

ADAPTING TO CLIMATE CHANGE: RISK-BASED SHORELINE MANAGEMENT PLANNING

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INTRODUCTION

Shoreline management planning is entering its third generation in the UK and its first in NZ. In both countries Shoreline Management Plans (SMPs) aim to establish the short, medium, and long term 'management intent' for unique, distinct stretches of coast by understanding coastal processes, hazards, and risks. They also aim to reflect the interests of all parties (of the community) and be deliverable.

However, there are differences between the approaches, which reflect the countries different geographies and governance structures, but also their different shoreline management planning history. And lessons can be taken from both.

SMPS IN ENGLAND AND WALES

SMPs were introduced in England and Wales in the 1990s. Their primary role was, and still is, to steer coastal defence decision-making and, by doing this in close partnership with planners and other stakeholders, to achieve an integrated management approach.

The first generation provided an important evidence base, but in many cases did not address the difficult questions in locations where continuing to defend is challenging.

The second generation, 20 years on, produced more realistic policies and a 10-year review found that the existing SMPs were largely still valid and helping coastal managers and planners work towards sustainable coastal zones. In the interim, a 'coastal change management areas' planning instrument was introduced, which linked directly to SMP policies. Other processes, such as habitat management, environmental impact assessment, water quality and marine planning, are now also explicitly linked to SMPs.

A recent refresh produced supplementary guidance and policy 'health checks', mostly focused on setting up 'live' SMPs to support ongoing management. Coastal managers are now implementing the recommendations, including developing more meaningful management policy labels (to better reflect the actual intent) and triggers for policy transition.

SMPS IN NEW ZEALAND

SMPs, or Coastal Adaptation Plans (CAPs), in NZ should align with the Ministry for the Environment's coastal hazards and climate change guidance for local government on risk-based 'dynamic adaptive pathways planning' (DAPP). They are intended to reduce the risk from coastal hazards to a 'tolerable' level; by developing tailored, flexible solutions to ensure the long-term sustainability and resilience of coastal areas and communities.

For the Coromandel Peninsula's coastline, the SMP is a direction setting document that provides a foundation for implementing local CAPs. The coastal adaptation plans (or pathways) themselves are based on science and an understanding of the hazards, the risks (taking account of vulnerability and adaptive capacity) and risk tolerance (see Figure 1), but the advocated adaptation options and policy pathways are community-led and values based. In September 2022, the District Council adopted 138 CAPs that both address short- and medium-term issues and set out how local communities and hapū may need to and should adapt in the long-term.

Assets / Values	Coastal Inundation					
	King Tide			5% AEP		
	0.4m SLR	0.8m SLR	1.2m SLR	0.4m SLR	0.8m SLR	1.2m SLR
Buildings		34 dwellings and 12 other buildings	127 dwellings and 14 other buildings	124 dwellings and 14 other buildings	135 dwellings and 16 other buildings	141 dwellings and 20 other buildings
Roads		0.32 ha of roads	0.4 ha of roads	0.38 ha of roads	0.46 ha of roads including 0.03 ha of State Highway 25	0.62 ha of roads including 0.17 ha of State Highway 25
Recreation Reserve	0.09 ha	0.5 ha	0.64 ha	0.63 ha	0.64 ha	0.66 ha
Te Puna Boat Ramp	✓	✓	✓	✓	✓	✓
Te Puna Boat Club		✓	✓	✓	✓	✓
Depth of flood waters at Te Puna Boat Club		0 to 300 mm	300 mm to 1 m	300 mm to 1 m	> 1 m	> 1 m
Depth of flood waters over Hames Coast Road (SH 25)					0 to 300 mm	300 mm to 1 m

Figure 1 - Assessment of Risk Tolerance, Coromandel NZ

The involvement of the community in the project through Coastal Panels and wider community workshops was invaluable to obtaining support for the initiative and enabling resilience. Four panels covered different parts of the Peninsula, with members selected based on expressions of interest to reflect a range of demographic profiles and interests and to represent different community perspectives.

It was recognised that that it would be an educational journey and sufficient time was allowed for that (from September 2020 to August 2022). Laying a solid foundation, based on an understanding of hazards, vulnerability and risks, as well as the likely performance of different adaptation options (e.g., dune management versus rock revetments), for the more difficult 'dynamic adaptive' pathway decisions. These decisions were informed by an adaptation menu, regional infrastructure plans, advice on vertical land movement, insurance and climate leases, as well as feedback on how individual communities wanted to respond. Local perspectives on values and risk were leveraged to establish preferred adaptation pathways that include polices, defined actions, thresholds, and triggers specific to each community for a 100-year planning timeframe.

COMPARISON

Both approaches have moved on from broad high level policy options - 'no active intervention', 'hold the line', 'advance the line' and 'retreat' - to provide more detailed adaptation actions (refer to Figures 2 and 3). Both are also moving beyond the use of fixed epochs

(timeframes) to define a change in policy direction (or from one action to another).

