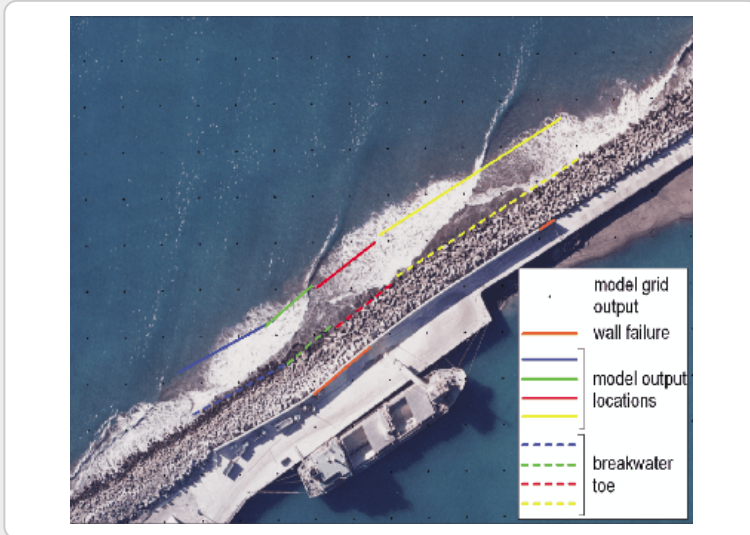
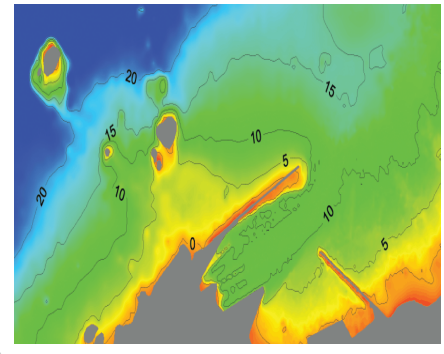
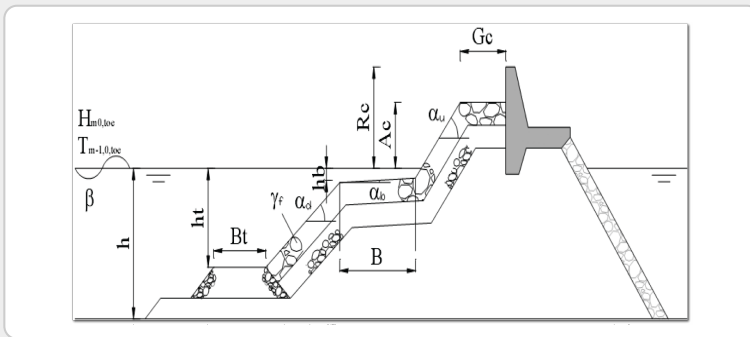


### Breakwater Overtopping Analysis

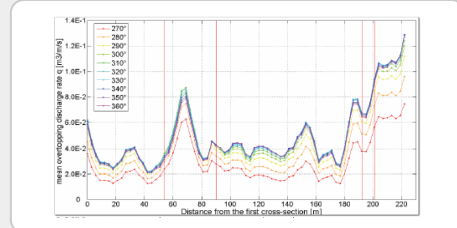
An energetic storm in 2005 led to the collapse of a wave wall on the Port Taranaki breakwater. A high-resolution study of the wave overtopping along the breakwater was subsequently undertaken to provide design values for repair and ongoing maintenance.



The three most commonly-used wave overtopping formulae were tested for a range of wave directions on the measured profiles. Sensitivity analysis showed that the Beasley (1999) method is the most robust.



A laser scanner was used to survey the breakwater face down to the low tide level, and profiles were extracted at 5 m horizontal intervals. The SWAN wave model was established to define the wave climate, coupled to the MSL 10-year wave spectra hindcast.



Zones of wall failure were clearly correlated to the regions of maximum overtopping volumes, modified by variable roughness and convex morphology. The analysis was used to provide guidance in terms of the optimum breakwater design to reduce overtopping while minimising construction volumes.