APPENDIX 9H

DRAFT ENVIRONMENTAL MONITORING MANAGEMENT PLAN (EMMP)

enviser

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DRAFT ENVIRONMENTAL MONITORING AND MANAGEMENT PLAN

PROPOSED CAPITAL DREDGING

Northland Shipyard and Dry Dock
MBIE

Contents

1 Introduction 1

1.1 Background 1

1.2 Purpose 1

1.3 Objectives 2

1.4 Regulatory requirements 3

2 Environmental monitoring and management 4

2.1.1 Dredge management 4

2.1.2 Assurance monitoring 5

2.1.3 Wider project environmental management framework 5

2.1.4 Baseline Monitoring Period 7

2.2 Groups 7

2.3 Key Personnel Contact Details 7

2.4 Report structure 8

3 Description of the proposed works 9

3.1 Requirement to deepen/extend swing basin 9

3.2 Location and extent of deepening works 9

3.3 Dredging equipment and execution 10

3.4 Timeframes 11

4 Site description 12

4.1.1 Sediments 12

4.1.2 Waves 12

4.1.3 Tides/Currents 12

4.1.4 Wind 12

4.2 Predicted turbidity plumes 13

4.3 Ecological Habitats 14

4.3.1 Inter-tidal 14

4.3.2 Sub-Tidal 14

4.4 Biological Environment 14

4.4.1 Fisheries 14

4.4.2 Marine mammals 15

4.4.3 Avifauna 15

4.5 Cultural Environment/Mahinga Kai 15

4.6 Recreational values 16

4.7 Archaeological Environment 16

4.8 Navigation and Navigational Aids 16
5 Dredge management 17
5.1 Proactive operational management 17
5.2 Dredge management 17
5.2.1 Real-time turbidity monitoring 17
5.2.2 Locations of monitoring sites 18
5.2.3 Instrument type 20
5.2.4 Adjusting monitoring locations post-deployment 20
5.3 Tiered trigger system 20
5.3.1 Data processing and display 21
5.3.2 Tiered Triggers 21
5.3.3 Calculation of trigger levels 21
5.3.4 Tier 1 – Internal Trigger 22
5.3.5 Tier 2 – Internal Trigger 23
5.3.6 Tier 3 Compliance Level 24
6 Assurance monitoring 26
6.1 Ecological monitoring 26
6.1.2 Inter-tidal 28
6.2 Coastal processes: bathymetric and shoreline surveys 30
7 Other management protocols 32
7.1 Dredge Management Plan 32
7.2 Dredge Biosecurity Management Plan (DBMP) 32
7.3 Construction and Environmental Management Plan 33
7.4 Marine Mammal Management Plan (MMMP) 34
7.5 Accidental Discovery Protocol (ADP) 34
7.6 Complaints 34
7.7 Incidents / spills 34
8 Reporting requirements 36
8.1 Tier 3 Compliance Level Exceedance Report 36
8.2 Monitoring Reports 36
8.2.1 Quarterly turbidity monitoring reports 36
8.2.2 Ecological assurance monitoring report 36
8.2.3 Bathymetric and shoreline assurance monitoring 36
8.2.4 Annual report 37
8.3 Dredging Stage Completion Report 37
9 Group roles and responsibilities 38

9.1 Consent Holder Project Team 38
9.2 Technical Advisory Group (TAG) 38
9 Applicability 40

Definitions

Whangārei Harbour: includes the waters west of the entrance between Marsden Point and Home Point.

Baseline Monitoring Period: 12-month period of monitoring undertaken over [XXXX – XXXX].

Dredging: encompasses all capital dredging activities associated with the project.

Consent Authority: Northland Regional Council.

Consent Holder: Ministry of Business Innovation and Employment (MBIE)

Extraordinary natural event: a significant and self-evident natural event that has clearly caused an Exceedance of the Tier-3 trigger at one or more of the turbidity monitoring stations. The high-concentration turbidity plumes would have been generated from events such as a tsunami, a weather event causing significant flooding, extreme swells, or a land slip.

The Consent(s): refers to [insert consent reference numbers].

Abbreviations

ADP: Accidental Discovery Protocol

BHD: Backhoe Dredge

BMP: Biosecurity Management Plan

Capital DMP: Capital Dredge Management Plan

CD: Chart Datum

CEMP: Construction and Environmental Management Plan

CHPT: Consent Holder Project Team

CSD: Cutter Suction Dredge

EMMP: Environmental Monitoring and Management Plan

MMMP: Marine Mammal Management Plan

NTU: Nephelometric Turbidity Unit

TSHD: Trailer Suction Hopper Dredge

TSS: Total Suspended Sediments

1 Introduction

[This document is a draft version, prepared in support of resource consent applications. This document will be updated and refined following resource consent approval to incorporate specific resource consent conditions. This document will also be updated once the detailed design and dredging methodology is determined.]

This dredging Environmental Management and Monitoring Plan (EMMP) has been collated by Enviser Limited with technical input provided by the following consultants:

- Coast & Catchment Environmental Consultants (marine ecology)
- MetOcean Solutions (hydrodynamic and morphological monitoring)
- Tonkin + Taylor Ltd (coastal geomorphology)

This report has been prepared in accordance with the Environment Court's Code of Conduct for expert witnesses, contained in the Environment Court's Practice Note 2023. The authors of this report agree to comply with the Code of Conduct, and confirm that unless otherwise stated, the issues addressed in this report are within the area of expertise of the authors. No material facts have been omitted that might alter or detract from the opinions expressed in this report.

1.1 Background

The Ministry of Business, Innovation and Employment (MBIE) is proposing to develop a Shipyard and Dry Dock facility abutting the western side of the existing Northport port facility at Marsden Point, Whangārei Harbour. The project includes a reclamation, vessel haul-out system, and associated wharf structures, dredging, and supporting infrastructure.

Dredging is required to form a swing basin and pocket for a ship lift device, and to facilitate deepening of the western perimeter berthing face. The resulting dredge spoil will be used as fill material to construct the proposed reclamation. Dredge spoil will be pumped to the reclamation site as a slurry and will require dewatering through a series of decant ponds.

The decant discharge from reclamation activities will be directed into outlets on the western or northern face of the new reclamation.[1] Dredging will commence in [insert year] with an anticipated duration of 18-22 months, depending on equipment used and construction phasing.

A key component of the proposed consent conditions is the monitoring and management of the dredging, via operational responses to real time water quality monitoring, as well as associated environmental assurance monitoring before, during and after the dredging. This EMMP and the measures proposed are similar to that promulgated by Northport for their recently granted Vision for Growth Project, albeit at a reduced scale due to the smaller volume of dredging.

This EMMP outlines all required monitoring and management measures to comply with both the consent conditions and the best practice philosophy adopted by MBIE for the project.

1.2 Purpose

The purpose of this EMMP is to:

[1] Reclamation decant water is subject to specific consent conditions, including discharge quality and associated management requirements. The Construction and Environmental Management Plan is required to detail methods for the monitoring and management of reclamation decant water.

- Ensure the effects of dredging on the coastal environment are within the envelope predicted by modelling and the assessment of environmental effects.
- Outline the turbidity monitoring and dredge management actions that shall be implemented by the Dredge Contractor and MBIE to minimise the risk of dredge-related elevated turbidity causing adverse effects on sensitive receptors.
- Provide a framework for assurance monitoring, which shall be implemented by MBIE. The results of the assurance monitoring shall be used to evaluate any actual or potential biological and physical effects and compare them with:
  - The predicted effects outlined in the information filed in support of the application.[2]
  - The assurance monitoring data collected during the baseline monitoring period.
- Ensure compliance with consents.

The EMMP is required as part of the consent conditions authorising activities associated with dredging in Whangārei Harbour. MBIE, as the Consent Holder, is responsible for the implementation of all monitoring and management requirements detailed in this plan. The Dredge Contractor must also comply with all relevant consent conditions and this EMMP.

1.3 Objectives

This EMMP implements an operational management approach based on the results of real-time turbidity monitoring at two locations within Whangārei Harbour. It also outlines a monitoring regime for the duration of dredging, and for the five years following completion of dredging. The post-dredging monitoring focuses on potential longer-term effects on key ecological habitats and communities and the physical environment, as well as quality control.

The objectives of the EMMP, as set out in the consent conditions are:

- *Turbidity monitoring and management:* to detail how capital dredging turbidity monitoring and management actions are implemented to minimise the risk of elevated turbidity[3] (attributed to capital dredging) causing adverse effects on sensitive receptors; and
- *Marine ecology assurance monitoring:* to facilitate the comparison of changes in the marine receiving environment caused by capital dredging with those predicted in the information filed in support of the resource consent application, including by:
  - Characterising the responses of surrounding sub-tidal and inter-tidal habitats and benthic communities to sediments suspended and deposited offsite during channel dredging, and subsequent changes after dredging is complete.
  - Confirming whether benthic habitats and communities similar to those currently existing re-establish on the dredged basin once dredging is complete.
- *Bathymetric and shoreline surveys:* to collect seabed and shoreline spatial data to assess any changes that may result from the Project.

In addition the EMMP also:

- Includes measures to ensure dredging activities are controlled to manage the wider community's cultural and recreational interests.
- Ensures stakeholder engagement is ongoing through all phases of dredging and provide procedures for handling complaints.

[2] MBIE (2026) FTAA Application. Northland Shipyard and Dry Dock Project.
[3] Beyond that predicted by the modelling included in the consent applications

- Detail reporting requirements and frequency for results of the management and monitoring.
- Specifies the roles and responsibilities of groups involved in monitoring and management during, and after the completion of dredging.
- Sets out other relevant management plans required during dredging including the Capital DMP and the linkages with those plans.

