

**PORT OF TAURANGA LIMITED
STELLA PASSAGE DEVELOPMENT
DRAFT DREDGE MANAGEMENT PLAN – RM - XXX
APRIL 2025**

Notes on the DRAFT Version

This is a DRAFT version and as such refers to appendices or documents that are yet to be completed. The document will be updated and finalised upon appoint of a Dredging Contractor to undertake the Works and must then be reviewed by the Stella Passage Development Advisory Group (SPDAG) and subsequently certified by the Bay of Plenty Regional Council (BoPRC).

1 INTRODUCTION

1.1 Purpose

The purpose of this draft Dredge Management Plan (DMP) is to detail the planned dredging activities authorised by resource consent number [RM-xxxx], detail the measures that will be implemented to address the potential effects of dredging (particularly in relation to the risk from the effects of sediment plumes redistribution and invasive pest species that may be present, outline the process for monitoring and the response framework.

As the consent holder, Port of Tauranga Limited (PoTL) must be responsible for ensuring the measures outlined in this DMP are followed by any contractor that undertakes the dredging.

1.2 Resource Consents

Resource consent RM-xxxx authorises the following dredging:

- Capital dredging to extend Stella Passage to facilitate vessel access to and berthing at, southern extensions to the Sulphur Point wharves; and
- Maintenance dredging of the shipping channel and sitting basins to maintain safe navigable depths.

Condition [number] of RM-xxxx requires that prior to the first capital dredging works commencing, the consent holder must prepare a Dredge Management Plan, to be certified by the BoPRC no less than twenty (20) working days prior to any dredging operations commencing.

1.3 Document Structure

This DMP is structured as follows:

Section 2	Proposed works and location.
Section 3	Location of areas to be dredged under consents [REDACTED]
Section 4	Dredging methodology.
Section 5	Water quality monitoring.
Section 6	Sediment discharge controls and contingency measures.

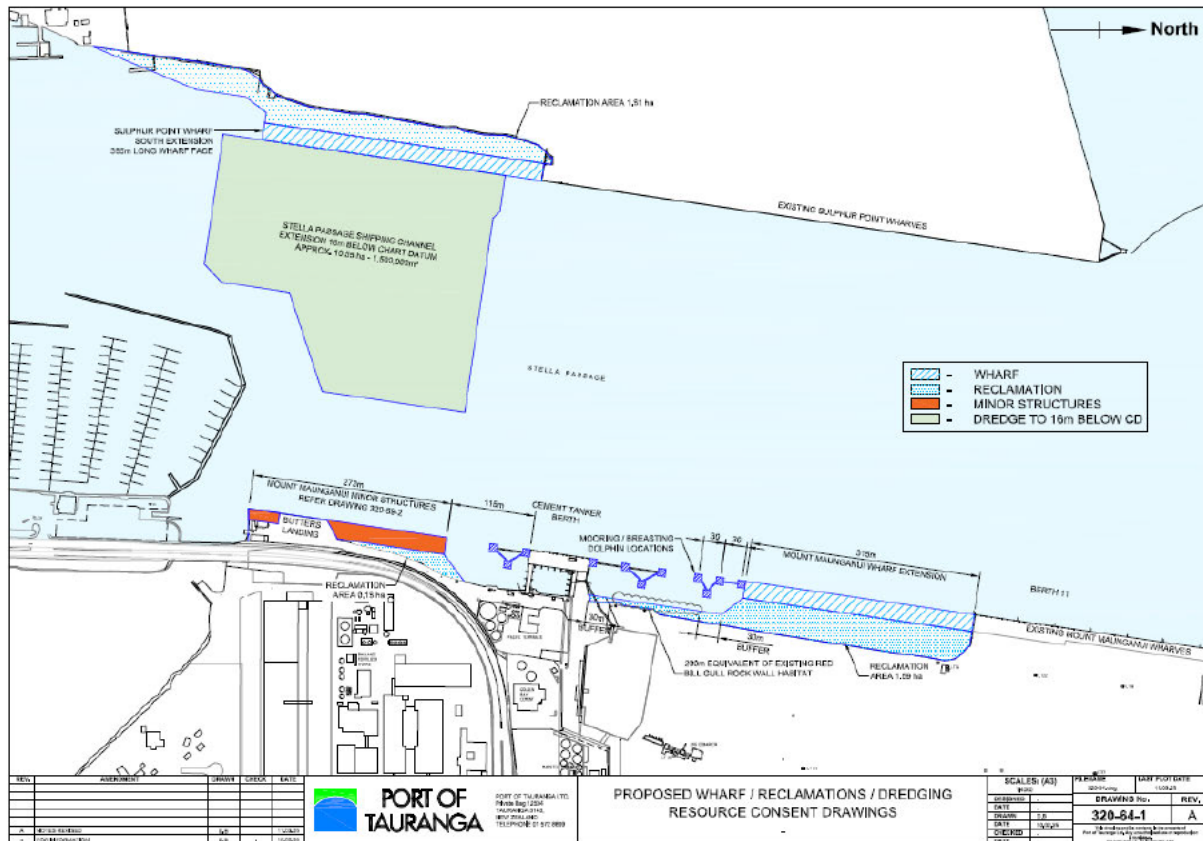
Section 7	Controls to minimise sediment discharges.
Section 8	Biosecurity management.
Section 9	Contingency measures.
Section 10	SPDAG review and recommendations.
Section 11	Waste management.
Section 12	Other management protocols.

