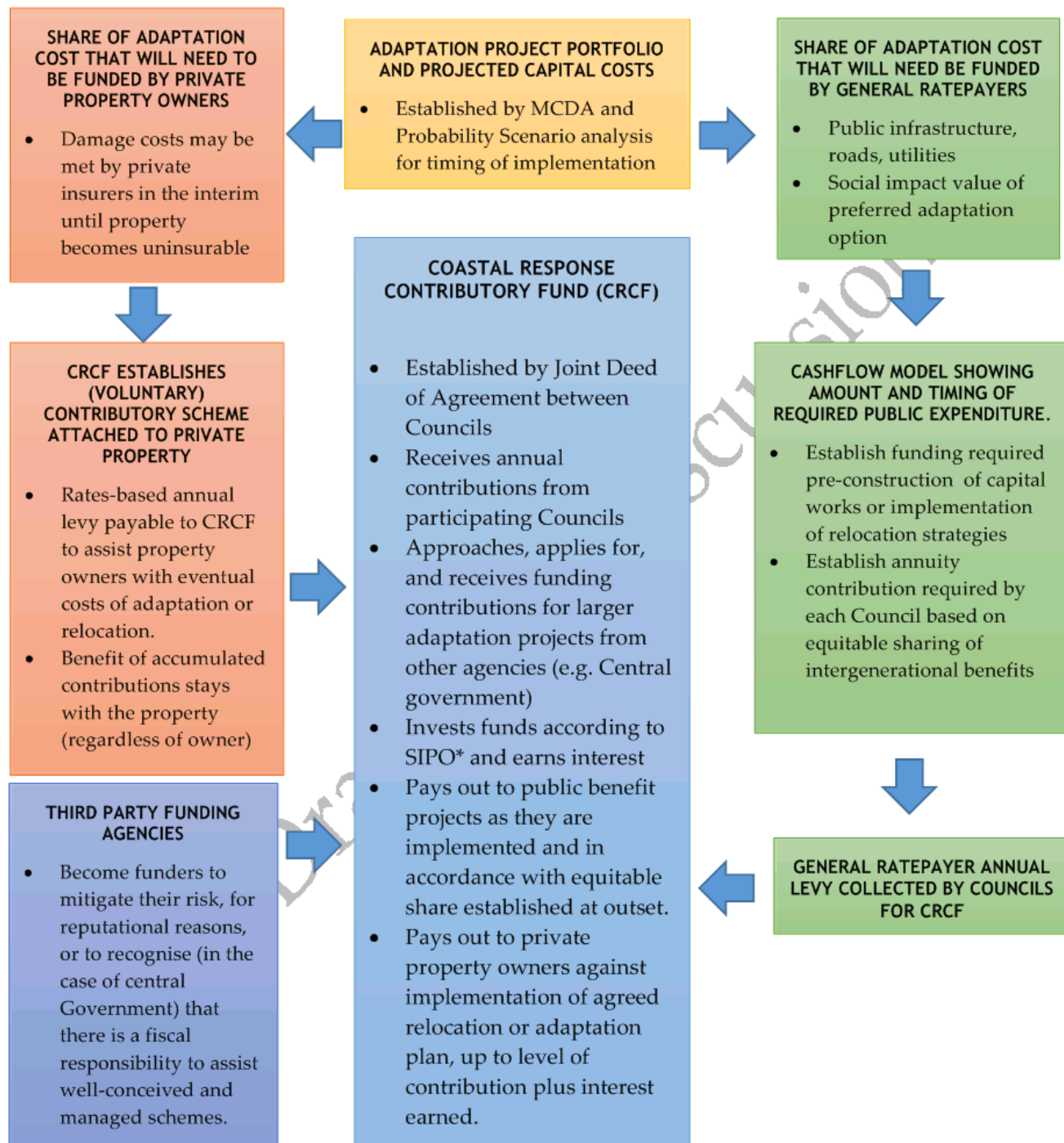
7.1 Contributory funding under a collaborative governance structure

This report identifies a complex matrix of:

- Current and future funding stakeholders that are not yet fiscally engaged;
- Public and private beneficiaries;
- Different timing (perhaps over several decades) of capital expenditure;
- The need to recognise liability falling equitably between current and future generations;
- Possible consequences of hazard adaptation responses to address coastal issues in one area adversely affecting another; and
- The need for consistent and equitable approaches to funding as between Councils.

Taking all this together it is recommended that a centralisation of coastal adaptation funding responses should be created through the establishment and administration of a Coastal Response Contributory Fund (CRCF).