1.4 Regulatory requirements

This EMMP is a requirement of the consent conditions for the following resource consents granted to MBIE (the Consent Holder) via the FTAA process.

- 1 XXXX
- 2 XXXX
- 3 XXXX

For the purposes of this report, [XXX and XXX] are collectively referred to as “the consents”.

2 Environmental monitoring and management

Three monitoring and management approaches are proposed for the duration of dredging:

- Dredge Management – based on real-time turbidity monitoring
- Assurance Monitoring and Review – of physical and ecological environments
- Management Protocols – implemented during dredging

The following sections detail the requirements for each monitoring and management type.

2.1.1 Dredge management

Best-practice dredge management (often referred to within the dredging industry as adaptive management) relies on a continuous cycle of monitoring, evaluation, and adjustment, with management responses informed by real-time monitoring data and prevailing environmental conditions (see Figure 1). The Central Dredging Association (CEDA) states:

"The need for integrating adaptive management into dredging projects is already becoming recognised but will probably increase in future, in reaction to an ever-growing awareness of the need for protection of the environments as well as in connection to the ecosystem services approaches" (CEDA, 2015).

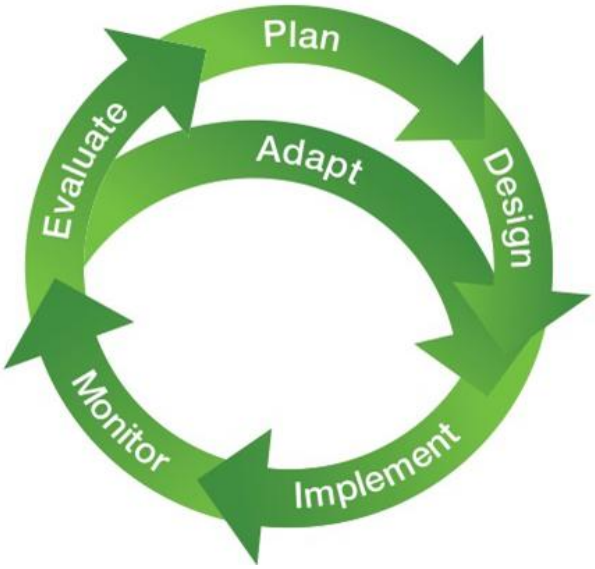


Figure 1: Adaptive management cycle.[4]

In the context of this project, the adaptations are proposed to be based on two different timeframes:

- Adapting day-to-day dredging operations in response to real-time measurements of the mechanism of effect, rather than the effect itself.
- Adaptation of the overall monitoring and management over the project lifetime.

4 CEDA. (2015). *Integrating Adaptive Environmental Management into Dredging Projects. Position Paper*. Retrieved from http://www.dredging.org/media/ceda/org/documents/resources/cedaonline/2015-02-ceda_informationpaper-environmental_monitoring_procedures.pdf

This management approach focuses on controlling the *primary mechanism of effect* – turbidity plumes – rather than the effects themselves. To avoid confusion with the distinct meaning of adaptive management under the Resource Management Act (RMA), this process is referred to in this EMMP as dredge management. As set out below, dredge management is a key component of this EMMP and will help ensure that risks associated with dredging are effectively managed.

Successful dredge management will include:

- The real-time water quality monitoring network.
- At least 12 months of baseline monitoring of existing water quality conditions collected prior to commencing dredging activities.
- Establishment of tiered trigger levels, based on baseline monitoring of the background turbidity as well as the modelled dredge plumes. (The Third Tier is a point of compliance under consent conditions. The First and Second Tier triggers are to inform management responses for the Dredge Operator.)
- Management responses and reporting at each of the three tiers to ensure appropriate responses to elevated turbidity levels.
- Involvement of key stakeholders throughout the project.

It is important to note that while the dredge management framework includes possible management responses, it does not specify prescriptive management actions for the dredge activities in response to trigger level exceedances. This is because the complexity of the coastal system means that a prescribed management response may be suitable one day (or in one tidal current scenario) and not the next.

Instead, the actual operational management measures implemented will be the responsibility of the Dredge Operator in coordination with the Consent Holder. This will allow management measures to remain flexible and adaptable to various conditions. It will also allow the Dredge Operator to refine the management responses as the project progresses.

2.1.2 Assurance monitoring

The purpose of assurance monitoring is to monitor over time to identify any longer-term effects and confirm whether those effects remain within anticipated levels. It is intended to provide confidence that the dredge management approach is achieving the objectives outlined above. The following monitoring activities form part of the assurance monitoring programme, to the extent they are within the scope of this EMMP:

- Ecological monitoring:
    - Sub-tidal video transects and inter-tidal surveys
    - Sub-tidal and inter-tidal sediment analysis
- Bathymetric surveys and shoreline surveys

As required by the consents, the assurance monitoring will be undertaken for at least a year during the baseline monitoring period and will continue during and after dredging.

2.1.3 Wider project environmental management framework

The capital dredging, which this EMMP covers, is one component of the wider project to construct and develop a shipyard and dry dock at Marsden Point. The other components of the project include:

- Earthworks on land (carpark, access roads and services)

- Reclamation construction
- Wharf and marine structure construction
- Construction and installation of on-land infrastructure (utilities, pavements, lighting, ship transfer rail

Components of the project that are subject to environmental management measures are outlined in a series of management plans. These plans collectively form the environmental management framework for the project. Due to the specialised nature of the dredging operations and its spatial separation to the other components, the environmental management of the dredging is controlled by dredge specific management plans. However, there will be some crossover between the dredging and other project components, and it is important the Dredge Contractor understands where these interactions may occur and how the other management plans seek to control the associated effects.

The primary interaction between the dredging operation and the reclamation will be via the use of dredge spoil for reclamation fill, the dewatering and associated effects on turbidity. The Dredge Contractor and the Reclamation Contractor must have good communication to ensure either, or both operations can be managed in a way that ensures compliance with the turbidity criteria for each operation. This includes means to modify or halt both operations where necessary.

The following plans comprise the suite of environmental management plans for the dredging operations:

- This **EMMP** – which requires updating by MBIE once the contractor is appointed and the baseline data is collected.
- The **Marine Mammal Management Plan** (MMMP) has been prepared and includes measures to manage the potential effects of all aspects of the project, including the dredging operations.
- A **Capital Dredge Management Plan** (Capital DMP) – documenting how the required measures in this EMMP and the MMMP will be implemented by the Dredge Contractor (and other protection measures) at an operational level.
- A **Dredge Biosecurity Management Plan** (DBMP) – setting out how the potential biosecurity risks of establishing and operating the dredging equipment and associated vessels will be managed.

The CDMP and DBMP will be prepared by the Dredging Contractor (once appointed) as they depend on the specifics of the dredge method and vessels used.

The following environmental management plans apply to the landside, reclamation and wharf construction area and are detailed in Section 7:

- A **Construction Environmental Management Plan** which is the overarching management plan for the landside works, reclamation, wharf and associated infrastructure. A CEMP will be prepared by the Contractor once appointed.
- A **Construction Biosecurity Management Plan** (CBMP) – setting out how the potential biosecurity risks of establishing and operating the marine construction equipment and associated vessels will be managed. This will be prepared by the Contractor.

The MMMP also applies to the reclamation and wharf construction, particularly the underwater noise producing activities, like piling.

Table 1 sets out the various plans involved in the overall project, where they apply and who is responsible for their preparation. All plans are available at the Project Website.

Table 1 Environmental management framework

Capital dredging	Reclamation and other landside activities
EMMP (prepared by MBIE)	CEMP (prepared by Contractor)
Capital DMP (prepared by Dredge Contractor)	CBMP (prepared by Reclamation/Wharf Contractor)
DBMP (prepared by Dredge Contractor)	
MMMP (prepared by MBIE)	

2.1.4 Baseline Monitoring Period

Baseline monitoring commenced on [insert date]. A full 12 months of baseline data has been collected, in accordance with the methodologies and frequencies outlined in the Consents. This includes:

- Real-time turbidity monitoring
- Sub-tidal video transects and inter-tidal ecological surveys
- Sub-tidal and inter-tidal sediment analysis
- Bathymetric surveys and shoreline surveys

2.2 Groups

To ensure this EMMP is implemented as intended, the associated consents are complied with and advice from stakeholders is received, two groups will be set up. The following summarises the two groups and their role in the project, further details on these groups is provided in Section 9:

- A **Consent Holder Project Team** (CHPT) who are responsible for the day-to-day delivery of the dredging project, the implementation of this EMMP (and other dredge related management plans), compliance with the relevant consent conditions and liaison with stakeholders where necessary.
- A **Technical Advisory Group** (TAG) [if desired by the stakeholders] to provide a forum for the CHPT to seek advice from stakeholders on technical and cultural aspects. Members of the group will have relevant technical or cultural expertise and knowledge and will meet as required. The TAG will not be involved in day-to-day operational dredge decisions.

MBIE is responsible for ensuring open communication with key stakeholders throughout the project, in particular Patuharakeke Te Iwi Trust Board, Te Parawhau and Ngāti wai Trust Board given the importance of cultural interests in the project area.

2.3 Key Personnel Contact Details

Table 2 summarises key project staff and contact details.