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2 PROPOSED WORKS AND LOCATION

2.1 Location

The location of the area to be dredged in accordance with consent RM-xxxx is shown in the figure below.



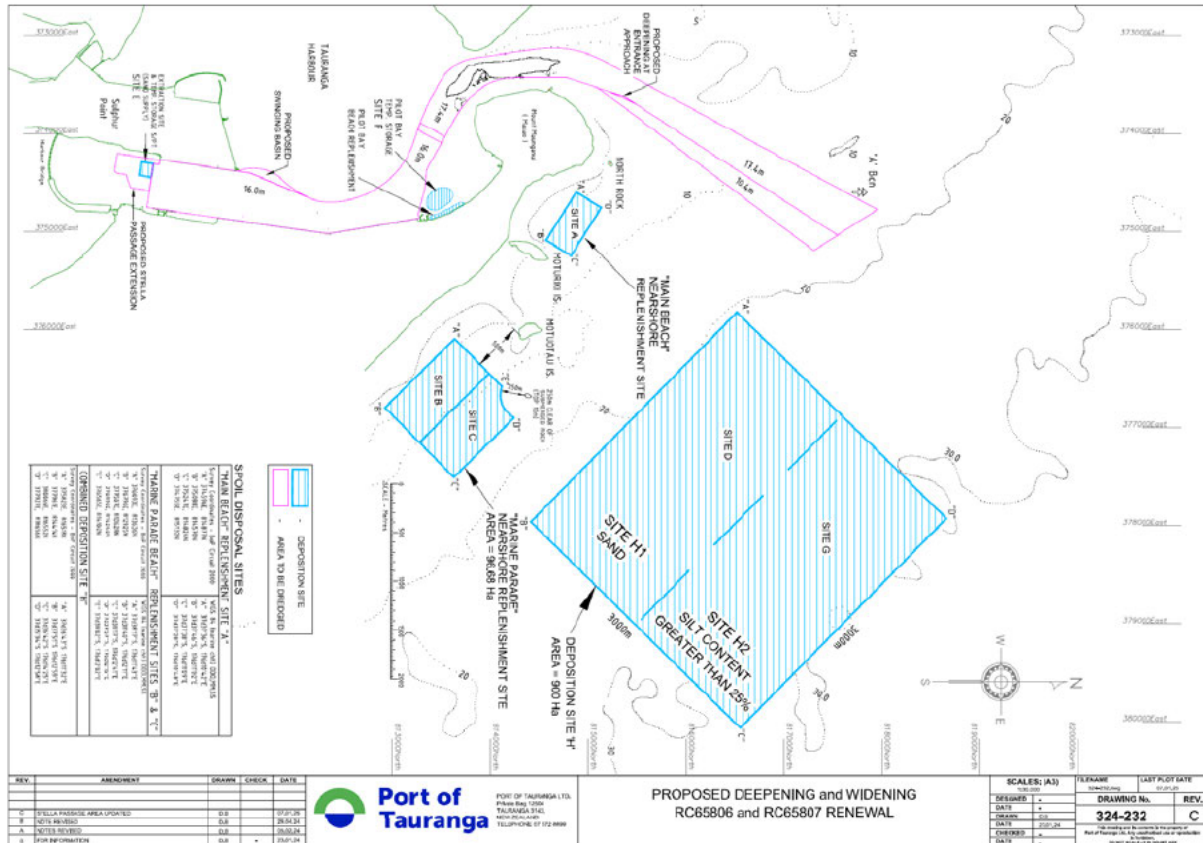
The dredging associated with the Stella Passage Development involves dredging an area currently 4-6m deep to a depth of approximately 16 m to allow vessels to travel further up harbour to berth at proposed southern extensions to the existing Sulphur Point wharves.

