



Community Based Decision-Making for Climate Change Adaptation in Hawke's Bay, New Zealand

Clifton to Tangoio Coastal Hazard Strategy 2120

STEPHEN DAYSH AND GRAEME HANSEN

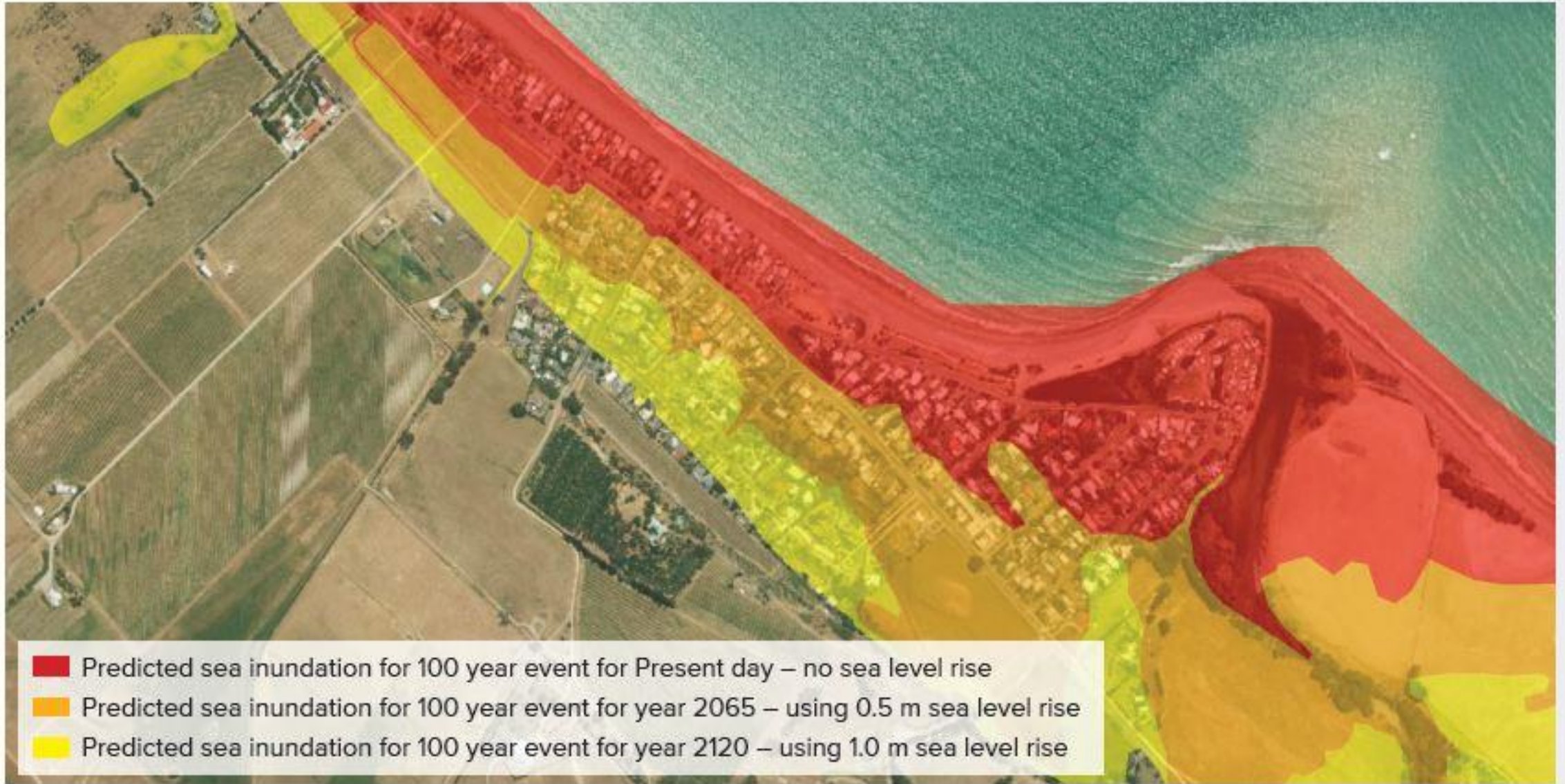
Decision Making under Deep Uncertainty Annual Event | Oxford | 14 – 15 November 2017