Table 2: Summary of key contacts, roles and responsibilities

Name	Role/Responsibility	Organisation	Contact details
	Project Director		
	Project Manager		
	Project Environmental Adviser		
	Dredge Contractor Works Manager		
	Project Coastal Process specialist		
	Project Marine Ecologist		
	Project Hydrodynamic Modeller		
	Project Environmental Statistician		

2.4 Report structure

This EMMP has been composed to set out the proposed monitoring and management plans for the duration of dredging (and pre- and post-dredging) and is structured as follows:

- Section 3 describes the proposed works and location and setting of the project.
- Section 4 provides an overview of the sensitivity of the existing ecological, social, cultural, and economic environments including a summary of the baseline water quality monitoring data.
- Section 5 details the monitoring and management approaches for the implementation of the dredge management approach.
- Section 6 outlines the assurance monitoring.
- Section 7 outlines the management plans prepared to manage the potential effects of the reclamation and wharf construction components of the project.
- Section 8 outlines the reporting requirements for each stage of management.
- Section 9 summarises the group makeup, roles and responsibilities.

3 Description of the proposed works

3.1 Requirement to deepen/extend swing basin

To enable access to the proposed dry dock, an extension to the existing Northport swing basin is required. The dredging to extend the swing basin serves two primary functions – it will ensure vessels can navigate safely to and from the dry dock, and the dredge spoil provides a source of fill for the reclamation footprint.

3.2 Location and extent of deepening works

The proposed dredging involves two stages:

- **Stage 1:** swing basin extension involves dredging an area 400m by 500m (including batter slopes) to a maximum depth of 14.5m below chart datum (CD) (see **Figure 2a**). This will involve dredging approximately 0.70 million cubic metres (m^3) of sediment.
- **Stage 2:** Deepening (to 18m below chart datum) the northern edge of the consented swing basin (approximately 0.71 million cubic metres (m^3) of sediment – **Figure 2b**) for the Northport Vision for growth project to provide sufficient fill for both projects.

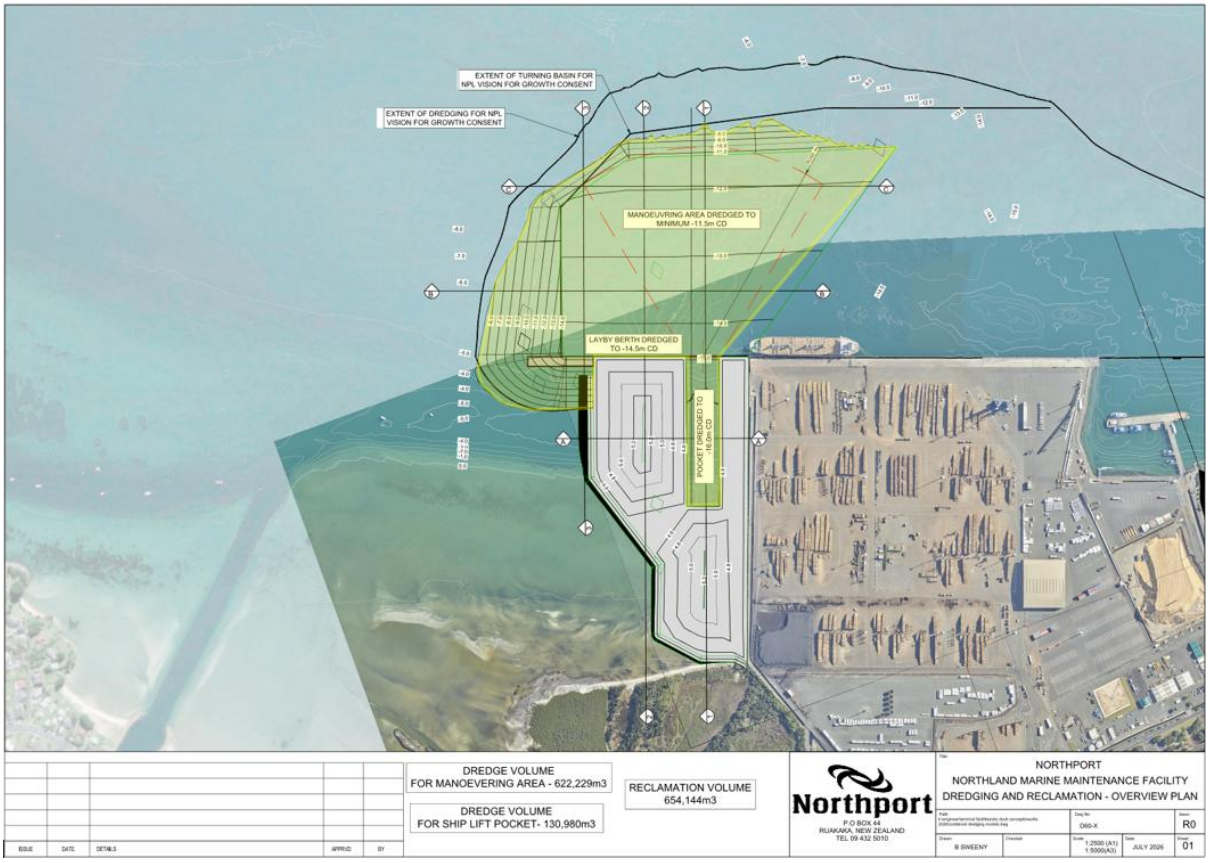


Figure 2a:Stage 1 Dredge (yellow) and reclamation area (grey) (Source: Northport).

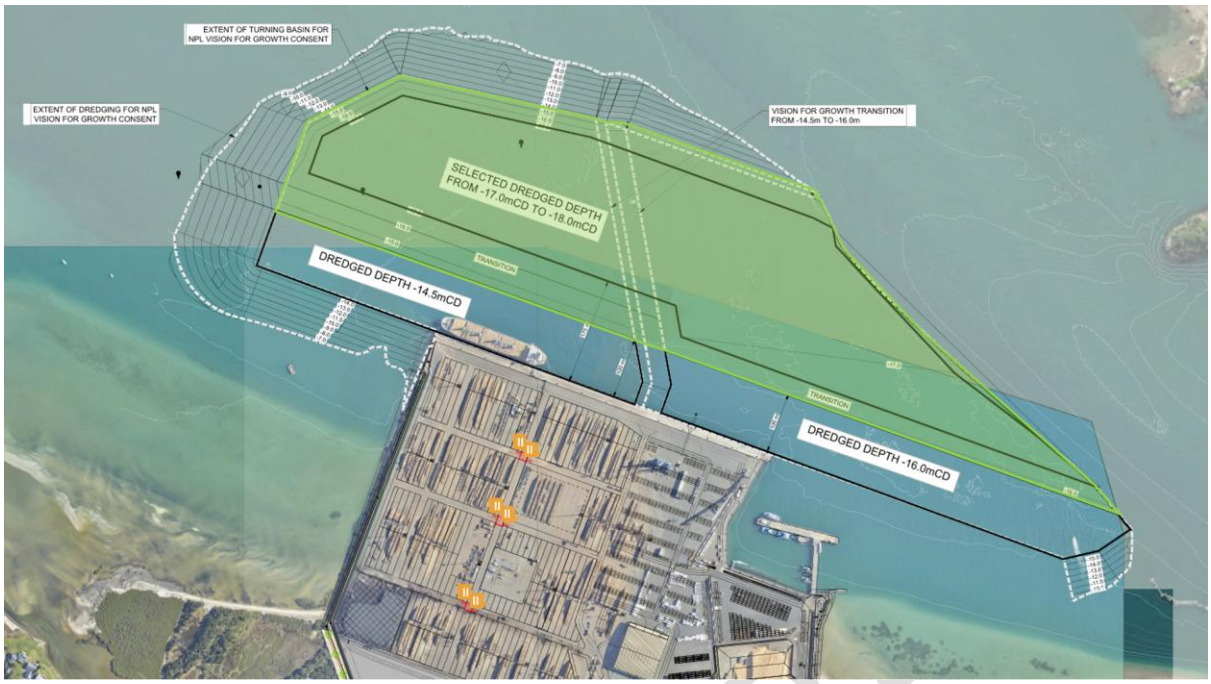


Figure 3b: Stage 2 Dredge (green) (Source: Northport).

3.3 Dredging equipment and execution

Total dredged material volumes for the swing basin and dry dock berth are anticipated to be approximately 0.7 million m^3 (in-situ).

Three potential dredging methods are anticipated – two methods to dredge the bulk volume in the swing basin and another to dredge close to berth and construction-related dredging. The swing basin dredging will likely be undertaken by either a cutter suction dredger (CSD) or a trailer-hopper suction dredger (THSD) or both. All other dredging will likely be undertaken using a backhoe dredge (BHD), but a CSD may undertake some bulk dredging in the dry dock berth.

Dredge spoil (silty sands) will be used for the bulk reclamation fill. These materials will be pumped ashore as a slurry, comprising approximately 30% solids and 70% water. The slurry will be pumped from the dredge, through a series of pipes and booster pumps, and ultimately discharged into the reclamation area where the solids will settle out. The resulting silty sands will be distributed across the site using earthworks machinery.

The placement of dredge spoil will be done in a manner where the water (and entrained sediment) is contained and treated before discharge to the harbour. To achieve this, the dredge spoil must be pumped into a contained area that is not open to the harbour. This may be achieved by bunds/cut off walls, a sediment curtain, or a combination of the two.

At the commencement of the operation, bunds may need to be constructed from imported material. As the reclamation progresses, these bunds may be created out of the dredge-won sediments.

To ensure the discharge water quality is appropriate, a series of internal paddocks will be needed to settle out the finer-grained materials prior to discharge. The spoil will be pumped into the first pond, the sediment settled, and the water decanted off the top into the next pond. This process is continued with a consequential reduction in the concentration of suspended solids in the decanted water at each step. Once the water reaches the desired quality it is discharged to the harbour. The

CEMP includes measures to manage the quality of the decant discharge water and construction phase stormwater from the reclamation construction.