Infill occurs throughout the shipping channel and berth pockets. As such maintenance dredging is required to maintain the operational depth of 16 m to provide under-keel clearance for vessels using the channel.

3 Location of area to be dredged under consents

3.1 Location

The area of consented dredging adjoins the area of consented dredging authorised by resource consents That separately consented dredging area is shown in the figure below.



The dredging associated with consents 65806 and 65807 involves lowering the seabed of the existing channel or sitting basin to allow deep draughted vessels to navigate safely on both high and low tide and widening the existing channel into the Otumoetai Channel off the northern end of Sulphur Point to create an area for swinging large container vessels.

Infill occurs throughout the shipping channel and berth pockets. As such maintenance dredging is required under these consents to maintain the operational depth of 16 m to provide under-keel clearance for vessels using the channel.

3.2 Deposition

The material removed from the seabed by the dredging will be transported and used in reclamations, or otherwise will be deposited offshore, bought ashore or nearshore to provide for beach renourishment, in accordance with resource consents or their replacements.

3.3 Compliance

Where the dredging activities are to be undertaken as one piece of work the following consent requirements shall be combined:

- Notifications.

- Channel Bathymetric Surveys.
- Deposition Site Bathymetric Surveys.
- Turbidity Monitoring.
- Cultural Monitoring.
- Reporting.