The role and operation of this fund can be presented in the following diagram.



*SIPO means Statement of Investment Policy Objectives. It includes risk appetite and approved investments etc.

In this funding model, the CRCF becomes the central management agency, acting for all participating Councils, for the purposes of funding coastal hazard responses. It would collate planned projects and strategies from the MCDA process. It would model all cashflows to be received and invested to earn required contributions to projects at the time they are planned for execution.

The CRCF would enable Councils to respond in a uniform and consistent way to coastal hazards in the Tangoio to Clifton coastal area, perhaps mitigating political pressure for some coastal areas or communities to gain a particular outcome, and allowing projects to proceed in an orderly and logical manner.

The CRCF might also provide a useful agency to positively assist private property owners to adapt by offering a (voluntary) contributory scheme that would operate in much the same way as Kiwisaver to build a fund attaching to a property at risk such as to enable a future adaptation project to be partially or even wholly funded by the then property owner. This amount could be collected by a rates levy on the subject property. This contributory fund approach might help private property owners to mitigate a future large relocation or retreat liability that they will eventually face.

From our discussion with third party stakeholders it is considered that, though it has yet to gain any momentum, there will be emerging interest in providing funding support for a coastal management response where communities are under threat. The insurance sector will likely be enjoined through reputational risk³⁰. Banks may be exposed through lending which might no longer have insurance collateral. EQC, has no choice but to provide insurance under statute and is exposed to coastal hazards because of the way in sea level rises exacerbate inundation risk. Central Government agencies are already aware that they cannot abandon communities that are affected by uninsurable coastal hazards. Each one of these parties will at some point in the near future be drawn to participation in well-constructed schemes supported by robust consultation and a macro-regional perspective.

The CRCF concept is considered to be a positive (and innovative) way to position for eventual dialogue and negotiation with these counterparties.

In simple terms, the CRCF is really a reversal of what is a customary practice for many Councils which undertake large capital works now for the benefit of general or targeted groups of ratepayers. Typically this might be funded by a targeted rate that aims to recover the capital cost over a suitable longer term reflecting the nature of the capital asset.

The CRCF is the reverse of this methodology. It reflects the need for future spending (based on MCDA analysis) which should be at least partially funded by ratepayer contribution before the time comes for the capital works to be implemented.

7.2 More immediate / short term coastal hazard responses - funding options

Nevertheless, under MCDA some adaptation projects will require more immediate action not able to be addressed by a governance and accretion fund model such as the CRCF.

As noted earlier in this report, s101(3) infers a user-pays approach to cost allocation, but also provides considerable scope for Councils to consider and alleviate the burden of payment to reflect the ratepayers' ability to pay, in principles of fairness and equity.

It is considered that social impact is at least one area in which the Council has room to rebalance public and private benefit by shifting some of the funding onus to the more general ratepayer base. There is a need to exercise due diligence in this area along the lines of the social impact assessment methodology discussed in Section 6. At the very least a robust process of consultation and transparency around social impact would ameliorate some of the concerns expressed by communities that Councils are not measuring and recognising this impact appropriately.

³⁰ Even though companies are not obliged to insure property in any area, a wholesale withdrawal of insurance cover leaving people to fend for themselves will not be well regarded by the marketplace.

Research suggests that some local authorities³¹ have considered providing other means of mitigating private property-owner costs. These include:

Purchase of property

TLAs might purchase property in at-risk areas. The house could be removed and the land used as a public recreation reserve until such time as it becomes unusable for any purpose; or revenue recovery options such as:

- Granting concessions or leases for commercial recreational activities on new coastal reserve; or
- Temporary leasing of purchased houses until risk is unacceptable; or
- Purchasing a property, placing a hazard covenant on the property, then reselling.

Relocation subsidies

TLAs might subsidise the cost of relocation. This might include subsidisation to relocate buildings on existing property or to another property

7.3 Coastal Response Long Term Bonds

As noted in Section 2, there is potential for local authorities to issue longer-dated debt securities specifically for utilisation in coastal hazard management, targeting these securities at the insurance sector as investors. Interviews with parties in the sector suggest that participation in coastal adaptation debt financing would provide a useful mechanism for the sector to contribute to resolution of a risk that forms part of their business exposure.

This willingness to invest suggests an opportunity to structure coastal hazard resilience bonds that are longer-term than more conventional debt securities, or that have lower pricing reflecting the sector's appetite to participate perhaps even on a concessional basis.

