

Coastal flooding challenge

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CLIMATE CHANGE WILL impact on us all, and especially on those living and working along the coast. In December 2017, the government released revised guidance documents and a comprehensive analysis of possible future scenarios of the impact of sea-level rise on New Zealand (available at www.mfe.govt.nz). The guidance is intended to be used by local government in future planning, and by those who provide services and infrastructure to coastal areas.

It is estimated that by 2040-2060 global sea-level rise will be approximately 0.2-0.4 metres above the 1995 levels. Accounting for sea-level rise over a 100-year timeframe, allowance is made for a rise of one metre.

Secondary changes include coastal erosion. Storm surges and the frequency and intensity of storm results from the global warming of the seas. The report suggests that these will impact on erosion, flooding, groundwater and drainage levels, saltwater intrusion and liquefaction. In fact very recently we have seen the severe impact of such intense storms along the coast of southeast Auckland, the Coromandel and on the West Coast and Haast. The effect is both personal and economic. Lost livelihoods, flooding to private and commercial property, sewage overflows, and damage to roads and other infrastructure has been significant.

It is predicted that the extreme coastal water levels that are currently expected to be reached or exceeded on average only once every 100 years, will by 2050-2070 occur at least once per year. Sea-level rise is not the same everywhere. Land also moves and winds and currents lead to uneven distribution of effects. In assessing the risk exposure to New Zealand's various regions, the report identifies that the highest coastal risk exposure is to the Canterbury and Hawke's Bay regions, with the Waikato having the greatest length of road network exposed.

Currently, with the coastal areas being less than 1.5 metres above mean high water spring tides, there are over 68,000 buildings, 133,000 residents, five airports, over 1500 wharves and over 2000 kilometres of road vulnerable to the effects of storm damage. The total replacement cost of all buildings within this zone has been assessed at \$19 billion in 2011.

The reality is that at times, difficult and unpopular decisions will need to be made to protect existing property and infrastructure on the coast as well as future investment.

The guidance document focuses on an 'adaptive planning' process to address the challenges that future climate change will bring. The purpose of this approach is to allow for decisions to be made now, which include built-in elements to allow for adaptation to future changes. The guidance places emphasis on community engagement with a wide range of stakeholders through discussion and debate around causes and effects of the problem as well as the range of responses possible.

Implementation of the guidance will be primarily through the Resource Management Act (RMA) and the local planning rules set out in district plans. The RMA requires developers and local authorities to consider natural hazards when considering suitability of development of land. Restrictions and conditions can be placed on developments in order to mitigate the effect of natural hazards, such as coastal erosion. Scrutiny of the decision-making is provided by the specialised Environment Court.

The guidance recognises that there is, at times, the potential for tension between the RMA and provisions of the Building Act 2004. Under the Building Act, the council cannot refuse building consent if the proposed development makes adequate provision to protect the land and building work from natural hazards. The focus is however limited to consideration of the safety of the building and its users over a 50-year timeframe and not on the wider environmental consequences that development in a "hazardous" area may lead to.

Parties undertaking developments understandably wish to avoid unnecessary red tape and thereby allow work to proceed quickly and economically, especially in times of housing shortages. However, long-term protection of infrastructure as well as buildings is also now recognised as being required. There will therefore need to be an understanding that installing protection measures such as sea-walls or other infrastructure at the current safe levels will not be sufficient if it is in an area which is likely to be affected by sea-level rise within the next 100 years.

All the guidance can do is to provide some direction in an uncertain world. Only future generations will know if it has achieved its aim. ⚠️