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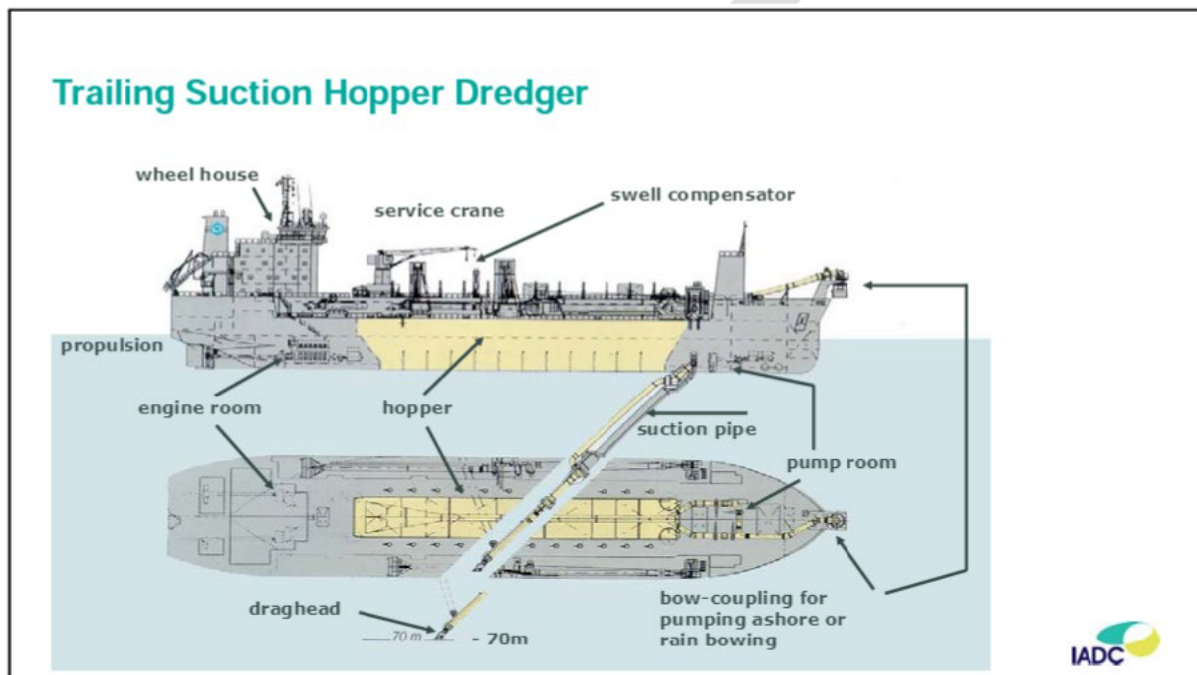
4 DREDGING METHODOLOGY

4.1 Dredging Equipment

The dredging equipment to be used is commonly found operating in ports around the world and has been used at the Port of Tauranga in the past and present.

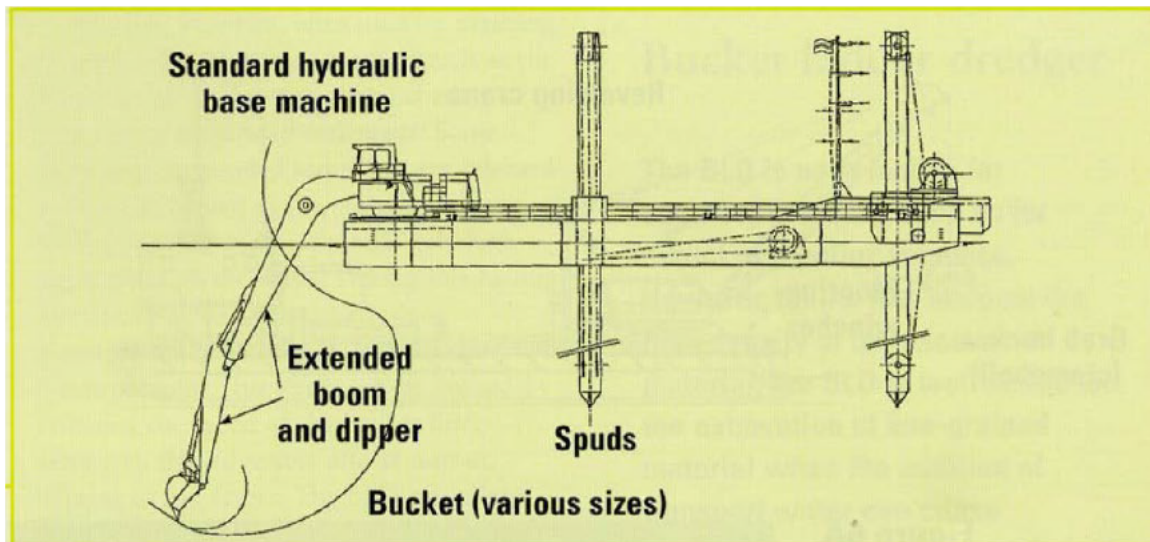
4.2 Trailing Suction Hopper Dredge (TSHD)

TSHDs are self-propelled ships that operate via a long suction pipe (trailing arm) with a draghead (or dragheads) attached that trail alongside the vessel, much like the operation of a vacuum cleaner. The hopper for storing the dredged materials is contained within the hull of the vessel. Refer to the figure below.