If more emphasis is placed on longer term debt funding, this will assist in transferring the funding of hazard responses across current and future generations in line with the life of the assets that are being built or relocated and in accordance with s101 (3) (a) (iii) of the Local Government Act.

³¹ See for example Managed Retreat from Coastal Hazards : Options for Implementation - Environment Waikato Technical Report 2006/48- April 2006 Section 7. Discussion with Waikato Regional Council suggests that these ideas have not been developed any further since this report.

APPENDIX ONE

Important Note: Below outcomes and financial proxies are examples only of how the methodology is applied. They are not based on any factual situation. In practice, real outcomes and proxies would be developed from robust consultation with affected parties, peer review and a process of transparency.

**ILLUSTRATIVE EXAMPLE OF SOCIAL IMPACT VALUATION FOR HYPOTHETICAL COASTAL COMMUNITY
A RETREAT / RELOCATION OPTION AGAINST COUNTERFACTUAL DEFEND OPTION**

Stakeholder	Outcomes - Describing the Change	Indicator - How would it be measured?	Quantity - How much change will there be?	Duration - How long will it last (yrs)	Financial Proxy - what proxy was used to value the change?	Value - What is the value of the change?	Deadweight - What would have happened without the activity?	Dropoff - will the outcome decline in future years?	Year One	Year Two	Year Three	Year Four	Year Five
Local community	Potential relocation causes negative view of area as a desirable place to live. Declining area population	Negative blight on property values - especially in high risk zone compared with other areas to live.	100 dwellings in high risk zone will decline in value by 20%	5 years - until understanding of retreat and strategy develops within community	Average value of house \$300K	100 houses at \$60,000 per house = \$ 6 million immediate impact but recovering	Negative view may still be present if protection works are built, or status quo - 20%	25% pa as area recovers and confidence in strategy increases	\$ 4,800,000	-\$ 1,200,000	-\$ 1,200,000	-\$ 1,200,000	-\$ 1,200,000
Local Community	Less engagement and participation in community groups	Falling membership of clubs, interest groups	Annual memberships of range of clubs / social groups decline by 200 pax per annum	5 years until viability of area is more clearly understood	\$ 50 estimated annual subscription to clubs etc	200 memberships at \$50pp equals \$10,000 per annum	Negative view may still be present if protection works are built, or status quo - 20%	20% as area recovers and community commitment renews	\$ 8,000	\$ 6,000	\$ 4,000	\$ 2,000	\$ -
Local Community	Less community safety - neighbourhood watch	Higher number of house burglaries / vandalism	5 additional burglaries / damage per annum	5 years until community recovers its collectiveness	\$9,220 per offence per annum (Tsy survey 2004)	5 offences per annum at \$9,220 per offence = \$46,100	Nil	20% as area recovers and awareness of strategy increases	\$ 46,100	\$ 36,880	\$ 27,660	\$ 18,440	\$ 9,220
Affected property owners	Increased anxiety and distress about relocation issues	Not having people to discuss issues with. More co-morbidity medical services required.	160 occupiers - 10% need counselling	One year	\$1,200 per person annual ACC cost for mental health issues	160 occupiers times 10% times \$1,200 per annum = \$19,200pa	5% (prone to distress disorders anyway)	20% as area recovers and confidence in strategy increases	\$ 18,240	\$ 14,592	\$ 10,944	\$ 7,296	\$ 3,648
Trailcyclists	Closure of Local Trail results in less visitors to area	Decrease in spend at local businesses - visits to local galleries / wineries.	437,000 users of HB trails pa. Say 25% use this trail. Say 20% of those will stop / purchase from local arts and businesses	5 years until an alternative trail is established	Average spend per customer = \$15	437,000 riders times 25% times 20% times \$15 per person equals \$327,500 per annum	0% - building of protection works would have kept trail in place.	30% as new business opportunities arise from revival of area	\$ 327,500	\$ 229,250	\$ 131,000	\$ 32,750	\$ -

APPENDIX ONE (continued)