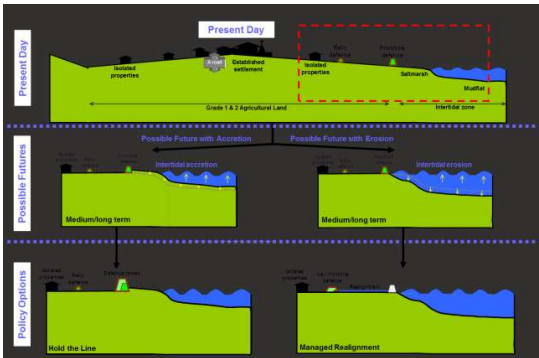


Figure 2 - Illustration of decision pathway for The Wash SMP (2010)

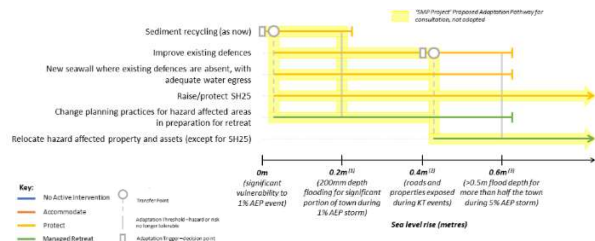


Figure 3 - Coastal Adaptation Pathway, Coromandel NZ (2022)

But whereas NZ is now using a fully trigger-based approach (i.e., defining adaptation signals, triggers and tolerance thresholds based on levels of erosion or inundation, frequency of storm events, insurance retreat and more), in England and Wales the adoption of this approach is only tentative and more constrained by the embedded process.

A key difference between the UK and NZ, is the extent of the coastline that is defended. That is, in England policies often focus on adaptation of existing defences, whereas in NZ, where defences are far less common, choices need to be made not just between defend and retreat but also between ‘soft’ (nature based) and ‘hard’ solutions.

In the UK the delivery of SMP policies relies on engagement with Planners, whereas in NZ the SMP is fundamentally a planning document and founded on community engagement. Community involvement in the UK is limited to drop-in sessions, the justification for this being the large scale of the plans (often covering two or three Local Authority areas, e.g., the West of Wales SMP covers 1,100km of coast, potentially affecting hundreds of thousands of people, compared to the Coromandel Peninsula’s 400km of coast and thirty thousand residents). The policy approach to be adopted is then determined by Local Authority elected representatives alongside the Environment Agency and Natural England (regulators); which can constrain long-term planning and sustainability.

However, where the link between the SMP and the planning process works, through coastal change management areas, the planning process includes more significant community engagement. Further, where property is at risk (e.g., on England’s east coast) and action is to be taken, Local Authorities maintain local engagement.

Due to the UK’s longer SMP history, the process is robust and shown to work, but also less flexible. Introducing SMPs in NZ requires more pathfinding and delivery is yet to be demonstrated but creates more room for innovation and wider engagement (see Figure 4).

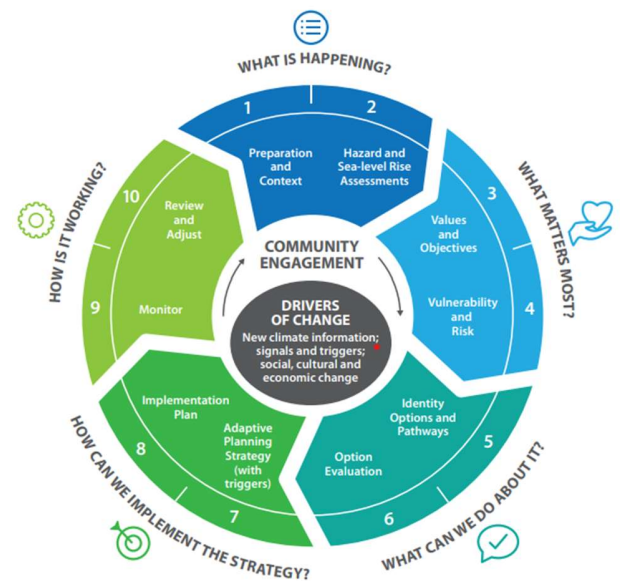


Figure 4 - Dynamic Adaptive Pathways Planning, NZ (after Ministry for the Environment’s guidance to local government)

LESSONS

Strong clear guidance is key and the benefits of an established process are apparent but there also needs to be room for flexibility. This will help in bringing the community on the journey, which is critical to the adaptive planning process.

Building on the lessons from elsewhere, the UK Government has just announced they are to give £34M to the Local Authorities in North Norfolk and East Riding to explore and implement innovative measures for adaptation to coastal change (through the Coastal Transition Adaptation Programme), with the aim of influencing policy, involving the community and learning lessons.