4.3 Back-Hoe Dredge (BHD)

The BHD consists of a hydraulic excavator with a single digging bucket at the end of a two-part articulated arm and is very similar to track-mounted machines commonly used on land, with the exception that they are barge-mounted. Refer to the figure below. The term back-hoe is referring to the action of the shovel, which digs by drawing material backwards, rather than scooping or in a forward motion.



4.4 Contractor Specific Details

For capital dredging projects the Dredge Contractor shall prepare a Dredge Contractor Management Plan (DCMP) with specific detail on how they intend to execute the works. The DCMP shall be submitted to PoTL and confirmed acceptable before the contractor may commence work. The Dredge Contractor shall operate all vessels and perform all dredging in accordance with this DMP and their DCMP.

The DCMP shall include but not be limited to:

- the area to be dredged
 - Sequencing of works
 - Programme of works
- methodology for undertaking the dredging activity
 - Vessel type
 - Vessel size
 - Sea state capabilities
 - Dredging Productivity rates
- controls for minimising sediment discharges
 - Green valve technology
 - Overflow restrictions
 - State of tide dredging restrictions
 - Methods to maximise settling of material in hopper
 - Bottom door seal integrity
- measures taken to prevent the spread of any invasive species within the area to be dredged
 - Clean hull certification

4.5 Cultural

Cultural observers appointed by the SPDAG/Tauranga Moana Iwi Customary Fisheries Trust in accordance with the consent conditions shall be present during capital dredging activities.

All turbidity monitoring results during capital dredging must be published on PoTL's website.

4.6 Surveys

Bathymetric surveys shall be undertaken at any capital or maintenance dredged site prior to and after dredging to allow comparative assessments of the volume of material removed and changes to the geomorphology caused by the dredging.

The bathymetric surveys shall be conducted in accordance with International Hydrographic Organisation (IHO) standards for Special Order Surveys. All surveys shall be supervised by IHO Category A and/or Certified Professional Hydrographic Surveyor Level 1 (CPHS1) surveyors. These survey standards demand a very high degree of survey accuracy and are performed by the highest qualified professionals.

All survey results must be published on PoTL's website and must be submitted to the BoPRC in accordance with the conditions of RM-xxxx.

4.7 Marine Mammals

Dredging contractors must operate in compliance with the Marine Mammal Protection Regulations 1992 to reduce the likelihood of marine mammal ship strike.

Dredge equipment must be regularly maintained, including lubrication and repair of winches, generators, propulsion components and other potential noise sources to reduce underwater noise.

Records of all marine mammal sightings must be collected by the Dredging Contractor during dredging operations in accordance with the following Marine Mammal Sightings Protocol.

On each occasion that a marine mammal sighting is made/received the following actions must occur:

- For every observation a photo must be taken (where possible);
- For every observation a 'Marine Mammal Sightings Form' (refer appendix 1) must be completed. Note, if an individual marine mammal is seen numerous times in a day then only one sighting form needs to be completed per day for that individual animal; and
- All completed 'Marine Mammal Sightings Forms' and photos must be scanned and emailed to POTL's Environmental Advisor on a monthly basis.

Any injured or dead marine mammals, any physical interaction or any near misses between the operation and marine mammals, must be reported immediately to PoTL, the BoPRC and Department of Conservation including details of the incident and any mitigation action taken.

POTL must ensure that dredge masters receive training on:

- the recording and reporting requirements relating to marine mammals;
- compliance with the Marine Mammal Protection Regulations 1992; and
- waste management requirements.

5 WATER QUALITY MONITORING

5.1 Manual Water Sampling

Water quality monitoring must be undertaken through manual turbidity readings taken upstream as background readings and downstream within the active plume with limits on the increased turbidity.