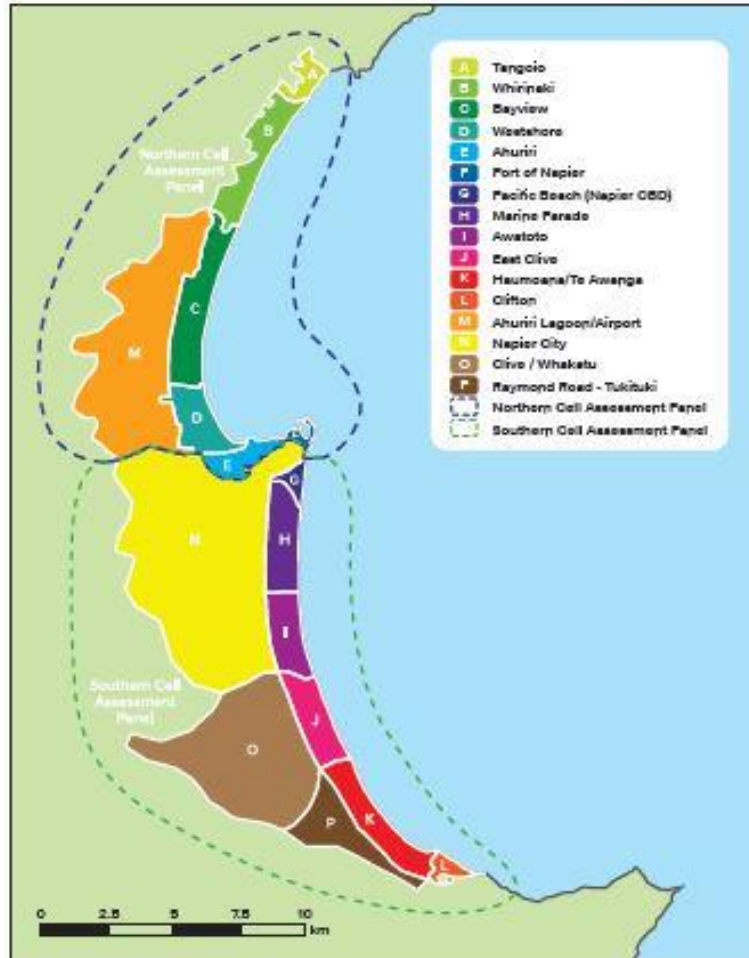
THE ISSUE



Hawke's Bay



COMMUNITY DECISION MAKING PROCESS



DECISION MAKING PROCESS

SOUTHERN CELL ASSESSMENT PANEL



DECISION MAKING TOOLS

SOUTHERN CELL

Pathway One

Coastal Unit K2: Te Awanga

Short Term

Renourishment

Regular gravel renourishment to offset erosion losses in combination with beach maintenance and planting

Medium Term

Retreat the Line

New defence line to reduce inundation risk constructed along Clifton Road/Wellwood Terrace

Long Term

Managed Retreat

Property and assets north of new defence line relocated inland, natural character of coastline reinstated



MCDA – Multi Criteria Decision Analysis
DAPP – Dynamic Adaptive Policy Pathways
ROA – Real Options Analysis

RESULTS OF DECISION MAKING

Te Awanga Coastal Unit Example

Unit K2: Te Awanga												
Pathway	Short term	→	Medium term	→	Long term	MCDA Score	MCDA ranking	Cost + Loss ¹ (\$m)	Cost + Loss ¹ ranking	VFM ² (\$'000/point)	VFM ² ranking	Short Term build costs ³ (\$m)
PW 1	Renourishment	→	Retreat the Line	→	Managed Retreat	50	4	24.15	6	403	6	8.84 (0.55 / yr)
PW 2	Renourishment + Control Structures	→	Renourishment + Control Structures	→	Retreat the Line	58	2	17.08	2	194	2	8.98 (0.60 / yr)
PW 3	Renourishment + Control Structures	→	Renourishment + Control Structures	→	Renourishment + Control Structures	62	1	16.77	1	171	1	8.98 (0.60 / yr)
PW 4	Renourishment + Control Structures	→	Renourishment + Control Structures	→	Sea wall	53	3	18.48	3	232	3	8.98 (0.60 / yr)
PW 5	Renourishment	→	Sea wall	→	Retreat the Line	43	5=	20.00	5	329	5	8.84 (0.55 / yr)
PW 6	Sea wall	→	Sea wall	→	Sea wall	43	5=	18.67	4	291	4	9.08 (0.66 / yr)
PW 30	Retreat the Line					--	--	14.94	--	--	--	

This pathway was chosen

How uncertainty and change has been integrated into the decision problem:

- MCDA included flexibility and ability to change criteria as part of decision making process.
- Pathways and options are able to be changed in the future based on agreed triggers, with 10 yearly strategy reviews planned.
- Process used short (0-20 years), medium (20-50 years) and long term (50-100 years) time horizons.



What was learned:

- Council and Iwi partnership in Joint Governance Committee set up to survive 3 yearly political cycles.
- Affected community members were invited and trusted to define options, determine pathways, consider cost implications and make recommendations to the Joint Committee.
- Technical Advisory Group provided critical guidance and support through the year long process.



Critical enablers that shifted decision making thinking toward managing long term risks:

- Joint committees willingness to invite affected members of the “at risk” communities to participate fully in the decision making process.
- 100 year pathways enabled affordable responses to be defined by prioritising immediate actions and identifying other actions which can be deferred for future decisions, based on the actual climate change experienced. (i.e; an intergenerational strategy)
- Inclusion of cultural needs and perceptions important in NZ context.