Stakeholder	Outcomes - Describing the Change	Indicator - How would it be measured?	Quantity - How much change will there be?	Duration - How long will it last (yrs)	Financial Proxy - what proxy was used to value the change?	Value - What is the value of the change?	Deadweight - What would have happened without the activity?	Dropoff - will the outcome decline in future years?	Year One	Year Two	Year Three	Year Four	Year Five
Environmental Conservationists	Loss of 20ha of estuarine reserve with habitat values	Value per hectare of passive reserve lands	Landcare estimate \$2,106 per ha. Total economic value of NZ's land based ecosystems and their services - Patterson, Cole 2012	Permanent	\$2,106 per ha	\$42,120	0% Wetland cannot be replaced	0% Wetland cannot be replaced	\$ 42,120	\$ 42,120	\$ 42,120	\$ 42,120	\$ 42,120
Recreational visitors picnickers/ playgrounds/ bird watchers etc) to wetlands, walkways, beach	Fewer numbers of visitors to the area. Disappearance over time of previous attractions	Decrease in spend at local (food related) businesses	15,000 annual destination visitors to beach and reserves. Say 20% of those will stop / purchase from local arts and businesses	5 years until alternative reserves / attractions are established.	Average spend per customer = \$15	15,000 times 20% times \$15 = \$45,000 per annum	10% - area may be less attractive anyway if large groynes are built	20% as new areas and attractions are built	\$ 40,500	\$ 32,400	\$ 24,300	\$ 16,200	\$ 8,100
	Maintenance of conservation / park areas deteriorates as sea encroaches Refuse and waste being dumped in previous areas of interest	Clean up / maintenance costs in abandoned or neglected areas	50 hectares abandoned as wasteland at \$3,000 per annum per ha maintenance.	5 years until land adapts to new coastal environment	\$3,000 pa per ha maintenance costs - district council statistics	50ha times \$3,000 = \$150,000 per annum	10% - people use the area as a dumping ground anyway	20% expected decline in maintenance as coastal processes encroach	\$ 135,000	\$ 108,000	\$ 81,000	\$ 54,000	\$ 27,000
Local Community - Local Playcentre	Reduction in roll as community relocates and numbers decline	Reduction in annual income to support playcentre activities	20% reduction in roll of 30 children	5 years until area recovers as a viable location to live.	ECE subsidy is \$8,500 pa per child	6 person drop in roll times \$8,500 per child equals \$51,000	Negative view may still be present if protection works are built, or status quo - 20%	20% as area recovers and awareness of strategy increases	\$ 40,800	\$ 32,640	\$ 24,480	\$ 16,320	\$ 8,160
Local Community - Fire Services	Closure of local brigade because not enough volunteers	Number of firefighters no longer active	11 firefighters.	5 years until area recovers as a viable location to live.	Volunteers hours 225 pa at avoided cost \$20 per hour.	11 firefighters at 225 hours per annum times \$20 per hour equals \$49,500 per annum (avoided cost)			-\$ 14,850	-\$ 14,850	-\$ 14,850	-\$ 14,850	-\$ 14,850
	Longer response times for emergencies	Cost per minute of response time.	Increase in response time will be 12 minutes from next nearest station. Approx 50 callouts pa - 10 structure, 40 vegetation	5 years till area recovers population and infrastructure.	\$4,000 per minute per structural fire. \$300 per minute per vegetation event.	10 structural fires at \$4,000 and 40 vegetation fires at \$300 per minute times 12 minutes = \$624,000 per annum	70% - volunteer fire station would probably have been closed within next three years anyway.	10% as efficiency response increases	\$ 187,200	\$ 168,480	\$ 149,760	\$ 149,760	\$ 131,040
Annual Value of Social Impact									\$ 5,630,610	-\$ 544,488	-\$ 719,586	-\$ 875,964	-\$ 985,562
Net Present Value of Social Impact (discounted at 7%)									\$2,828,318				

Subject: GROUND WATER AND SEA LEVEL RISE – HAZARD ASSESSMENT**Reason for Report**

1. This report updates the Joint Committee on the potential impacts of sea level rise on coastal groundwater, within the context of work being undertaken as part of the Clifton to Tangoio Coastal Hazards Strategy 2120 (the Strategy).

Background

2. The Strategy covers the period 2016-2120 and aims to provide a framework to guide and direct the assessment and implementation of preferred options for the long term management of coastal hazards risks between Clifton and Tangoio.
3. In late 2014 the Joint Committee confirmed the scope of the Strategy to assess the following coastal hazards risks:
 - 3.1. Coastal erosion (Storm cut, trends, effects of sea level risk)
 - 3.2. Coastal inundation (wave set-up, run-up, overtopping and sea level risk); and
 - 3.3. Tsunami.
4. At a workshop hosted by the Technical Advisory Group (TAG) in April 2016 for all Councillors from the Partner Councils, a question was raised regarding whether any consideration had been given to the adverse effects of sea level rise on ground water along coastal margins.
5. More specifically, the question focused on whether or not the effect of sea level rise on ground water levels would exacerbate existing hazards (e.g. surface flooding) or cause new hazards (e.g. groundwater inundation) in coastal areas, and if so, whether this should be factored in to decision making as part of Stage 3 of the Strategy.

