



Coastal Processes

We've been busy investigating the potential for increased erosion and shoreline change to areas such as Mair Bank using tools like hydrodynamic modelling and field work

The natural state of the harbour

Surveys of the Whangarei Harbour have shown that it is a stable coastal environment, with only a minor northern migration of sand observed over time along the shore of Ruakaka Beach. This means there is currently only small amounts of erosion or coastal change other than the natural fluctuations that come from banks and channels shifting following one-off events like storms.

How will the proposed changes affect the harbour?

The proposed changes will have very little effect, or in some cases no effect, on coastal processes within the harbour and surrounding areas.

Overall, any changes to tidal flows and wave conditions are small and consistent with the natural changes that already occur over time.

In areas of particular interest - including on the ebb tide shoal and Mair Bank - no significant changes to existing coastal processes are expected.

Waves

- The predicted change in wave height during average and moderate wave conditions is insignificant
- During extreme storm conditions where waves offshore can reach more than 5 metres high, some waves might break slightly higher (between 0.1 – 0.3 metres higher) on the edge of Mair Bank. This is no more than is expected in an average year of variable waves.

Tidal currents

- There might be some very slight changes to the timing of tidal phases as a result of dredging.
 - Tidal velocity changes (the speed the tides flow) are expected to be small as a result of dredging and the modified channel.
 - There is expected to be very little change to the transport of sediment (sand movement) as a result of dredging.
- » **These changes are consistent with natural coastal processes.**

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How will we remedy or mitigate any possible effects?

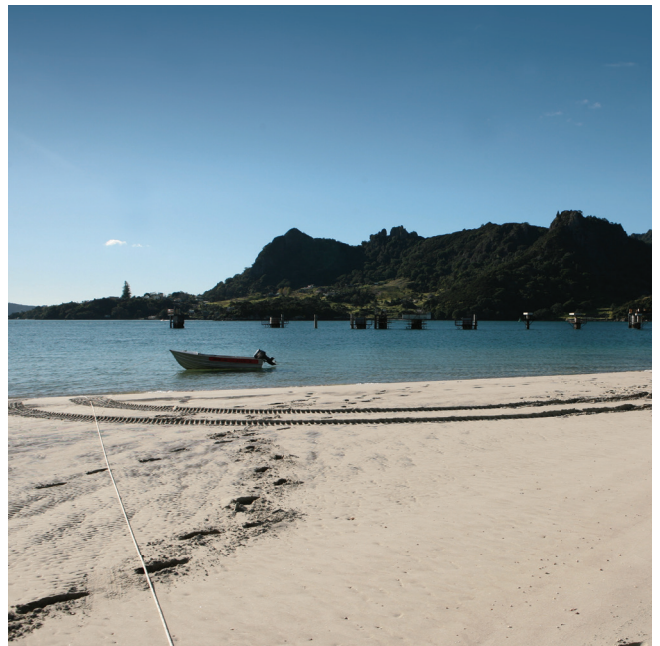
Mair Bank and the coastline extending south from Marsden Point have been undergoing natural change in recent times, including some net loss of sand. The proposed ongoing dredging to maintain the channel may add to the net loss.

To address this, Refining NZ is proposing to dispose a limited amount of dredged sand within the ebb tide shoal area, which will both replace and add to the volume of sand that can migrate landward, preventing erosion. This is a practical solution to replace the loss of sand we know about and to help offset the effects of sea level rise

We are also putting in place measures to monitor any potential changes to Mair Bank, the channel and the ebb tide shoal. This includes annual surveying of the channel, Mair Bank and the wider ebb tide shoal, before and after dredging.

If you'd like to know more of the nuts and bolts of the possible effects on coastal processes, you can get a copy of the independent expert's report at www.thedeepertory.co.nz.

Our independent experts spent a lot of time considering possible effects on things like marine animals, recreation and harbour safety. Please take a relevant sheet that focuses on these things in more detail.



If you'd like to know more of the nuts and bolts of the effect on coastal processes, you can get a copy of the assessment reports from the independent experts [here](http://www.thedeepertory.co.nz)