

# Construction and Planting and Enhancement Works

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## Construction of breakwaters

The breakwater structures are required to provide protection to vessels navigating into and out of the barge port from waves in the open coast environment. They are also required to provide protection from waves to berthed vessels, commercial, and recreational activities within the mooring basin. The breakwater structures are shown on the appended drawing.

The breakwaters will be located on land, as well as in the intertidal area (where the tide covers and uncovers the foreshore) and sub-tidal area (where the seabed is permanently covered by tidal water). The breakwaters will be constructed by excavating the sediment and then placing geotextile, and rock and/or concrete armour units to form the structures from the shoreline moving seaward. The rock will be imported to the site from local quarries.

The sediment excavated to form the foundation of the breakwaters will be used in the construction of the breakwaters themselves, placed within the beach located in the mooring basin or used to nourish the foreshore adjacent to the breakwaters. Sediment will be visually sorted and used for these different purposes depending on particle size. Sediment will be stockpiled on the land.

## Dredging within the access channel and excavation to create mooring basin

The dredging proposed within the access channel will create sufficient depth in the channel for the design vessel to effectively and safely navigate under a range of weather and tidal conditions.

The comments above relating to sediment won from breakwater construction equally apply to dredging. There will be a much larger quantity of sediment created from dredging between the breakwaters.

## Construction of permanent access roads

The location of the proposed permanent access roads are shown on the appended drawing. The permanent access road for commercial access will be formed from SH 35 through TRT land. A bridge will be constructed where the access road crosses the tributary of the Karakatūwhero River. Trucks will offload products directly onto the barge and exit the site using the same access road.

Public access will be from Te Arawapia Road and through a small section of existing 4WD coastal track, which will be formed as a permanent road.

The works to create the roads will involve excavating a foundation and then laying and compacting fill and aggregate for a carriageway surface together with local drainage works.

## Planting and enhancement works

TRT are committed to enhancing the existing freshwater wetlands and the stream on site, as well as implementing a substantial revegetation programme to recreate some of the former coastal forest.

This will involve retirement of expansive areas from livestock grazing, planting, fencing, weed removal and predator control. Revegetation will involve blanket planting of backdune areas, the establishment of a protective native shrub and small tree margin to improve gravel dune wetland areas, and riparian planting of the stream to create new habitat and spawning opportunities for indigenous fish species.

Where applicable, describe the staging of the project, including the nature and timing of the staging:

Delivery of the project is broken into three phases. Currently, work is advancing in phase 1 which is to complete detailed design, consultation with the community and stakeholders, and submission of resource consent. The target resource consent submission date is late November 2022. To enable submission of the

resource consent, the required technical specialists have been engaged and already undertaken their preliminary impact assessments.

Following resource consent, phase 2 will commence - the construction phase. Initial work includes establishment of any management controls and preconstruction monitoring should it be required. In general, the construction will progress with establishing a local quarry such that the rock can be directly hauled, and the breakwaters constructed. Concurrent to this, local excavations will be undertaken to construct the land based facilities i.e. wharf facing boat ramp, etc. Dredging will commence as soon as practical, starting with the land excavations and retaining a bund between the land works and the sea. Lastly, the bund will be removed and dredging undertaken between the breakwaters i.e. within the access channel. Dredged material will be placed within the beach located in the mooring basin or used to nourish the foreshore adjacent to the breakwaters. Finally, civil infrastructure, accessways and community features would be installed.

Stage 3 will involve the restoration and enhancement works whilst the facility is operating. This involves replanting historic totora stands, planting high value coastal dunes areas, and wetland enhancement works.