On every second day of dredging operations, the consent holder must undertake measurements, using a back-scatter or nephelometric methods at the following sites:

- (a) To determine the natural background turbidity levels:
 - > 500m up current (away from the direction of the sediment plume) from the actively dredged area.
- (b) To determine the turbidity within the water column during dredging operations for a Trailing Suction Hopper Dredger:
 - > 200m down current from the actively dredged area and/or at Aerodrome Bridge if the plume is going under Aerodrome Bridge.
- (c) To determine the turbidity within the water column during dredging operations for a Backhoe Dredger:
 - > 500m down current from the actively dredged area and/or at Aerodrome Bridge if the plume is going under Aerodrome Bridge.

Note: The “actively dredged area” means the area identified in Section 2 of this DMP.

The results from the measurements taken must not be greater than 15 Nephelometric Turbidity Units (NTU) above the natural background turbidity levels.

If three consecutive measurements are taken and found to comply with the 15 NTU limit monitoring may be suspended for seven (7) days.

If three consecutive measurements are taken and found to exceed the 15 NTU limit specified the consent holder must:

- (a) Cease the dredging operations that caused the exceedance.
- (b) Notify the BoPRC and the SPDAG.
- (c) Consult with the Chief Executive of the BoPRC or delegate and the SPDAG over possible explanations for the exceedance and any proposed measures to rectify the non-compliance (including an amendment to this DMP, if required).
- (d) Not recommence the dredging operations that caused the exceedance until any modification to the dredging operation receives the written certification of the Chief Executive of the BoPRC or delegate.

6 SEDIMENT DISCHARGE CONTROLS AND CONTINGENCY MEASURES

To control the effects of sediment beyond the dredged area continuous turbidity measurements from fixed turbidity monitors at the below sites must be carried out. A tiered response framework using turbidity triggers and environmental limits as outlined in the table below have been designed to safeguard the sensitive receiving environment receptors:

Port/location	Trigger 1 (NTU)	Trigger 2 (NTU)	Environmental limit (NTU)	Term/Notes
Pilot Bay	15	20	35	6 hr Moving Avg.
No. 10	12	17	25	2 Week Moving Avg.
Butters	12	17	25	2 Week Moving Avg.
Otumoetai	15	20	35	6 hr Moving Avg.
Response framework				
Trigger 1	Investigation into the elevated turbidity. Assess impact of on-going operational dredge.			
Trigger 2	Modification to methodology of operational dredging. Including, but not limited to; <ul style="list-style-type: none"> • relocation of dredge • changing dredging equipment • operate dredge during certain tides times • modify frequency of dredging operation • a combination of methods 			
Environmental limit	Upon reaching the environmental limit dredge operation should cease.			

The purpose of the continuous turbidity is to ensure water quality is monitored and maintained within acceptable parameters.

The manual method is carried out to maintain a transparent reliable level of compliance with environmental limits. The continuous monitoring is conducted to provide real time data to the dredge operators to enable informed operation decisions to limit turbidity and ensure water quality is maintained during the dredging.

The manual compliance monitoring limits use well established values and testing frequency enforced in previous dredging resource consents.

Adaptive management will be implemented through an established three-step trigger level matrix which require management responses. The system is based upon comparing the real time monitoring information collected against established trigger levels. The trigger levels are set based on the monitors locations from the various sensitive receiving environments, tolerance of species present and existing natural turbidity levels. The corresponding required responses inform an adaptive management approach targeted at ensuring environmental limits are not breached.

7 CONTROLS FOR MINIMISING SEDIMENT DISCHARGES

7.1 Green Valve

The 'green valve' system was developed for TSHD to help reduce turbidity caused by overflow during the dredging process. Water overflow consists of not only water, sediments and fines, but also air. And air rises. So, even if the overflow is below the water surface, as the air rises from the underwater outlet to the water surface, it carries fines with it, spreading over a large area causing increased turbidity. When a 'green valve' is installed air entrainment is reduced and therefore sediments and fines sink to the seabed and reduce the turbidity.

