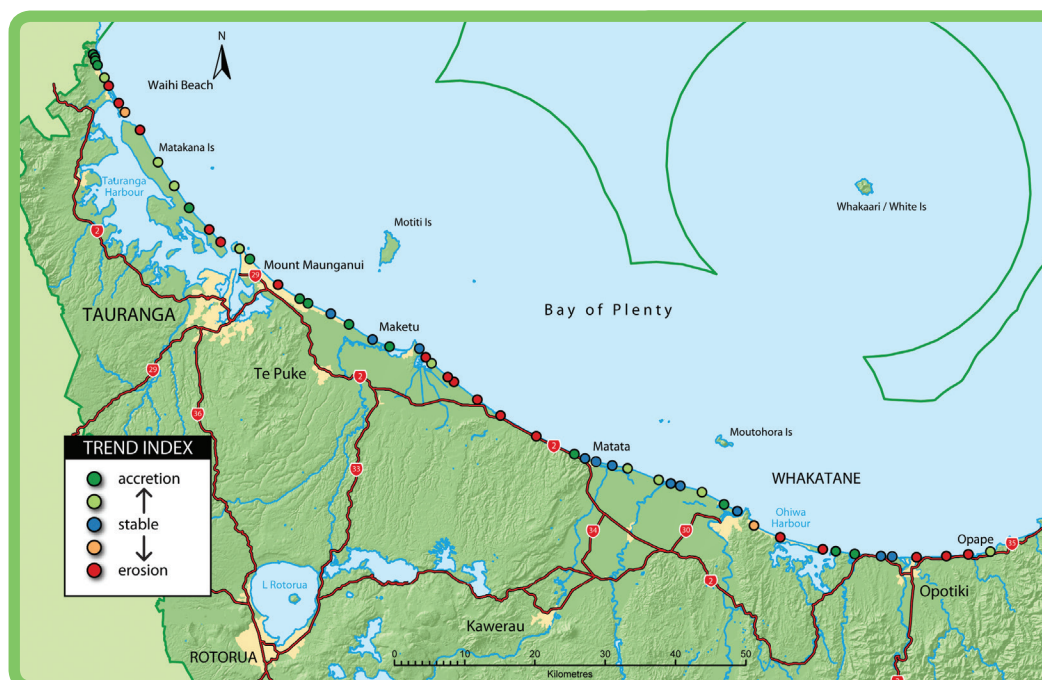
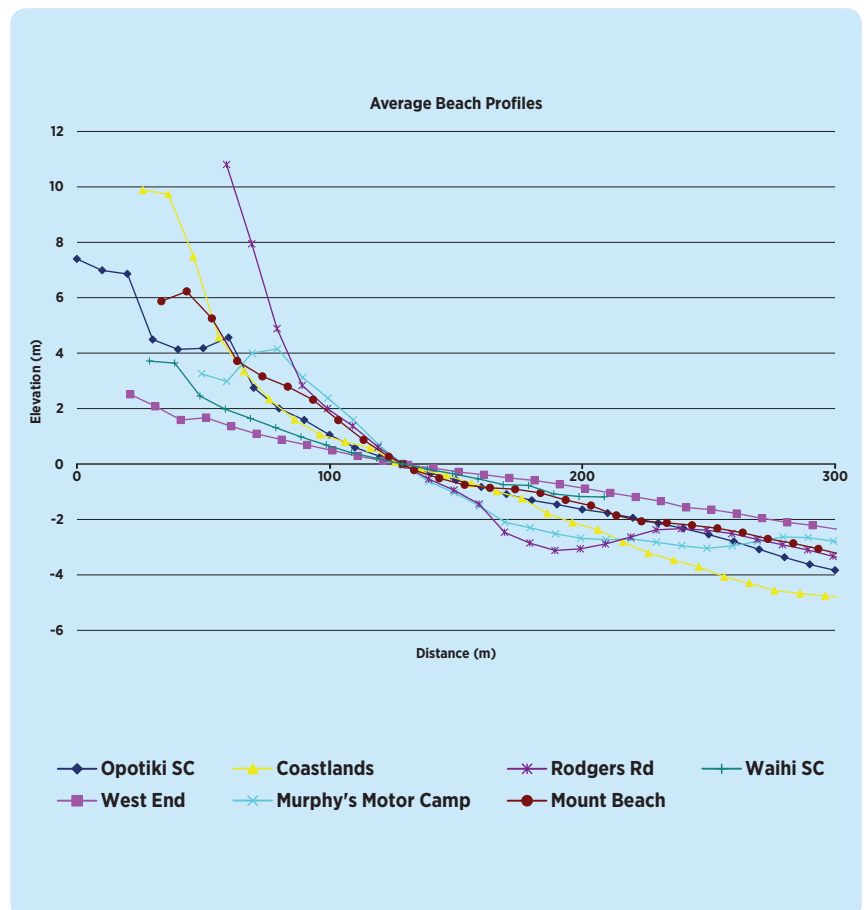


Over the course of a year along the Bay of Plenty coastline, changes in the beach morphology result from “cut and fill” processes. The movement of sediment from this process is dependant on wind and wave action as well as sediment properties. These seasonal changes are superimposed on short and long term processes which act to produce periods (tens of years) of erosion, accretion and dynamic equilibrium.

To obtain a true representation of the beach form it is necessary to be able to measure the minor changes in slope present along a sandy beach profile. The spacing of observation points will often be irregular in order to define the beach shape.

We continue to monitor 53 sites. Cross-sections (a selection of sites are shown in the graph to the right) starting from behind the frontal dune and moving seawards towards the mean sea level mark are measured annually in February at each of the sites. The position of the toe of the frontal dune and the volume of sand on the beach are used to determine a trend index value (map below) for each site. Data from 1990 to 2018 is used in this calculation.

These cross section data sets are used for coastal hazard analysis. The map below shows the variety of beach shapes at a selection of sites from the sandy section of the Bay of Plenty coastline.



Results from the 1990-2018 dataset for each of the 53 monitoring sites show the following beaches are exhibiting trends of ongoing erosion:

- Ōhope Beach
- Pukehina Beach
- Southern area of Waihi Beach
- Central section of Hikuwai Beach

This pattern is unchanged since the last report, which summarised data up to 2016.

Wave climate

Wind blowing over the sea surface produces short waves or ripples. The stronger the wind, and the more time and distance it has to work on the waves, the higher and longer they get. In a storm the rough sea is a mixture of waves of different heights and lengths, travelling in different directions. Once started, waves can travel long distances (as "swell"), crossing whole oceans. NIWA has several projects looking at modelling waves and swell which will provide valuable information for planning, engineering and science staff at Council. www.niwa.co.nz/natural-hazards/hazards/waves

Data from the Council Triaxys wave buoy located 13km north of Pukehina Beach is used to ground truth models as well as providing a useful data source and safety tool for recreation users of the open sea environment within the Bay of Plenty. Data for the period October 2005 to May 2018 shows maximum recorded $H_{max} = 12.4m$ (13/4/2017), average $H_s = 1m$ and average $T_s = 6.9s$. Summary plots for H_{max} and H_{sig} are shown on the right.

Regular servicing by the Data Services team keeps the data capture and data quality high for this instrument.