Groundwater and sea level

6. Groundwater is water held underground in the soil or in pores and crevices in rock. As sea levels rise, groundwater levels in coastal areas may also rise in response to hydraulic pressure from the sea. This can result in wet and soft near surface soils, although this is more problematic for silt and clay type soils due to capillary action than it is for sand and gravel type soils.
7. Additionally, rising groundwater could result in a range of impacts such as:
 - Saline intrusion into the aquifer system
 - Near surface saline water could affect terrestrial vegetation on the coast and cause corrosion to underground assets
 - Increased risk of liquefaction
 - Increased uplift on buildings with sealed basements, possibly requiring strengthening of these structures
 - Underground tanks and services could start to 'float'. This is particularly likely to impact large lightweight pipes (such as gas pipes) and fuel tanks
 - Possible water infiltration to basement structures, requiring waterproofing and pumping
 - A possible increase in landslide risk in some locations

Strategy scope

8. As noted above, following discussion and advice from TAG, Strategy scope was confirmed by the Joint Committee in late 2014. Reports commissioned by TAG to assess coastal hazards risks under the Strategy did therefore not specifically include

groundwater effects, and were limited to considering coastal erosion, coastal inundation and tsunامي.

9. In responding to the question posed at the Councillor workshop, TAG needed to determine whether or not the scope of the Strategy should be expanded at this time. The following factors were considered relevant in making this assessment:
 - 9.1. Noting community expectations around timeframes, whether or not information or data on ground water effects was readily available in a form that could be integrated into the Strategy without significant delay;
 - 9.2. Whether or not this information, if it were available, could materially alter decisions made in Stage 3 of the Strategy; and
 - 9.3. The degree of risk associated with ground water effects of this nature
10. In considering these factors, TAG have determined that:
 - 10.1. While there is work underway in this area (for example, by GNS Science and HBRC), there is insufficient data currently available to integrate with the Strategy at this time.
 - 10.2. Halting the Strategy to either wait for this data to become available, or to engage dedicated technical experts to assess these risks, presents issues around cost, duplication of work, and/or potentially significant delays in Strategy development
 - 10.3. Given that many areas along the coast are already pumping ground water, this issue is already present to a degree, and is not expected to rapidly deteriorate in the short to medium term.
 - 10.4. It is considered unlikely that decisions made in Stage 3 would be materially different were detailed information on this issue made available. For example, a decision to defend the coast from coastal erosion is unlikely to be influenced by groundwater issues in the short to medium term.
 - 10.5. It is anticipated that future iterations of the Strategy as developed through subsequent reviews will be able to integrate information on groundwater effects, along with updated and revised science and data as this evolves over the coming decades.
11. In light of the above, it is considered that groundwater effects should not be added to Strategy scope at this time. However, TAG will remain actively involved with the work being undertaken in this area, and considers that once reliable data is available it should be factored in to Strategy scope as part of future review processes.

Recommendations

1. That the Clifton to Tangoio Coastal Hazards Strategy Joint Committee receives and notes the ***Ground Water and Sea Level Rise – Hazard Assessment*** report.
2. That the Clifton to Tangoio Coastal Hazards Strategy Joint Committee notes that the impact of sea level rise on groundwater levels and associated effects should be incorporated into future reviews of the Strategy.

Authored by:

Simon Bendall
PROJECT MANAGER

Approved by:

Mike Adye
GROUP MANAGER ASSET
MANAGEMENT

Attachment/s

There are no attachments for this report.

Friday 19 August 2016

Subject: PROJECT MANAGER UPDATE**Reason for Report**

1. This report provides an opportunity for the Project Manager to present an update to the Committee and answer any questions on general project matters.

Timeframe and Budget Update

2. There have been some adjustments to project timeframes to account for additional consultation and analysis in the development of Stage 2, which has proved to be a highly complicated phase of Strategy development, however the budget allocation for Stage 2 is on track.
3. The following outlines key dates over the coming months and an indication of programme through to the completion of Stage 3.