3.4 Timeframes

Dredging to deepen the swing basin will commence in [insert date] and is anticipated to take approximately18-22 months to complete.

4 Site description

The Northland Shipyard and Dry Dock facility is to be located immediately to the west of the existing Northport facility. Northport is a deep-water commercial port located at Marsden Point in Northland. The port is located at the entrance to the Whangārei Harbour, between the Marsden Point Channel Infrastructure facility to the east, and One Tree Point to the west (see Figure 4).

Figure 4: Northport location (source: Google Earth).

4.1.1 Sediments

Inter-tidal sediments in the mid and outer harbour are predominantly sandy, with sediments becoming muddier in the upper harbour. Inter-tidal sediments around the site are predominantly sand, except for the area immediately west of the proposed reclamation, which is a muddy sand.

Sub-tidal sediments are predominantly fine to medium sands with small amounts of silts and clays. Areas of shell hash exist in the sub-tidal areas, particularly within the deeper channels.

4.1.2 Waves

The immediate vicinity of the site is sheltered from oceanic swells but does experience wind-driven chop during periods of sustained high winds. Particularly from the north-west through to the north-east directions where longer fetch distances exist.

4.1.3 Tides/Currents

The site sits within the outer harbour and entrance zone of Whangārei Harbour – a physically complex zone subject to strong currents. Tidal velocities in the project area have been modelled and are expected to be in the order of 0.6-1 m/s.

4.1.4 Wind

The predominant wind direction is from the west and south-west sectors, but strong easterly conditions can also occur. Average wind speed is approximately 5m/s, the stronger winds (>10m/s) typically come from the Northeast.

4.2 Predicted turbidity plumes

Dredge plume modelling has been conducted by MetOcean Solutions to assess the predicted suspended sediment concentrations and plume pattern due to the dredging.

Modelling found that in general, dredging plume and deposition footprints are elliptical, typically centred on the release sites, with a clear north-west-south-east-axis consistent with the channel morphology and ambient hydrodynamics dominated by tides. Dispersion footprints are contained within the main harbour channel, with no significant branching towards the secondary northward channel arm (towards Shoal Bay), as shown in Figure 5.

During ebb, the current and hence the plume is directed south-east towards the harbour entrance, generally along the southern side of the harbour. During flood, the current and plume are directed Northwest towards the upper harbour, largely constrained within the channel leading to Shell Cut Reach.

It is expected that suspended sediment plumes will be visible behind and around the dredge equipment during dredging. These plumes may extend hundreds of metres behind/around the dredge. The visual presence of a plume does not mean the suspended sediment concentration are above what is expected or predicted by the modelling.

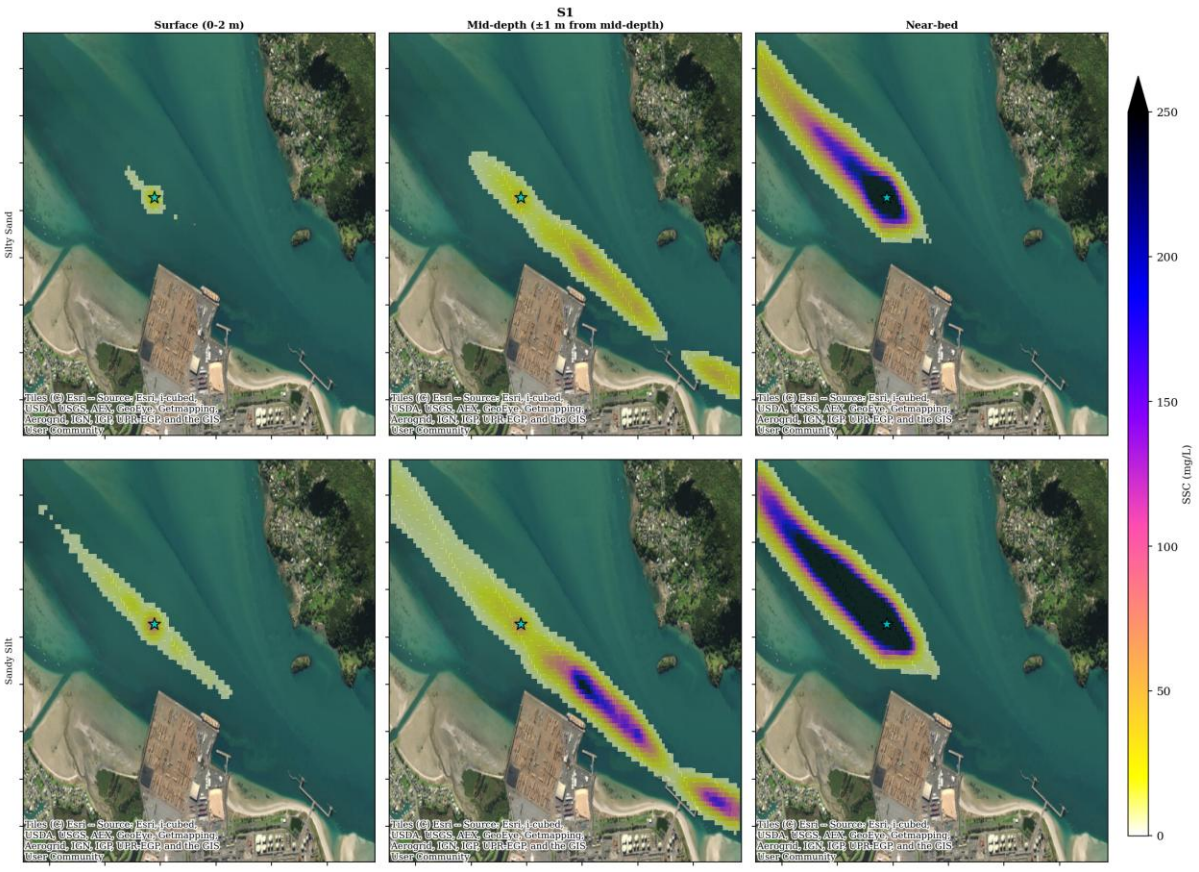


*Figure 5: **90th percentile** of total suspended sediment concentrations (mg L^{-1}) at surface, mid water and near bed levels (from left to right) for **TSHD** dredging at **site 1**, over the **existing bathymetry**. Results are shown for the silty sand on the top panels and sandy silt on the bottom panel. TSS were masked below 5 mg L^{-1}*

4.3 Ecological Habitats

The inter-tidal and sub-tidal ecological habitats surrounding the project area were surveyed to inform an Assessment of Marine Ecological Effects[5] and are summarised in the following sections.

Whangārei Harbour's ecological habitats vary between the depth contours and physical environments. The outer harbour and entrance zone where the project is positioned contains diverse physical habitats, extensive areas of biogenic habitat (including extensive shell gravel beds, seaweed meadows, seagrass beds, sponges, horse mussels, scallops, and significant beds of other shellfish).

4.3.1 Inter-tidal

Extensive seagrass beds are present on the inter-tidal flats between One Tree Point and the site, and seagrass beds are present within, and near, the proposed reclamation area.

Finer scale inter-tidal sampling around Northport and the project site has shown that benthic macrofaunal diversity is high.

Cockles are widespread in Whangārei Harbour and are particularly abundant around the outer harbour (Marsden Bay, McLeod Bay, Snake Bank and MacDonald Bank).

Pipi are present at several sites in the mid to outer harbour. Pipi were previously commercially harvested from Marsden and Mair Banks just outside of the harbour entrance, but commercial harvesting has been prohibited since 2011 and 2014, respectively, due to low biomass levels.

4.3.2 Sub-Tidal

Sub-tidal sampling indicated that infaunal and epifaunal macroinvertebrate diversity is very high around the site, with areas of dense shell, macroalgae meadows, and diverse communities of encrusting organisms. Those habitats are likely to provide shelter, refuge, and food for a large variety of invertebrates and fishes.

4.4 Biological Environment

4.4.1 Fisheries

A large variety of fishes utilise Whangārei Harbour, reflecting the range of habitats present. Leatherjackets, red moki, spotty, sweep, triplefins, kingfish, jack mackerel, two-spot demoiselle, and goatfish are commonly observed around Northport's rock revetments.[6]

Snapper, kahawai, trevally, and kingfish are all popular recreational fish species and are present in the vicinity of Northport's facilities and the proposed shipyard.

Some commercial set netting occurs in the harbour. Flatfish (e.g. flounder) and mullet are targeted in the upper harbour and larger species like snapper, kahawai, trevally, and shark are caught in gill and set nets in the outer harbour.

[5,6] Coast & Catchment Environmental Consultants (2026). *Northland Shipyard and Dry Dock Project Assessment of Marine Ecological Effects.*

4.4.2 Marine mammals

A diverse range of marine mammal species live or pass through the North Island's upper and central east-coast waters, with sighting data collected over the last several decades recording sightings of at least 27 cetacean (whales, dolphins and porpoises) and two pinniped (seals and sea lions) species along the north-eastern coastline[7].

According to the assessment of potential construction effects on marine mammals, the following species are identified as being present (albeit in a transitory manner) within the harbour and potentially influenced by the proposed construction activities:

- Bottlenose dolphin (*Tursiops truncatus*)
- Common dolphin (*Delphinus delphis*)
- Killer whale/orca (*Orcinus orca*)
- Bryde's whale (*Balaenoptera edeni bryde*)
- New Zealand fur seal (*Arctocephalus forsteri*)
- Leopard seal (*Hydrurga leptonyx*)
- Southern right whale (*Eubalaena australis*)
- Humpback whale (*Megaptera novaeangliae*)

The marine mammals most sighted near or within Whangārei Harbour are bottlenose and common dolphins, orca, and Bryde's whales, with sightings occurring mainly during spring and early summer. Other species of interest include New Zealand fur seals, leopard seals, and southern right and humpback whales, which are all seasonal visitors to the wider Bream Bay area.

