



ANTICIPATING STAGED MANAGED RETREAT

at the coastal margins

**Key questions and considerations for
community and local government evaluation
of managed retreat approaches.**

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Managed retreat in coastal areas involves the landward relocation of existing and planned development to reduce exposure to hazards. The hazard risk is reduced or removed entirely, leaving the coast to respond to natural processes.

Introduction

The New Zealand Coastal Policy Statement (NZCPS) 2010 provide directives to local government to consider such approaches (Objective 5; policies 25 and 27), amongst a suite of options for reducing coastal hazard impact on existing and future development. Similar provisions were present in the NZCPS 1994, however, managed retreat approaches still remain a ‘black box’ for many and New Zealand has few successful examples of managed retreat of habitable dwellings at the coast. There is a pressing need to examine managed retreat more closely as a viable, or the only, alternative for sites at intractable risk of erosion and flooding. Here we seek to unpack the black box of managed retreat as a mainstream option for coastal risk management.

We draw from collective observations arising from work undertaken by the Living at the Edge project (The Edge), part of the Resilience to Nature’s Challenges, National Science Challenge. We worked alongside a formal decision making process that embodied engagement with communities

in Hawke’s Bay by three joint councils developing the Clifton to Tangoio Coastal Hazards Strategy 2120 (www.hbcoast.co.nz). We provided social and physical science expertise, acting as a ‘critical friend’ supporting the stakeholder evaluation of multiple coastal management options for the region’s coast. In this context the team provided a review of managed retreat practice, as well as information on other options and assessment tools, highlighting different approaches and barriers to implementation.

Here we identify key questions and considerations for community and local government evaluation of managed retreat approaches. In particular, we highlight managed retreat as a suite of options that may be staged over time in response to agreed triggers (decision points) before reaching adaptation thresholds. Proactive community engagement is highlighted as pivotal. We place these questions within the context of the Ministry for the Environment Coastal Hazards and Climate Change: Guidance for Local Government (MfE Guidance, 2017)¹ and the Department of Conservation’s (DoC) NZCPS 2010 Guidance Notes: Coastal Hazards², to inform practice.

Unpacking the ‘black box’: defining managed retreat

Managed retreat is commonly perceived as a singular ‘one off’ option, predicated on the removal of structures, disruptive for people and costly upfront. However, Reisinger et al. (2015) define managed

retreat as: “...a long-term, strategic decision to allow the shoreline to migrate inland in response to sea-level rise and attendant erosion [and flooding], and proactive management of the removal of affected assets, rather than protecting the existing shoreline”. Managed retreat is thus “conscious”, “deliberate”, “coordinated”, and “precautionary” (Fletcher et al., 2013).

In practice, managed retreat employs a number of staged actions, including anticipating the removal or abandonment of hard protection structures, decisions to stop maintaining such structures, restrictions on land use, identifying new places for retreating communities to go, and the removal or relocation of at-risk infrastructure, including transport links. These actions may require a transition over a few or many years and flexible planning processes that can signal change is approaching, triggering decisions to shift to new pathways rather than reinforce delay or additional exposure to hazards.

A number of anticipatory short and long term planning tools are available for facilitating managed retreat, including development setbacks, hazard overlay maps, relocatable buildings, relocation plans (including trigger points) and closed zones (e.g. Mapua and Ruby Bay, Tasman District, MfE Guidance, 2017: 43). Retreat also provides opportunities to re-vision coastal spaces and connections with coastal communities, including enhancing public access, recreational space, landscape value, and ecological functioning (Fletcher et al., 2013).

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¹ <http://www.mfe.govt.nz/publications/climate-change/coastal-hazards-and-climate-change-guidance-local-government>

² <http://www.doc.govt.nz/Documents/conservation/marine-and-coastal/coastal-management/guidance/policy-24-to-27.pdf>

Towards anticipatory managed retreat

While these definitions infer that managed retreat is a process to be canvassed with communities, with options and triggers explored for future action, for many communities the realities of retreat are decisions driven post-hazard. While many international examples of retreat involve property buy-out after a significant event (e.g. Staten Island, USA, post-Hurricane Sandy), these emphasise a reactive approach, overlooking how longer term retreat plans developed with communities can be implemented. Anticipatory strategies can enable decisions about properties and communities to be staged over a number of decades by first identifying the most at-risk sites and staging the implementation of the retreat options.

Developing agreed triggers for retreat

To enable staged implementation, community coping capacity needs to be identified and triggers designed for retreat well before the coping thresholds are reached. Triggers can be physical ones such as increasing frequency of flooding events and the location of erosion relative to at-risk structures, or social triggers that start to emerge as the physical impact evolves. Decisions can be made for implementation of retreat options in time, ahead of such defined trigger thresholds being reached. Understanding community thresholds and the development of agreed triggers can help ameliorate community concerns about the timing and magnitude of sea-level rise, how triggers can be reflected in plans, and the potential impacts on people, land and assets. The MfE Guidance (2017) offers direction on how hazard and sea level rise assessments can be done where uncertainty exists, and methods that can be used for developing adaptive plans, including managed retreat.