19 August, 2016	<ul style="list-style-type: none"> • Joint Committee Meeting: <ul style="list-style-type: none"> - Confirm direction on Decision Making Framework - Confirm recommendation to Partner Councils on Funding Model
29 August, 2016	<ul style="list-style-type: none"> • TAG Meeting • Councillor Workshop: <ul style="list-style-type: none"> - Present Funding Model recommendations
During September 2016	<ul style="list-style-type: none"> • Funding Model recommendations presented to Partner Councils for adoption
19 September, 2016	<ul style="list-style-type: none"> • TAG Meeting
7 October	<ul style="list-style-type: none"> • Workshop – TAG, T&T, EMS, and Living at the Edge, to determine programme of work, resource requirements etc for Stage 3.
November – December 2016	<ul style="list-style-type: none"> • Form Stage 3 Assessment Panels
5 December 2016	<ul style="list-style-type: none"> • Joint Committee Meeting: <ul style="list-style-type: none"> - Adopt process for Stage 3
February 2017 – August 2017 (approx.)	<ul style="list-style-type: none"> • Assessment Panel Process
September 2017	<ul style="list-style-type: none"> • Joint Committee receives recommendations from Assessment Panels

Living at the Edge

4. Living at the Edge is a work stream under the resilient Communities Science Challenge. The team working on this work stream is keen to work with the Coastal Strategy Team and can add value to the process.
5. In recent weeks' members of TAG have held a number of meetings with the Living at the Edge team to discuss and consider ways in which their work can integrate with and benefit the development of the Coastal Hazards Strategy.
6. This culminated in a meeting with 4 members of the Living at the Edge team and TAG on 8 August. It was agreed that there is significant potential for mutual benefit through integrating these projects, but that this needed to be carefully planned to avoid duplication, complication and confusing messaging for stakeholders and communities.
7. A full day workshop has been confirmed with TAG, Tonkin and Taylor, Environmental Management Services, Maven Consulting and Living at the Edge on 7 October, 2016 to map out the programme of work for Stage 3. A report on the outcome of this process will be provided to the Joint Committee at the next meeting in December.
8. To provide additional background information, attached to this paper is a brief summary document on the Living at the Edge project.

Recommendation

1. That the Clifton to Tangoio Coastal Hazards Strategy Joint Committee receives and notes the ***Project Manager Update*** report.

Authored by:

Simon Bendall
PROJECT MANAGER

Approved by:

Mike Adye
GROUP MANAGER ASSET
MANAGEMENT

Attachment/s

- 1 Living at the Edge Transforming the Margins Overview

Living at the Edge – Transforming the Margins

Overview

The New Zealand government (Ministry of Business, Innovation and Employment) has funded 11 National Science Challenges; science investments that focus on defined issues of national importance, including the ten-year challenge “Resilience to Nature’s Challenges” (<http://resiliencechallenge.nz>). One component of the Resilience Challenge is the three-year ‘Living at the Edge’ programme (the Edge), which focuses on communities living in localities exposed to natural coastal hazards (coastal inundation/flooding, coastal erosion and tsunami), exacerbated by socio-economic, demographic and environmental change (future sea-level rise and associated rising groundwater). The aim of the Edge is to build shared understanding about coastal hazards and risk and to develop practical ‘resilient’ solutions that can be institutionalised in the region for the benefit of current and future generations. The programme will be developed and implemented in partnership with key stakeholders, including communities. The initial case study community will be located in the Hawke’s Bay, where challenges for managing coastal issues exist.

National
SCIENCE
Challenges



Research partners and participants

Key regional level stakeholders (people or group who can affect or be affected by the research) that the Edge will engage with include:

- Government agencies (HBRC, HDC, NCC, DOC, MfE, MBIE, HBCDEM)
- Tangata whenua (Ngāti Kahungunu iwi)
- Community-based organisations (urban, rural, community development groups, trusts, clubs, societies)
- Business, industry and infrastructure providers (HB Chamber of Commerce)
- Research agencies e.g. universities (UoA, MU, VUW, LU), CRIs (NIWA, GNS), independent consultants and specialists
- Other projects (East Coast LAB, Natural Hazards Portal, Clifton to Tangoio Coastal Hazards Strategy, Deep South NSC)
- Media (Hawke’s Bay Today)

In collaboration with key stakeholders at the regional level, the Edge will engage with stakeholders at a local level. Through engagement and collaboration, the team will be able to contribute to building a ‘safe environment’ for public deliberation, social learning and the practical implementation of resilience efforts. We envisage local level stakeholders to include: hapu; marae; trusts; community members; community clubs/societies; private landowners; schools; businesses and local government.