A marine mammal management plan (MMMP) describing the management actions and monitoring that will be employed during the proposed works to minimise effects on marine mammal species has been prepared.

4.4.3 Avifauna

Coastal avifauna surveys conducted from One Tree Point to the Channel Infrastructure jetty recorded a total of 19 species utilising the area, including five species classified as Threatened and nine classified as At Risk.[8]

Mitigation measures are required for the dredging operation, namely minimise night lighting and where used, should be shielded and directed downward. The CEMP will include a section on avifauna describing the management actions and monitoring that will be employed during the proposed reclamation works to minimise effects on avifauna, including Kororā (Little Penguin) and Tōrea pango (Variable oystercatcher). These measures may be relevant for the dredging operations where slurry pipelines cross the shoreline/existing batter slopes.

A wildlife approval is to be sought to manage accidental discover of Kororā (Little Penguin).

4.5 Cultural Environment/Mahinga Kai

[To be completed in consultation with hapu/iwi]

[7] Clement D (2026). *Shipyard and drydock facility at Marsden Point, Whangārei Harbour: potential construction effects on marine mammals. Prepared for MBIE. Cawthron Report No. 4261.*

[8] Blue Green Ecology (2026). *Northland Shipyard and Dry Dock: Coastal Avifauna Assessment. Report prepared for MBIE.*

Engagement with iwi and hapu is ongoing and will continue throughout and after the dredging works.

4.6 Recreational values

Recreational activities occur on the beaches in Marsden Bay and on the water adjacent to the site and the wider harbour. The beach to the west of the reclamation is accessible from the track at the end of Papich Road, as is the popular fishing jetty located on Northport's Western Revetment.

On-water recreational activities in (or adjacent to) the dredging area include fishing, sailing, kayaking and diving/snorkelling on the rocky northern shore within or near the marine reserve. High numbers of recreational craft use the harbour which can result in relatively high numbers of recreational traffic transiting the project area, particularly on weekends.

4.7 Archaeological Environment

No specific marine archaeological sites have been identified in, or adjacent to the dredge area. Notwithstanding this, accidental discovery protocol conditions are proposed in the event that subsurface archaeological evidence is unearthed during construction.

4.8 Navigation and Navigational Aids

Access to Northport and the site is navigable via a buoyed and lit channel, five nautical miles long leading from the Fairway Buoy to Marsden Point. The approach to Marsden Point has a shallowest depth of 14.7 m at chart datum between the Fairway Buoy and No. 1 buoy.

All vessel movements, pilotage and towage are coordinated through Whangārei Harbour Radio on VHF channel 16/11.

5 Dredge management

Two primary management methods will be employed throughout the operational phase of the project:

Proactive Operational Management: utilises forecast and real-time environmental information (i.e. tides, wind, waves, weather etc.) to guide operational management decisions during dredging. Undertaken as part of common dredging practice.

Dredge Management: based on real-time turbidity monitoring – implements a responsive dredge management approach in response to predetermined trigger levels.

5.1 Proactive operational management

The Dredge Contractor is responsible for proactive operational management of the dredge and reclamation activities. This will take into consideration the predicted meteorological and tidal conditions, predicted plume movement based on modelling[9], the real-time water quality information (turbidity) and will be refined as the dredge operator builds up experience on the project. The purpose of proactive operational management is to continuously assess the daily planned dredge operations to minimise the risk of a dredge-induced trigger exceedance.

The proactive operational management measures are detailed further in the Capital DMP, prepared by the dredge contractor.

5.2 Dredge management

During the dredging operations, the location and operational activities of dredging will be managed in response to real-time turbidity monitoring. Monitoring of the real-time turbidity at two locations to the west and east of the project site will be undertaken as part of the Baseline Monitoring Period and will continue during the dredging.

[XX] [12 months or greater] months of baseline data was used to determine the two trigger values (Tier 1 and 2) and the compliance level (Tier 3). These are based on higher order percentiles (80th, 95th and 99th) of the collected turbidity background data combined with modelled dredge turbidity and a cumulative time component.

Tier 1 and Tier 2 trigger levels serve as an early warning tool for the Dredge Operator and Consent Holder. If these are exceeded, dredging activities may need to be modified, taking into account the hydro-meteorological conditions and the predicted plume directions, in order to reduce the turbidity at the location of exceedance.

If the Tier 3 compliance level is exceeded (i.e. the turbidity threshold is exceed for more than the allowable hours), dredging activities must cease in the vicinity of the exceedance location, unless the exceedance is caused by an extraordinary natural event. Dredging can resume once turbidity levels reduce.

5.2.1 Real-time turbidity monitoring

The objective of the real-time turbidity monitoring programme is to provide continuous real-time information on turbidity levels to inform the management of the dredging operations. The dredge

[9] Dredge Plume Modelling, Dredging sediment plume dispersion over existing and proposed port configurations prepared for MBIE by MetOcean Solutions Limited (2026).

operations will be managed in real-time by comparing the real-time turbidity data with pre-established trigger levels as defined in Section 5.3.

The real-time turbidity monitoring occurs 0.75-1 m below the surface (readings are taken and telemetered every [insert interval] minutes).

5.2.2 Locations of monitoring sites

In determining the locations of the monitoring sites the broad objectives were to:

- Locate the instruments between the dredging and the location of sensitive receptors.
- Ensure the plume can be monitored in all tidal conditions.
- Avoid creating navigation hazards for commercial or recreational traffic.

The two monitoring locations have been chosen based on these objectives, analysis of predicted plume dispersion based on hydrodynamic models, and locations of environmental and cultural significance. These locations are shown in Figure 6.

Each monitoring site consists of a buoy with a single instrument capable of monitoring turbidity (in NTU), as described in Section 5.2.3.

Figure 6: Approximate turbidity monitoring locations [map to be updated once instrument locations confirmed for baseline].

5.2.3 Instrument type

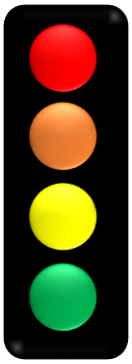
All locations have the same buoy and instrument deployed. The unit comprises a floating buoy housing the batteries, solar panels and telemetry equipment, with the turbidity instrument attached to a bridle beneath the buoy. The buoy is moored via rope and chain to a mooring block placed on the seafloor.

5.2.4 Adjusting monitoring locations post-deployment

Due to the complexity of the coastal environment, it may be necessary to adjust the monitoring locations during dredging operations. If any adjustments are required, MBIE is responsible for ensuring that new locations are close enough to where baseline data was collected to allow for the background data to be reliably used.

5.3 Tiered trigger system

Dredge management is to be implemented through a system of triggers which, when exceeded, require management responses (see Figure 7). This system is based on comparing the real-time (but manually validated) smoothed monitoring information against pre-established and agreed tiers of intensity (NTU)/duration (hours) combinations to ascertain the degree of management required.



Tier 3 compliance level: Cease dredging in the vicinity of the monitoring station(s) showing the exceedance

Tier 2 trigger: Turbidity levels increasing – increase management actions

Tier 1 trigger: Warning, elevated turbidity levels commence management actions

Normal operating conditions

Figure 7: Tiered trigger system.

Each tier has management and reporting requirements to determine the cause of the trigger level exceedance and, where appropriate, take measures to reduce the exceedance and/or prevent turbidity from increasing. Reporting requirements are detailed in Section 8 and group roles and responsibilities in Section 9.

All real-time monitoring sites have been assigned turbidity trigger values. Throughout the dredging activities, the telemetered turbidity data recorded at these locations will be continuously assessed against the trigger limits.

No reference site is necessary for this turbidity management framework.

It is important to note that the design of the trigger system means natural events (such as storms) will cause exceedances of the trigger and compliance levels. Consequently, an exceedance of the trigger or compliance levels may not be associated with dredging activities but due to naturally fluctuating turbidity levels.

5.3.1 Data processing and display

The real-time turbidity data collected by the monitoring buoys requires processing to ensure its validity and appropriateness for analytical purposes. These steps may include automated data validation and application of a smoothing filter as well as manual validation.

Automated data management is applied to the real-time data prior to display. Secondary manual validation will be required to identify and remove erroneous data points (e.g. due to fouling of the instruments).

A suitably experienced person is needed to complete the manual validation, and manual validation will occur only once every 24-48 hours in typical conditions. If the Tier 3 compliance limit is being approached, more frequent manual validation will occur (i.e. 6-hourly or shorter).

Final measurement of compliance with the Tier 3 compliance limits (intensity and duration) will be made against the manually validated data only.

5.3.2 Tiered Triggers

There are two turbidity triggers (Tiers 1 and 2) and one compliance level tier (Tier 3 Compliance Level) which have an associated turbidity intensity and allowable duration component.

The **turbidity intensity** is a measure of the cloudiness of the water (in NTU or Nephelometric Turbidity Units) while the **allowable duration** is the amount of time in a 30-day rolling window that the turbidity at any given monitoring site may exceed the turbidity intensity.

Once the allowable duration above the turbidity intensity has been exceeded at a monitoring location, a **trigger event** has occurred, requiring the management actions set out below to be implemented – dependent on the level of event occurring. The trigger event ceases when either the turbidity drops below the allowable turbidity intensity, or the allowable hours are no longer exceeded.