7.2 Restricted Overflow

While a 'green valve' reduces the turbidity from any overflow the elimination or time restricted overflow can further reduce the turbidity created. Where areas are known to contain material with a high proportion of silt and sensitive receiving environments are nearby, dredging can be conducted with overflow restrictions to limit turbidity.

7.3 Tidal Restrictions

Where areas are known to contain material with a high proportion of silt and sensitive receiving environments are nearby, dredging can be conducted only on certain tides to ensure any turbidity generated stays within the shipping channel rather than travel towards the sensitive receiver.

7.4 Measures to be deployed

All TSHD used will have a 'green valve' or similar technology installed.

The dredging of Stella Passage shall be carried out with the following overflow and tidal restrictions:

- Flood Tide - No overflow
- Ebb Tide - 15 minute overflow

8 BIOSECURITY

8.1 Overview

Dredge vessels arriving from overseas or from outside the Bay of Plenty region constitute the largest relative biosecurity risk associated with the proposed activities. In particular, elevated risk occurs if the vessels' region of origin has marine non-indigenous species (NIS) of concern not currently present within the Bay of Plenty, and if risk mitigation measures have not been implemented for these vessels prior to their passage to the port.

All vessels entering Aotearoa New Zealand waters from overseas are required by national and international regulations to manage the risk of introducing NIS via hull fouling (through MPI's Craft Risk Management Standard for Vessel Biofouling (CRMS)) and ballast water (under the International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM Convention)). If implemented correctly by incoming vessels, the combined requirements minimise the risk of introductions of NIS from vessels.

Dredge spoil disposal can also act as a pathway for the inadvertent transfer of marine NIS from the dredge location to the spoil disposal grounds. The majority of NIS established within Tauranga Harbour are sessile filter-feeding invertebrates (e.g. sponges, hydroids, bryozoans, ascidians) and seaweed species that primarily colonise hard substrates. There is likely to be a lack of suitable habitats for these taxa at the consented disposal grounds.

The fanworm *Sabella spallanzanii* presents a specific risk that may warrant additional safeguards (e.g. pre-dredging surveillance). Although this species predominantly colonises hard substrates, it has been shown to establish on small pieces of shell or rock material within predominantly soft sediment habitats in other regions.

Results of the most recent NIS survey conducted as a part of the Bay of Plenty Regional Council regular biosecurity monitoring within the area to be dredged must be reviewed prior to capital dredging. Any additional management measures required will depend on any NIS present.

8.2 Management Measures

Any vessel arriving must be compliant with the international regulations to manage the risk of introducing NIS via hull fouling (through CRMS) and ballast water (under the BWM Convention).

8.3 Notification

Conditions [4.1], [4.2] and [4.3] of consent [RM-XXX] require the consent holder to provide notification of the pending commencement of dredging operations. The notification to be provided must include the following information:

Based on the results of the most recent invasive species survey undertaken through biosecurity monitoring by the Bay of Plenty Regional Council, identification of any measures to be implemented as part of the dredging operations to prevent the spread of any invasive species that may have been identified from that survey within the area to be dredged.

9 CONTINGENCY MEASURES

Two approaches will be employed throughout the operational phase of the project. The primary control is based on the known risks and the assessment of controls to mitigate them. Where monitoring shows the effects are not being controlled effectively contingency measures through adaptive management measures shall be taken to limit the effects of dredging.

Adaptive dredge management will occur throughout the duration of the dredging project. The results of the turbidity monitoring will be used to inform any additional controls required. The tiered response approach with respect to turbidity is provided through the use of both Response Levels and an Environmental Limit.

Environmental Limits are defined levels of maximum tolerance to an environmental condition, beyond which the potential for long-term negative impact is considered unacceptable.

Response Levels provide an early warning that conditions may be trending towards the Environmental Limit, enabling timely management action to be taken in order to avoid unacceptable adverse impacts. Two tiers of Response Levels will be used to ensure early intervention can be achieved.

Both the Environmental and Response Levels are based on either a 6 hour or 2 week moving average appropriate for the environment they are protecting.