Edge research team – see back of page for research team profile

We are an independent, multi-disciplinary team of internationally and nationally recognised coastal hazard and risk specialists willing to work collaboratively with the people of Hawke’s Bay. Together we have an array of disciplinary backgrounds that span social sciences, governance, emergency management, climate change and natural hazards resilience, coastal engineering, planning and coastal hazard management, including applied research and practice in the Hawke’s Bay. Moreover, we can draw on experience and expertise of the wider Resilience Challenge team, involving nine other programmes of work that sit alongside and interconnect with the Edge.

The purpose of the initial relationship-building meetings with key stakeholders at a regional level is to collaboratively identify the most pressing research needs over the next 1 – 5 years within the field of coastal hazard risk to which the Edge can contribute.

Contact: Emma Ryan, The University of Auckland
Email: e.ryan@auckland.ac.nz | Phone: 02108768939

Living at the Edge – Transforming the Margins

Edge research team profile

The University of Auckland (UoA):

- Prof. Paul Kench, the Edge project leader, is Head of the School of Environment at the UoA. Paul is a coastal geomorphologist with 20 years experience in coastal processes and coastal management in New Zealand and globally.
- Dr. Emma Ryan is the Edge project co-ordinator and the first point of contact for stakeholder engagement. With a background in coastal geomorphology, Emma is an emerging researcher in coastal hazards and citizen science.
- Dr. Susan Owen has experience in coastal planning and research interests in institutional influence and participatory processes.
- Dr. Mark Dickson has a strong track record in coastal processes research in New Zealand. Mark's research has a focus on eroding coastlines and future erosion patterns in response to sea-level rise.

NIWA:

- Dr. Rob Bell (Edge deputy project leader) has a proven track record in applied coastal, hazard-risk and sea-level research and advisory/planning services. Rob, along with Paula and Judy, is involved in developing the MfE climate change guidelines to be released in 2016.
- Dr. Paula Blackett, a social scientist, has an extensive record of researching processes and techniques for coastal community engagement, along with planning experience.
- Dr. Michael Allis, a trained engineer has a track record in physical coastal science. Mike's work is increasingly delving into the community engagement aspect of coastal science.

Massey University:

- Prof. Bruce Glavovic is a leading expert with >20 years experience in resilience planning and adaptation. Bruce is also involved in the Governance Group of the Resilience Challenge and several international research initiatives dealing with coastal governance and adaptation.
- Dr. Paul Schneider is an emerging researcher with interests in resilience, governance and stakeholder engagement. Paul has significant experience working with multi-level stakeholders around climate change adaptation issues. Paul is also involved in the Governance Group of the Resilience Challenge.

Victoria University of Wellington:

- Dr. Judy Lawrence has a strong central and local government policy/management background and a research record in decision making under uncertainty and change. She has developed with international partners, NZ relevant adaptation pathways methodologies in response to climate change. Judy is also involved in the Governance Toolbox of the Resilience Challenge.

GNS Science:

- Dr. Julia Becker is a leading social scientist with interests in hazard preparedness, emergency management, community engagement and resilience. Julia has 16 years of experience working on resilience issues in the Hawke's Bay region. Julia also leads the Cultural toolbox of the Resilience Challenge.

Lincoln University:

- Assoc. Prof. Hamish Rennie has >25 years experience in planning/policy and his research has influenced legislation and coastal policy and plans. He is Director of Post-Graduate Studies in Disaster Risk and Resilience at Lincoln University and is involved in the Rural laboratory of the Resilience Challenge.



Edge research group from left to right: Hamish Rennie, Julia Becker, Emma Ryan, Paula Blackett, Sue Owen, Paul Kench, Paul Schneider, Judy Lawrence, Bruce Glavovic, Mike Allis (missing: Rob Bell and Mark Dickson).

Contact: Emma Ryan, The University of Auckland
Email: e.ryan@auckland.ac.nz | Phone: 02108768939

Friday 19 August 2016

Subject: COMMUNICATIONS UPDATE**Reason for Report**

1. This report provides an update on communications and consultation undertaken since the last Joint Committee meeting in May.