The Tier 1 and Tier 2 turbidity triggers are internal triggers, alerting the CHPT and Dredge Operator that the turbidity at the monitoring location has increased (either dredging or natural cause related). The Tier 3 Compliance Level trigger requires dredging (in the location of the trigger event) to cease. Dredging can recommence in that location once**:**

- recorded turbidity at that location has dropped below the intensity level, or
- the duration of exceedance at that location drops below the allowable duration, or
- the event causing the turbidity increase has been classed as an extraordinary event.

Exceedances of any of the trigger levels can occur due to natural events and may not always be directly related to the dredging activities. The causes of the trigger level/compliance level exceedances will be investigated as described in the following sections.

A brief summary of how the turbidity triggers are calculated is presented in the following sections. Details of the management actions required in response to each trigger are set out further below. The turbidity intensity and allowable duration associated with each tier are tabulated in the following sections.

5.3.3 Calculation of trigger levels

The calculation of trigger levels requires a series of steps, first to process the measured baseline turbidity data, and then to combine the processed baseline data with the modelled dredge turbidity.

Processing of the measured baseline turbidity data is required to ensure the gathered data is appropriate for analytical purposes. In summary, the data first receives manual validation to remove erroneous data. The data then runs through a statistical QA/QC process and missing data is imputed (if required). Next the data is smoothed using the approved smoothing method. The smoothed measured turbidity data is then combined with the model predicted turbidity (which has been converted from TSS to NTU) to create the complete baseline turbidity data set.

The 80th, 95thand 99th percentiles for each monitoring location are then calculated from the complete baseline turbidity data set. Some final adjustments may be needed to account for sample size effects.

The trigger values for each Tier and the subsequent management and reporting actions are set out in the following sections.

5.3.4 Tier 1 – Internal Trigger

Percentile: **80th**

Duration: **144 hours (6 days)**

Turbidity (NTU)			

Once a Tier 1 trigger event has occurred the CHPT will investigate the potential causes by utilising some or all of the following methods.

Investigate the following:

- Examine the monitoring equipment for any faults/defects/biofouling that may have influenced data collection.
- Analyse and compare the results against:
    - Background turbidity levels measured during baseline and trends at other monitoring sites.
    - Recent meteorological and current/wave/tide conditions (particularly any extreme events).
    - Turbidity levels and trends at all monitoring sites for at least 48 hours prior to exceedance.
- Consider sediment transport patterns in Whangārei Harbour using aerials/satellite imagery.
- If necessary, examine the environs of the monitoring site to ensure no natural processes (e.g. landslips, seaweed build up etc.) are contributing to the elevated turbidity level.
- If necessary, undertake manual soundings of turbidity in the area to verify instrument readings.
- Consider the location of dredging in the two days preceding exceedance.

Based on the above, the investigation shall determine the likelihood of the trigger event being due to the dredging to analyse how and why the event occurred. If it is determined likely that the dredging activities have contributed to the increased turbidity level, the Dredge Operator may, as soon as practicable, adjust the dredging operations in order to prevent turbidity further increasing at the location. Where the extent to which the dredging has contributed to the trigger event is

uncertain, a precautionary approach shall be taken assuming the dredge has contributed to the exceedance.

Dredging operation modification to reduce plume extent/concentration may include the following, based on the discretion of the Dredge Operator and advice from other members of CHPT:

- Change the dredging location.
- Alteration of overflow regime (if a TSHD dredge is being used)
- Modification of dredge phase with respect to tide phase/meteorological conditions.

A monitoring location shall be deemed no longer in a trigger event immediately upon turbidity levels reducing to below the specified turbidity trigger level. It is important to note that whilst the trigger event has ceased when turbidity has dropped below the turbidity trigger level, the duration may still be at its limit. Therefore, any exceedance of the turbidity trigger may instantly cause a trigger event until the 30-day rolling window clears the last elevated turbidity occurrence and the amount of accumulated exceedance hours are reduced.

5.3.5 Tier 2 – Internal Trigger

Percentile: 95th

Duration: 36 hours (1.5 days)

Turbidity (NTU)			

Once a Tier 2 trigger event has occurred the CHPT will, as soon as practicable, investigate the potential causes and implement management measures by utilising some or all of the following methods as well as those set out in the Tier 1 trigger:

- Dredge Operator is to increase the management measures to further reduce the turbidity levels at the location of exceedance.
- Undertake further review of the monitoring data and environmental factors which may be causing a natural increase in turbidity (as set out for Tier 1).
- If deemed necessary, undertake additional monitoring in the area of exceedance to further investigate the turbidity plumes.

A monitoring location shall be deemed no longer in a trigger event immediately upon the turbidity levels reducing to below the specified intensity level, or the exceedance time dropping below the allowable duration. As for Tier 1, any exceedance of the turbidity trigger level may immediately cause a trigger event until the rolling 30-day period has cleared the last elevated turbidity occurrence and the amount of accumulated exceedance hours are reduced.

Records shall be kept of Tier 2 trigger events, number of trigger events and associated investigations or actions. For clarity, a trigger event report is not required for Tier 2.

5.3.6 Tier 3 Compliance Level

Percentile: 99th

Duration: 7.2 hours

Turbidity (NTU)			

Tier 3 Compliance Level is a compliance trigger level as specified in Consent Condition [insert condition number]. The CHPT/Dredge Contractor shall take all practicable steps to avoid dredge turbidity plumes causing a Tier 3 Compliance Level trigger event.

If a monitoring location records a Tier 3 Compliance Level exceedance (i.e. exceeding the turbidity intensity for more than 7.2 hours in any 30-day rolling period) the following shall occur:

- **Dredging must cease in the vicinity of the monitoring location**. The distance at which the dredge is no longer within the vicinity of the monitoring location is determined by the CHPT and should take into consideration the predicted suspended sediment plume extent from the dredging activities as well as the current and forecast Meteorological and current/wave conditions.
- The CHPT/Dredge Contractor shall undertake an investigation into the likely cause of Trigger Event and produce a short compliance level exceedance report. This should include the following points.
    - Condition of monitoring equipment and any faults/defects that may have influenced data collection.
    - Analysis and comparison of the results against:
        - Background turbidity levels
        - Recent meteorological and current/wave/tide conditions (particularly any significant events)
        - Turbidity levels and trends at all monitoring sites for at least 48 hours prior to exceedance
        - Sediment transport patterns in Whangārei Harbour aerials/satellite imagery.
    - Any coastal changes near the monitoring site (e.g. landslips, seaweed build up etc.) which may be contributing to the elevated turbidity level.
    - The dredging programme in the two days preceding exceedance.
- Dredging can only recommence if (in accordance with Conditions [insert condition number] through [insert condition number] of the Consents):
    - The number of Tier 3 exceedance hours has fallen below the 7.2 hours available at that station over a 30-day rolling period; or
    - The turbidity recorded at that station is less than the Tier 3 NTU Intensity value; or
    - The exceedance is deemed due to an extraordinary natural event (in accordance with condition [XX]).
- If MBIE and the CHPT deem the exceedance is due to an extraordinary natural event (as defined in the advice note below condition [insert condition number]) then dredging can continue in the vicinity of the monitoring location provided that:
    - A written report, demonstrating the elevated turbidity is due to an extraordinary natural event and not dredging, is provided to the Northland Regional Council within 24 hours of the exceedance, AND

    - Northland Regional Council does not notify MBIE, within two working days of the report being provided, that the report is NOT being accepted.
- The ‘extraordinary natural event’ report is to be made available to be viewed by the public on the Project Website.

6 Assurance monitoring

The purpose of the assurance monitoring programme is to gather data to confirm whether the effects of the proposal correspond with the effects predicted as part of the resource consent application process and to assess the monitoring/management approach in the context of the objectives of the EMMP. Assurance monitoring data will be collected before dredging (baseline) during dredging and after dredging.

Assurance monitoring within the scope of this EMMP comprises:

- Ecological monitoring:
  - Sub-tidal video transects, and inter-tidal ecological surveys
  - Sub-tidal and inter-tidal sediment surveys
- Bathymetric and shoreline surveys

An outline of the monitoring and required monitoring frequency is given below.

6.1 Ecological monitoring

A summary of the ecological assurance monitoring methods is provided in the following sections.

Objectives:

1. Characterise the responses of adjacent sub-tidal habitats and benthic communities to sediments suspended and deposited offsite during dredging, and subsequent changes after dredging is complete.
2. Confirm whether benthic habitats and communities similar to those currently existing re-establish on the dredged basin once dredging is complete.

Upon completion of the ecological monitoring, the results shall be recorded and reported as part of the reporting schedule (see Section 8.2).`

6.1.1.1 Sub-tidal

Ecological monitoring of the sub-tidal ecological environments will be achieved via characterisation of the sub-tidal habitats and communities using underwater video surveys of two transects that cover a gradient running through the dredge basin to One Tree Point. Potential changes in benthic sediment (grain size) and infauna composition will be monitored using replicated grab sampling (n=6 replicates) from 3 sites arranged along each video transect (6 sites total).

The survey design has been based on spatial categorisation of the sub-tidal areas adjacent to the dredging which will see elevated turbidity during dredging. *Figure 8* sets out the proposed video transects and sediment sampling location.

The timing and frequency of the monitoring is set out in **Table 3**.

