

Shifting Sands: what the ‘Sand Report’ means, and why it is key to the eastern seaboard suburbs.

The ‘Sand Report’ is actually two technical reports written by NIWA for Christchurch City Council (CCC), completed in mid 2018¹. The sand that has and is building the New Brighton/Southshore Spit and the associated seaward dunes is eroded from the Alps and that great ‘sand-dump’ we call the Canterbury Plains. As our rivers flow to the sea, they erode sand from their beds and banks, and this sand is carried with them. Locally, climate change will increase² the amount of sand getting to the sea. Once in the sea this sand is carried southwards by longshore drift³ and arrives at the dunes where due to the shallow waters and slowing currents it is deposited, ‘dune feeding’. These reports showed that in a future where sea-level had risen 1.4m, with more frequent and more violent storms⁴, The Spit would still be growing seaward. With current knowledge, such a future is >100 years away.

The context of the *Sand Reports* is a 2015 technical report⁵, the longshore coastal erosion parts of which were subsequently discredited by technical peer review. Council officers seem to have interpreted this report to mean that the extensive dune systems which protect The Spit suburbs would be eroded very soon because there was not enough sand to ‘feed’ the dunes. The fallout from this 2015 report was the creation of a coastal erosion zone which indicated that along the open coast there was a significant and imminent risk that the sea would rapidly erode areas of the dunes and potentially the area behind them could be flooded by the sea. However, the *Sand Report* has shown this to be unlikely. Unlike analogous situations in other parts of The City where CCC has promptly modified the extent of hazard zones in the light of new information⁶, this coast erosion zone remains. This increases social inequity and well-being differences across The City which seems contrary to the Local Government Act and its recent amendments.

When confronted with professional opinions of coastal engineers and ourselves that the *Sand Report* (which also includes the multi-hazard contributions from sea-level rise, rainfall, droughts and storms), was *prima facie* evidence that the erosion zone needed modification, CCC responded⁷ was that it was part of a multi hazard assessment and hence not of itself significant. Whilst the multi-hazard approach is completely appropriate, and the correct approach to adaptation, this case is about correcting an error with a coastal erosion zone: the extent of which is not consistent with the best available erosion data. We do not understand why this has not been acted upon promptly, given that we understand that residents are encountering real problems with insurance *etc.* because of the location and extent of this zone.

¹ Hicks et.al (2018) *Coastal sand budget for Southern Pegasus Bay Stage A (April 2018)* #NIWA 2018062CH Project #CCC18501 and Hicks et.al (2018) *Coastal sand budget for Southern Pegasus Bay Stage B: Future sand budget (June 2018)* #2018172CH Project #NIWA CCC18501

² Although overall rainfall is likely to decrease, the rain when it does come will be much more intense and the land it is falling on will be drier, hence increasing erosion. NIWA medium term predictions.

³ This is the phenomena of material being carried parallel to the shore by the interaction of tides, sea currents and prevailing winds.

⁴ Note at any time, the position of the coastline is the result of deposited sand and storm erosion.

⁵ Coastal Hazard Assessment: Stage Two (Christchurch City Council) July 2015 Job No: 851857.001.v2.1

⁶ Port Hills example: https://christchurch.infocouncil.biz/Open/2020/05/CNCL_20200514_ATT_4045_EXCLUDED.PDF

⁷ Reply from CEO Dawn Baxendale