DiscussionCommunicating Stage One

2. Following the confirmation and adoption of Stage One at the May Joint Committee meeting, TAG implemented a range of communications to ensure that the new information on hazard extents and risks was well distributed and understood.
3. This commenced with a mail out in mid-May 2016 to all landowners within the new hazard extents for coastal erosion and inundation, with just over 2,000 letters being sent. The mail out was clustered into 6 coastal areas, with each cluster receiving a summary sheet relevant to their area. The following indicates the numbers of letters sent for each cluster:
 - 3.1. Tangoio / Whirinaki: 187
 - 3.2. Bay View: 131
 - 3.3. Westshore: 686
 - 3.4. Marine Parade: 30
 - 3.5. Clive / East Clive: 380
 - 3.6. Haumoana / Te Awanga / Clifton: 641
4. In addition to the summary sheet, the letters also included a link to the updated project website (www.hbcoast.co.nz) and an invitation to attend a drop in session being held in Westshore and Te Awanga. The drop in sessions were also advertised in local media.
5. The drop in sessions were hosted by TAG on the 1st and 2nd of June in Westshore and Te Awanga respectively. Both were well attended, with approximately 60 people attending each session. TAG considers that the format of the sessions worked well, that they were well received, and that there was a good level of engagement by attendees.
6. As a result of the mail out and drop in sessions, 153 people signed up to join the Strategy's mailing list. While customer services staff at each of the Councils were briefed and advised that there could be a spike in queries following the mail out, this didn't eventuate.
7. It is also noted that following the May Joint Committee meeting, LIM staff from each of the Councils were advised of the new hazards information and this is now being reflected on new LIM requests for properties within the new hazards extents.

Engaging with Marae

8. There are 7 marae within the Strategy area: Tangoio, Petane, Pukemokimoki, Waiohiki, Matahiwi, Kohupatiki and Ruahapia.
9. Each of these marae have been contacted by the Chair to update them on Strategy development and in some cases meetings have been held.
10. As a follow up to this contact, letters were sent to all Marae Chairs on 13 June, 2016. The letters provided maps relevant to each marae, showing the new hazards extents and the information collected to date on elements at risk (e.g. cultural sites, schools, etc). It was asked whether or not there were additional culturally significant areas or sites not shown on the maps that should be considered as part of the Strategy. Follow up phone calls have been made subsequent to this letter being sent and these

communications will continue. No new information on elements at risk has been received to date.

Website

11. 2,842 individual users visited the updated project website (www.hbcoast.co.nz) since the last Joint Committee meeting in May 2016.
12. A revised / simplified mapping tool for hazards extents will shortly be available through the website.

Future communications

13. TAG is conscious that following this meeting, there will be a period of limited public activity in terms of the Strategy until later in the year. With the support of Drew Broadley from HBRC, additional communications will be developed over the coming weeks to maintain a public presence for the Strategy and to provide updates on progress.

Insurance industry

14. Communication with the insurance industry is ongoing. HBRC are hosting a discussion with the Insurance Council on 1st September. Further contact with both the Council and individual insurance companies is planned for the future.

Recommendation

1. That the Clifton to Tangoio Coastal Hazards Strategy Joint Committee receives and notes the ***Communications Update*** report.

Authored by:

Simon Bendall
PROJECT MANAGER

Approved by:

Mike Adye
GROUP MANAGER ASSET
MANAGEMENT

Attachment/s

There are no attachments for this report.

CLIFTON TO TANGOIO COASTAL HAZARDS STRATEGY JOINT COMMITTEE

Friday 19 August 2016

Subject: UPDATE OF PROTECTION WORKS AT WHAKARIRE AVENUE

Item 10

1. This report provides an opportunity for Napier City Council staff to update the Joint Committee on progress with the protection works at Whakarire Avenue.
2. Napier City Council staff will provide a verbal update at the meeting.

Recommendation:

1. That the Clifton to Tangoio Coastal Hazards Strategy Joint Committee receives and notes the *verbal* **Update of Protection Works at Whakarire Avenue** report.

Authored by:

Simon Bendall
PROJECT MANAGER

Approved by:

Mike Adye
GROUP MANAGER ASSET
MANAGEMENT

Attachment/s

There are no attachments for this report.

CLIFTON TO TANGOIO COASTAL HAZARDS STRATEGY JOINT COMMITTEE

Friday 19 August 2016

Item 11

Subject: UPDATE ON PROPOSED REVETMENT WORKS AT CLIFTON

1. This report provides an opportunity for Hastings District Council staff to update the Joint Committee on proposed revetment works at Clifton.
2. Hastings District Council staff will provide a verbal update at the meeting.

Recommendation

1. That the Clifton to Tangoio Coastal Hazards Strategy Joint Committee receives and notes the verbal ***Update on Proposed Revetment Works at Clifton*** report.

Authored by:

Simon Bendall
PROJECT MANAGER

Approved by:

Mike Adye
GROUP MANAGER ASSET
MANAGEMENT

Attachment/s

There are no attachments for this report.