



# Dredging & Disposal

We've been busy with our experts looking at the best possible plan for harbour dredging and disposal

## What is the plan for dredging?

Refining NZ will need to carry out dredging to deepen parts of the existing channel (capital dredging) and do ongoing maintenance dredging to keep the channel at the right depth. This means there will be an upfront dredging programme to prepare the channel, followed by additional dredging as required in the following years.

The capital dredging, which is likely to take up to six months, will occur primarily in the outer channel, jetty approach and around the refinery jetties pocket, with some targeted dredging in other areas. The estimated volume of sand to be dredged is 3.7 million cubic metres over a 1.44 square kilometre area.

Maintenance dredging may be needed every 2-5 years. Although this will depend on how fast sand refills the dredged areas. We expect maintenance dredging will be mainly around the jetties and outer channel.

It is likely that we will use a small to medium sized trailing suction hopper dredge, possibly assisted by a backhoe dredger and barge. A cutter suction dredge may be used for localised dredging. Maintenance dredging is likely to use the same, or smaller size dredgers.

- Trailing suction hopper dredgers are self-propelled ships with hoppers (dredged material storage within the ship's hull). Articulated dredging pipes, or "drag-arms", extend to the sea bottom and dredge while trailing at low speeds.
- Back hoe dredgers are mechanical dredgers consisting of an excavator mounted on a dredging pontoon.
- Cutter suction dredgers use a cutter head and centrifugal pumps to lift and transport dredged material. The pumps produce the flow required to lift the material and, via the pumping head, to transport solid / water slurry through a pipeline from the dredger to a discharge point. Most CSD operations are stationary while dredging.

## What is the plan for disposal?

Once the sand has been dredged, it needs to be disposed of safely, in areas that have been carefully selected to avoid adverse effects on the environment (including ecology and tides, waves and currents).

Refining NZ is proposing two marine disposal areas for dredged sand:

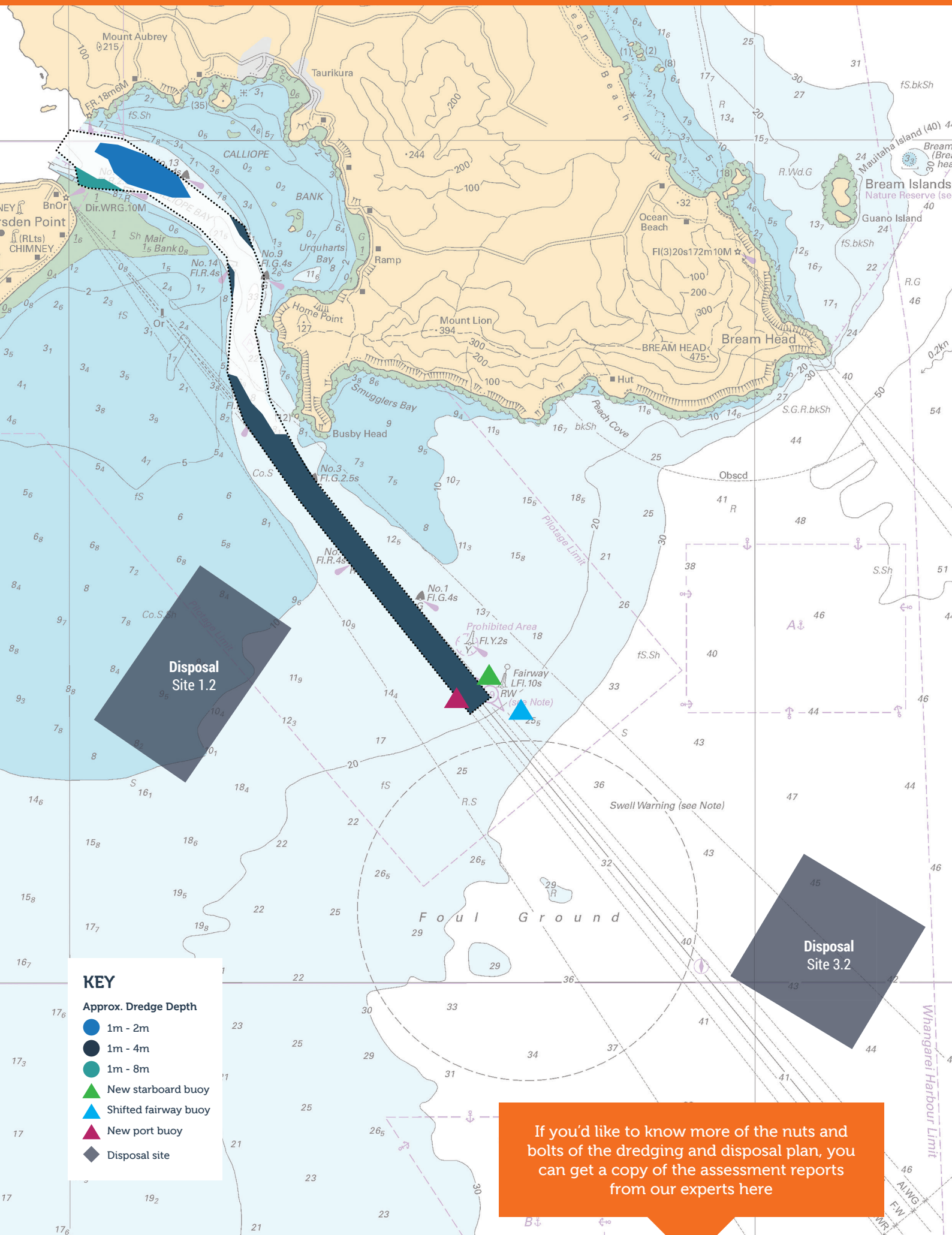
- Area 3-2: in up to 45 metres of water to the south east of the channel
- Area 1-2: nearer the shore in up to 15m of water and on the outer part of the ebb tide shoal

Most of the dredged material will be placed in Area 3-2, which is large enough to take all of the dredged material from both the capital and maintenance dredging programmes if needed.

If sand from the capital dredging is uniformly spread within Area 3-2, it will settle at a height of 1.5 metres from the seafloor. If a targeted site within Area 3-2 is used, the maximum height of the sand would be 4 metres in that spot (less than 9% of total water depth).

The remaining dredged material not going to Area 3-2 will be disposed of in Area 1-2 or to land. Area 1-2 is useful because it helps to provide a pathway for sand to migrate towards the shore. This will assist in preventing erosion and assisting to offset any effects of sea level rise.

Some proportion of the dredged material could also go to land based disposal where it is practical, beneficial and where there are appropriate consents in place. Options could include reclamation or beach renourishment.



**KEY**

Approx. Dredge Depth

- 1m - 2m
- 1m - 4m
- 1m - 8m
- New starboard buoy
- Shifted fairway buoy
- New port buoy
- Disposal site

If you'd like to know more of the nuts and bolts of the dredging and disposal plan, you can get a copy of the assessment reports from our experts here