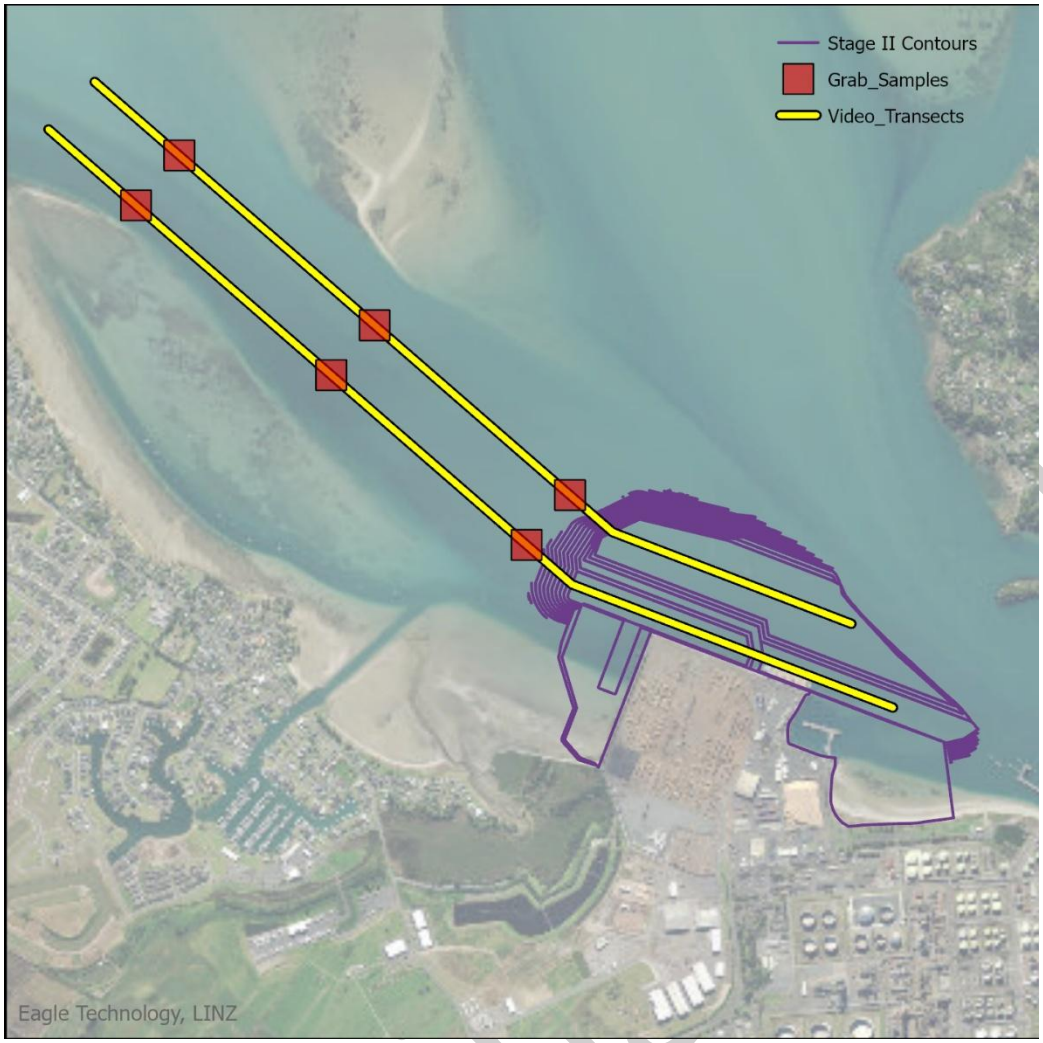


Figure 8: Video Transects and sediment sample locations for sub-tidal monitoring.

Table 3: Planned timing of each sub-tidal sampling round.

	Within a one year period within 18 months prior to dredging commencing		During dredging (except in the dredge basin)		One year after dredging is complete		Three years after dredging is complete	
Season	Spring / summer	Autumn / winter	Spring / summer	Autumn / winter	Spring / summer	Autumn / winter	Spring / summer	Autumn / winter
Video Transects	P	P	P	P	P	P	P	P
Sediment sampling	P	P	P	P	P	P	P	P

P means monitoring is required; O means no monitoring is required

6.1.2 Inter-tidal

Whilst little increase in suspended sediment concentrations (or deposition) is expected in the inter-tidal areas, the following ecological monitoring will be undertaken:

- Collection of grab samples for infauna analysis and determining the particle size distribution of the sediment.
- Low-tide drone surveys to map the extent of seagrass beds (see *Figure 10*).

Figure 9 sets out an indicative concept sample design for the inter-tidal monitoring. The timing and frequency of the monitoring is set out in **Table 1.**

Figure 9: Indicative sample design for inter-tidal sediment and infauna monitoring.

Figure 10: Indicative area for inter-tidal seagrass monitoring.

Table 1: Timing requirements of each inter-tidal sampling round.

	Within a one year period within 18 months prior to dredging commencing		During dredging		One year after dredging is complete		Three years after dredging is complete	
Area	Spring / summer	Autumn / winter	Spring / summer	Autumn / winter	Spring / summer	Autumn / winter	Spring / summer	Autumn / winter
Marsden Bay benthic sediments and ecology	P	P	P	P	P	P	Ö	Ö
Marsden Bay seagrass	P	P	P	P	P	P	Ö	Ö

P means sampling is required; Ö means sampling is required if the previous monitoring round shows that scientifically significant adverse effects have occurred.

6.2 Coastal processes: bathymetric and shoreline surveys

Objective: Collect spatial data on the seabed and shoreline to assess any physical changes to the coastline and seabed that may result from the dredging and reclamation works.

Methodology:

Sub-tidal bathymetric surveys shall be undertaken using multibeam sonar, ideally at high tide to enable an overlap with the inter-tidal/beach surveys. Survey transects shall be carried out at a maximum of 50 m. The surveys will include the access channel to Marsden Cove to main marina area.

Inter-tidal and shoreline surveys shall be undertaken using either an aerial photogrammetry or LIDAR based survey (i.e., via drone) or by a land based traditional survey method. If a land-based method is used, a series of vertical beach transects can be used, in combination of standard orthorectified drone aerial photographs. The transects must run from up to 10 m landward of the vegetation line and/or dune crest at the landward end, down to mean low-water springs and shall be undertaken in the locations shown in Figure 10. The transects shall be spaced a maximum of 50 m apart.

The dredged area shall be surveyed annually by multibeam sonar, with the survey extending at least 500m beyond the dredge area (where water depth allows).

Wave and water level data from the Northport Ltd Wave Rider Buoy should be combined with the shoreline and seabed elevation data, so the elevation data can be assessed together with changes in wave energy and water level fluctuations.

Figure 11: Extent of shoreline surveys.

Monitoring frequency

The bathymetric shoreline surveys shall be undertaken during the baseline, during dredging and for a period of 5 years post cessation of capital dredging. **Table 4** sets out the required frequency.

Table 4: Bathymetric and shoreline monitoring frequencies.

Project Phase	Frequency
Baseline (pre dredge)	Two full surveys over the 12-month baseline period
During Dredging and in the first year post-dredging	6 monthly surveys
1-5 years post-completion of a dredging stage	One full survey annually

7 Other management protocols

As set out in Section 2, a Capital DMP and DBMP will be prepared by the Dredge Contractor to manage specific risks associated with the equipment and methodology that will be used to deliver the Capital Dredging. Further management plans will be prepared to manage the potential effects of the reclamation and wharf construction components of the project. The Construction Environmental Management Plan (CEMP) has controls that will interact with the landside placement of dredge spoil. A brief description of each of these plans is set out in the following section and all plans are available on the Project Website.

7.1 Dredge Management Plan

A Capital DMP is to be prepared by the Dredge Contractor prior to the commencement of dredging. The objective of the Capital DMP is to describe the capital dredging plant, work methodologies, and environmental management systems to be used for the delivery of the capital dredging to ensure that potential adverse effects associated with operation of the capital dredging equipment are appropriately managed and are in accordance with the assessments accompanying the resource consent applications.

The Capital DMP includes the following information:

- Number and type of dredgers to be used.
- Methodology and operation of the dredger(s).
- Details of spatial control and recording for dredging activities.
- Maintenance of equipment and systems.
- Storage and handling of hazardous substances.
- Liaison with water sports clubs to identify potential conflicts between the dredging program and organised sporting events and identify measures to resolve these conflicts.
- Utilisation of a ‘green valve’ (also referred to as ‘environmental valve’) for TSHD dredgers.
- Details of the training for a person involved in the operation of the dredge so that he/she may recognise any potential archaeological material including koiwi tangata or taonga.

A description of all other necessary measures to manage adverse effects on the receiving environment during the operation of the dredge vessel, including measures relating to biofouling, management of waste, and refuelling.

7.2 Dredge Biosecurity Management Plan (DBMP)

The purpose of the DBMP is to specify how the risk of a biosecurity incursion via the dredge and related vessels is to be minimised and managed.

The DBMP shall include the following:

- Description of the dredge and associated vessel(s) and their attribute(s) that affect risk (e.g. voyage speed, maintenance history, prior inspection, voyage history since last dry-docking and antifouling).
- Description of the key sources of potential marine biosecurity risk from ballast water sediments and biofouling.
- Findings from previous inspections.
- If from overseas, a description of the risk mitigation taken prior to arrival in New Zealand, including:

    - Routine preventative treatment measures and their efficacy, including the age and condition of the antifouling coating, and marine growth prevention systems for sea chests and internal sea water systems.
    - Any specific treatments for submerged and above-water surfaces that will be undertaken to address Import Health Standard (IHS) and Craft Risk Management Standard (CRMS) requirements prior to departure for New Zealand. These could include, for example, in-water removal of biofouling, or above-water cleaning to remove sediment.
    - Any additional risk mitigation planned during transit to New Zealand, including expected procedures for ballast water management.
    - Expected desiccation period of above-water surfaces on arrival to New Zealand (i.e. period of air exposure since last dredging operations).
- The nature and extent of pre-border inspection that will be undertaken to verify compliance with IHS and CRMS.
- Record keeping and documentation of all mitigation undertaken to enable border verification if requested by Ministry of Primary Industries and to facilitate final clearance.