The proposed Response Levels and Environmental Limits are those set in the report *Setting Water Quality Limits And Monitoring Turbidity For The Port of Tauranga* and listed below.

Location	Concern	Trigger 1 Response	Trigger 2 Response	Environmental Limit	Limit
Pilot Bay	Benthic invertebrates	15 NTU	20 NTU	35 NTU	6-hourly moving average
No.10	Seagrass	12 NTU	17 NTU	25 NTU	2-week moving average
Butters	Seagrass	12 NTU	17 NTU	25 NTU	2-week moving average
Otumoetai	Benthic invertebrates	15 NTU	20 NTU	35 NTU	6-hourly moving average

The Trigger 1 Response Limit requires investigation as to the reason for the elevated turbidity. This trigger requires the contractor to check equipment/data accuracy to verify exceedance and assess the impact of on-going dredging operation.

The Trigger2 Response Limit requires the contractor to change the current dredging methodology until the turbidity is reduced below this level. Undertake the actions as per Level 1 Response and undertake management of dredging process to reduce turbidity, this could include:

- Relocation of dredge.
- Reduce dredging frequency.
- Suspend dredging.

- Operate dredge in non-overflow mode.
- Dredge particular areas on certain tides.
- Change of dredging equipment.
- A combination of the above.

The Environmental Limit is the limit beyond which no dredging shall occur. Once this limit has been exceeded the entire dredging operation shall be suspended until such time as the BoPRC gives clearance to continue.

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10 STELLA PASSAGE DEVELOPMENT ADVISORY GROUP (SPDAG) FEEDBACK

This section would be populated post-consent, following review and feedback from SPDAG.

In accordance with condition [8.3] of RM-xxxx, the consent holder must invite the SPDAG to provide feedback on the Dredge Management Plan. If the consent holder does not adopt any recommendations provided in the feedback, it must explain why this is the case in the DMP provided to the BoPRC for certification.

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11 WASTE MANAGEMENT

Dredging contractors must operate in accordance with Resource Management (Marine Pollution) Regulations 1998, including the following requirements.

- a) all dredge vessels must have covered waste bins and debris retrieval nets;
- b) any waste or equipment that enters the water from the dredge vessel(s) must be promptly retrieved (if safe to do so) and disposed of onshore; and
- c) marine debris recovered during the process of dredging must be retrieved for safe disposal onshore.

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12 OTHER MANAGEMENT PROTOCOLS

12.1 Resource Management (Marine Pollution) Regulations 1998

The disposal of all domestic and industrial rubbish and waste must be in accordance with all applicable legislative or regulatory requirements.

The Dredge Contractor must not discharge any domestic or industrial waste of any description from any vessel into any water body of the Port. Failure by the Dredge Contractor to comply with this requirement will result in the immediate suspension of the Contract Works by PoTL. Work must not resume until any such contravention is investigated, work procedures reviewed and staff and crew re-trained in the relevant procedures all to the satisfaction of PoTL.

12.2 Historical and Archeological Finds

All items having apparent historical or archaeological interest discovered in the course of dredging activities shall be carefully preserved. The dredging contractor must leave the archaeological find undisturbed and immediately report the find to the Cultural Monitor if on board and to PoTL.

12.3 Complaints

Records shall be maintained by PoTL of any complaints received relating to the dredging activities. The records shall cover the following details:

- The location of the reports nuisance of effect;
- The data and time of the complaint;
- A description of any relevant details to the complaint, sea condition, weather;
- Any possible cause of the nuisance or effect;
- Actions taken to address the cause of the complaint; and
- Name of complainant and contact details if offered.

PoTL must follow its standard complaint response protocol to ensure any complaints received are appropriately responded to.

The records of complaints must be made available to the BoPRC upon request.

12.4 Incidents

In the event of a spill or leak of oil, fuel or other hazardous substances to water, PoTL must notify the BoPRC and the SPDAG/Tauranga Moana Iwi Customary Fisheries Trust .