The need for early and effective engagement

A major constraint on community and local government considering managed retreat processes is understanding the viability of options and their funding



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(Boston & Lawrence, 2017). Inadequate or absent community engagement has significantly constrained attempts to implement managed retreat. In instances of government driven relocation or removal of shoreline protection there has been community resistance (e.g. Fairbourne, Wales; Byron Bay, Australia) resulting in delay, significant cost and policy reversal. Attempts to implement managed retreat have been challenged by affected property owners, concerned at the loss of connection to home and place, uncertainty about property values, insurance, and mortgage availability. However, where communities were engaged and included in decision-making in an enduring and meaningful way, strategies for retreat have been developed and implemented (Port Waikato; Twin Streams (Vandenbeld & MacDonald, 2013); Grantham; Soldiers Grove). See also Appendix 1 of the MfE Guidance (2017).

The timing of effective engagement is critical for successful implementation of managed retreat. Community engagement is frequently undertaken near the end of the decision cycle, and may be perceived as a post-hoc legitimising exercise. A

participatory strategy developed at the outset will enable the context and community values to guide the process of plan development and implementation (refer Chapter 3 of the MfE Guidance, 2017; DoC Guidance Notes, 2017). The processes can then be inclusive of a range of voices and reflect local and wider community values, beyond the economic value of physical assets and private property.

Funding managed retreat

Financial limitations and uncertainty about who will bear the cost can constrain implementation of managed retreat options (Boston & Lawrence, 2017). Successful international examples of managed retreat have been contingent upon significant funding assistance from national or state-level governments. New Zealand funding mechanisms currently rely on a disaster trigger through the Earthquake Commission and insurance, after the damage has occurred. Managed retreat is by contrast an anticipatory strategy to avoid and reduce risk. Through managed retreat the costs of adaptation, while potentially substantial, can be managed by spreading them across time, thus reducing the burden on both current and future generations.

Key questions to address

Relocation options are essential for an adaptive retreat strategy aiming to reduce hazard risk. Movement of households and infrastructure requires site-specific consideration of whether managed retreat is total abandonment, full or part relocation, the timing, the triggers that will activate the adaptive plan and consideration of:

- What are the community values and aspirations?
- Is land available for relocation?
- What criteria are used for allocation of land?
- Does the community wish to relocate as a community?

- What infrastructure and services should be relocated?
- Should local government play a role in providing relocation options?
- Do planning controls facilitate or create barriers to the movement of structures or the development of new sites away from the risk areas?
- Who should pay?
- What are the equity issues?
- What funding mechanisms are available?

Conclusions

Managed retreat comprises a staged and evolving adaptive planning process over time that can be implemented in a range of physical, social and governance conditions. Managed retreat considerations necessitate a collective process, involving early engagement, that can address the why, where, how and when of retreat. The preferred outcome would be the development of a staged and adaptive set of strategies, based on a set of agreed triggers that can start the managed retreat process allowing enough time before thresholds are reached, rather than a fixed and single temporal solution or one that occurs after the damage has been sustained. To date, examples of successful larger-scale relocations of communities tend to be reactive and crisis

driven. Efforts to undertake more strategic (pre-emptive) relocation actions are less common in New Zealand. Early and considered engagement, identifying the values of current and future generations, can avoid disconnects between community and local government and short and longer term priorities, particularly where retreat is anticipatory and not forced through extreme events.

References

Boston, J. and Lawrence, J. (2017) The Case for New Climate Change Adaptation Funding Instruments. Institute for Governance and Policy Studies & New Zealand Climate Change Research Institute, Victoria University of Wellington, Wellington

Fletcher CS, Taylor BM, Rambaldi AN, Harman BP, Heyenga S, Ganegodage KR, Lipkin F,



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and McAllister RRJ (2013) "Costs and coasts: An empirical assessment of physical and institutional climate adaptation pathways" National Climate Change Adaptation Research Facility, Gold Coast, <https://www.nccarf.edu.au/publications/costs-and-coasts-climate-adaptation>

Reisinger A, Lawrence J, Hart G, Chapman R (2015) From coping to resilience: the role of managed retreat in highly developed coastal regions of New Zealand. In: Glavovic B, Kelly M, Kay R, Travers A. (eds) Climate change and the coast: building resilient communities. Florida: CRC Press, Taylor and Francis; 285–310.

Vandenbeld, A. and Macdonald, J. 2013 Fostering community acceptance of managed retreat in New Zealand, in Jean Palutikof, Sarah L. Boulter, Andrew J. Ash, Mark Stafford Smith, Martin Parry, Marie Waschka and Daniela Guitart. Eds. Climate Adaptation Futures, John Wiley & Sons, Ltd, West Sussex, United Kingdom

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