7.3 Construction and Environmental Management Plan

The CEMP covers the reclamation and wharf construction activities and will interact with the dredging operations via the use of dredge spoil for reclamation fill. This includes the infrastructure (i.e. pipelines) used to pump the dredge spoil ashore.

The objectives of the CEMP are:

- To detail the environmental monitoring and management procedures to be implemented during the proposal's construction phase to ensure that appropriate environmental management practices are followed and adverse construction effects are minimised to the extent practicable; and
- To ensure construction effects of the proposal are in accordance with the assessments accompanying the resource consent applications.

The CEMP must include the following sections:

- Construction phase roles and responsibilities protocols
- Environmental Risk Assessment
- Dust
- Hazardous Substances
- Erosion and Sediment Control
- Marine Works
- Wildlife, including:
    - Avifauna (as identified above, the avifauna section is required to describe the management actions and monitoring that will be employed to minimise effects on avifauna, including Kororā Little Penguin and Tōrea pango Variable oystercatcher); and
    - Marine Mammals (including the MMMP – see below)
- Archaeology
- Noise
- Marine Biosecurity
- Communications Protocols, including Complaints Procedures

7.4 Marine Mammal Management Plan (MMMP)

A Marine Mammal Management Plan (MMMP) has been prepared to manage the risks to marine mammals posed by the construction activities (including dredging), and to effectively monitor effects of the proposal. The purpose of the MMMP is to describe the management actions and monitoring that will be employed during the proposal to minimise effects on marine mammal species, specifically the risk of vessel collision and the risk of impacts from dredge noise on marine mammals. The MMMP shall be implemented alongside this EMMP.

7.5 Accidental Discovery Protocol (ADP)

Accidental Discovery Protocol (ADP) applies to the works.

The ADP includes the following processes for accidentally discovering a material of archaeological significance during the dredging works:

In the event of any discovery of archaeological material, the consent holder shall immediately:

- Cease Dredging operations in the affected area, and mark off the affected area using GPS coordinates on the dredge vessel.
- Advise the Consent Authority of the disturbance.
- Advise the Regional Office of Heritage New Zealand Pouhere Taonga (HNZPT) of the disturbance.

If the archaeological material is determined to be koiwi tangata (human bones) or taonga (treasured artefacts) by HNZPT, the consent holder shall immediately advise the office of the Kaitiaki rūnunga of the discovery.

If the archaeological material is determined to be koiwi tangata (human bones), the consent holder shall immediately advise HNZPT, the New Zealand Police, relevant iwi/hapu, and Northland Regional Council.

Dredging may only recommence within the marked location if the Consent Authority provides a written statement to the consent holder that it is appropriate to do.

7.6 Complaints

Records of any complaints logged relating to the dredging activities shall be maintained by the Consent Holder.

The records shall cover the following:

- Name of complainant, if offered.
- The issue raised.
- The location of the issue raised.
- The date and time of the complaint.
- A description of the weather conditions at the time of complaint, if relevant.
- Any possible cause of the issue raised.
- Any management actions undertaken to address the cause of the complaint.

The record of complaints shall be provided to NRC on request.

7.7 Incidents / spills

In the event of a spill or leak of oil, fuel or other hazardous substance to water, the following actions shall be taken immediately:

- Take action to prevent further spills and contain any spilled material.
- Notify the Northland Regional Council of the spill via *0800 504 639.*
- Take all reasonable steps to remedy or mitigate any adverse effects on the environment resulting from the discharge/spill.
- Contact [insert local iwi and hapu] so whanau who may use the area for mahinga kai can be advised of the spill.

8 Reporting requirements

8.1 Tier 3 Compliance Level Exceedance Report

As specified in the Consents, where a Tier 3 Compliance Level trigger has occurred and it is considered due to an extraordinary natural event and not dredging, MBIE may provide a report to Northland Regional Council within 24 hours of the trigger exceedance demonstrating this is the case. If accepted, MBIE may continue dredging in the vicinity of the triggered monitoring location. If, within 2 working days of receiving the report, Northland Regional Council notify MBIE that it does not accept the event was extraordinary, dredging must cease in the vicinity of the monitoring location until a trigger event is no longer occurring.

The report shall include:

- Results of investigations occurring as part of the management responses detailed in Section 5.
- Determination of whether the event was likely to be dredge related or not.
- Management actions taken in response to the event and the result of the action i.e. changes in location of the dredge and turbidity levels as a result of this.
- Graph summarising the turbidity at the exceedance location over the monitoring period.

The report is to be published on the Project Website for public viewing.

8.2 Monitoring Reports

8.2.1 Quarterly turbidity monitoring reports

A quarterly report shall be prepared by the CHPT every three months during and after dredging. These reports shall include the turbidity monitoring results during the three-month period, and details of any triggers that have been exceeded, the management response measures carried out and the results of monitoring after the management response measures have been completed.

At least two quarterly reports shall be prepared covering the post-dredging phase.

8.2.2 Ecological assurance monitoring report

After the completion of each set of annual (i.e. spring/summer and autumn/winter) marine ecology assurance monitoring, a report detailing the assurance monitoring undertaken during that period shall be prepared. That report shall include reference to any previous assurance monitoring to illustrate any relevant trends over time.

8.2.3 Bathymetric and shoreline assurance monitoring

A monitoring report will be prepared after the first year of post-dredging surveys and after the five years of post-completion surveys (i.e., two reports). These will be prepared within three months of survey completion.

The reporting will include a comparison of the baseline and the two post-dredging surveys. Observations based on the results of the analysis will be made, including results and discussions on the ambient conditions, such as wind speed and direction, water level variations and any significant climate events. Recommendations on changes to the monitoring programme (if required) will be made in the first report.

8.2.4 Annual report

Annually, during the baseline, dredging and post-dredging phases, the following monitoring reports (if produced in that period) shall be collated and provided to the NRC:

- Quarterly turbidity monitoring
- Ecological assurance monitoring
- Bathymetric and shoreline assurance monitoring

The annual report shall be provided to the NRC no later than three months after the completion of the relevant set of annual assurance monitoring.

8.3 Dredging Stage Completion Report

Within nine months of the completion of capital dredging, a Dredging Completion Report shall be prepared by the CHPT. The report shall contain a summary/collation of the following:

- Dredging activities
- Final bathymetry survey results and analysis
- Monitoring undertaken during the period and a comparison of results to the baseline monitoring
- Trigger exceedances, investigation results and management responses
- Evaluation of the general performance of the EMMP including:
    - Evaluation of the dredge management approach and management responses undertaken by the EMMP and whether or not the objectives and purpose of the plan were met
    - Evaluation of the monitoring methodology and results

A copy of the completed report shall be provided to the NRC.

9 Group roles and responsibilities

Successful dredge management relies on good communication, liaison, and input from a number of key parties throughout the monitoring and management stages. To ensure all relevant technical experts and stakeholders are appropriately involved in the dredge management process, the Consent Holder Project Team (CHPT) and Technical Advisory Group (TAG) shall be established prior to commencing dredging.

9.1 Consent Holder Project Team

The CHPT is to be established by MBIE and may include any expertise deemed necessary. However, at a minimum, the Consent Holder shall ensure the CHPT includes employees, or persons engaged by MBIE, with at least the following expertise:

- An assigned (contractor or employee) project manager for MBIE
- Dredge operator
- Hydrodynamic modeller
- Environmental Management with dredging experience

The roles of the CHPT will include:

- Daily operations and proactive management of the dredge taking into consideration:
    - Real-time turbidity monitoring
    - Water quality monitoring
    - MetOcean conditions and forecasts
- Preparation of the monitoring reports and circulation to the various parties as required (refer Section 8).
- Continually examine the monitoring data to ensure the appropriate information is being gathered.
- Ensure the Dredge Contractor has the required monitoring information and the appropriate management responses are completed in a timely manner.

9.2 Technical Advisory Group (TAG)

This purpose for this group is to give technical advice to the CHPT on matters of individual member expertise. The group shall consist of no more than 12 members as follows:

- To be decided following consultation

The role of the TAG is to:

- Review the reports prepared by the CHPT and where necessary provide advice to the CHPT in writing.
- Provide advice on any technical matters as sought by the Consent Holder.
- The TAG will not direct the nature or specifics of dredge management responses.
- Where the TAG does not have the expertise in any of the areas it is required to report on, it may engage the services of an appropriate expert on a relevant matter to the TAG.

The Consent Holder shall provide any administrative support necessary for the TAG to carry out its functions. The Consent Holder shall establish the TAG at least 2 months prior to the first

commencement of dredging. The Consent Holder shall offer to hold meetings at a frequency appropriate for the dredging programme and reporting intervals.

9 Applicability

Enviser Limited has prepared this report for the Ministry of Business, Innovation and Employment in accordance with the agreed scope for use in the Fast Track process. No other party may rely on this report, or any conclusions or opinions within it outside of the Fast Track process. The Panel appointed to consider the project application, and other parties involved in the process, may rely on this report for the purpose of the Fast-track Approvals Act 2024.

The opinions and conclusions within this report are based on the information that was viewed during preparation of the report.

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