

APPENDIX 9B

DRAFT MARINE MAMMAL MANAGEMENT PLAN (MMMP)



enviser

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DRAFT MARINE MAMMAL MANAGEMENT PLAN

CONSTRUCTION AND CAPITAL DREDGING

Northland Shipyard and Dry Dock
MBIE

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Foreword

This plan has been collated by Enviser Limited with technical input provided by the following:

- Deanna Clement, Marine Mammal Expert, Cawthron
- Matt Pine, Underwater Acoustics and Marine Mammal Monitoring Expert, Styles Group Ltd

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.

Abbreviations

MMMP: Marine Mammal Management Plan (this plan)

TTS: Temporary auditory threshold shift

PTS: Permanent auditory threshold shift

MMO: Marine Mammal Observer

MMOZ: Marine Mammal Observation Zone

EMMOZ: Extended Marine Mammal Observation Zone

OCMMOZ: Outer Channel Marine Mammal Observation Zone

UHMMOZ: Upper Harbour Marine Mammal Observation Zone

1 Introduction

1.1 Purpose of the MMMP

The Ministry of Business, Innovation and Employment (MBIE) is proposing to develop and operate a new shipyard and drydock facility adjacent to Northport's facilities in Marsden Bay. The proposed Northland Shipyard and Drydock Facility (NDDSF) will be located immediately west of Northport's port operations at Marsden Point, Whangārei Harbour. The project includes a reclamation, vessel haul-out system, and associated wharf structures, dredging, and supporting infrastructure.

There is potential for the construction activities, particularly pile driving and dredging, to have effects on the marine mammal species that live or pass through the north-eastern coastal waters of the North Island. The species most likely to be present in the vicinity of the project area are bottlenose and common dolphins, orca and Bryde's whales. Other species of interest include New Zealand fur seals, leopard seals, and southern right and humpback whales which are seasonal visitors to the wider Bream Bay area.

The assessment of potential construction effects on marine mammals (Clement, 2026) identified physical hearing injuries and/or habitat avoidance (due to the associated increase in underwater noise production from pile driving and dredging activities) as potential direct effects of the proposal. Vessel strike and possible entanglement were identified as potential indirect effects.

The assessment of potential construction effects and this MMMP have been informed by an assessment of underwater noise effects (Pine, 2026), which modelled the spatial range where auditory injury, behavioural responses, auditory masking and overall audibility may occur in those species likely to be present within the project area and recommended noise reduction methods, specifically the use of bubble curtains to reduce the underwater noise levels.

This MMMP describes the management actions and monitoring that will be employed during the construction activities to minimise effects on marine mammal species.

1.2 Roles and responsibilities

Table 1 summarises the key project staff and contact details for each. The Consent Holder (MBIE) is ultimately responsible for implementing this MMMP.

It is the responsibility of MBIE to ensure that the Contractor understands and can implement the requirements of this MMMP. The Contractor is responsible for training their staff and ensuring that they understand and can implement the requirements of this MMMP.

Table 1: Summary of key contacts, roles and responsibilities

Name	Role/Responsibility	Organisation	Contact details
TBC	Consent Holder	MBIE	
TBC	Project Environmental Adviser		
Dr Deanna Clement	Project Marine Mammal Specialist	Cawthron Institute	deanna.clement@cawthron.org.nz
Dr Matt Pine	Project Underwater Noise Specialist	Styles Group	Matthew@stylesgroup.co.nz

1.3 Training requirements

To ensure construction crew are aware of the risks and the necessary management actions, all crew will attend the Marine Mammal Observation toolbox talk. This will be given by the Project Marine Mammal Expert (Dr Deanna Clement, Cawthron) and the Project Environmental Adviser (TBC).

The Contractor will record training attendance. The Project Environmental Adviser will train other relevant project personnel (i.e., site supervisors, project engineers, etc) as required and whenever new crew commence work on the project.

Reminders and updated information will be provided throughout the project.

1.4 Regulatory requirements (TBC)

The management of effects on marine mammals is subject to the provisions of the Resource Management Act 1991, New Zealand Coastal Policy Statement and the Regional Coastal Plan for Northland.

The construction activities, including the marine piling, requires consent under the Regional Coastal Plan for Northland. MBIE holds the following consents for the construction phase of the project:

- XXXXXX
- XXXXXX

1.5 Updating the MMMP

This MMMP shall be implemented throughout the reclamation, piling and dredging works. It shall be considered a 'living document' that is expanded and updated as the project progresses.

Shut-down zones will be established around the construction area to minimise any risk of hearing impairment (i.e., TTS) to marine mammals from pile driving activities¹.

As soon as practical after the commencement of underwater noise generating activities (dredging or piling), noise validation will be completed and the MMMP will be updated to ensure all noise management actions are appropriate. The final size of the shut-down zones will be confirmed once construction methodologies are confirmed and *in situ* sound levels are verified.

To maintain relevance, this Plan must be reviewed at the following times and amended where necessary:

- Following completion and reporting of the noise validation monitoring data.
- Following any marine mammal entanglement incident or near incident.
- If the size or length of the pile, or the piling method, changes during the project.
- As any new significant marine mammal sighting or information data becomes available.
- If three or more shut-downs (due to the presence of marine mammals entering the shut-down zones during piling) occur within three consecutive days.

Following any update, the MMMP will be provided to the Northland Regional Council for certification.

¹ Shut-down zones for dredging activities are not considered necessary based on predicted noise levels and relative to other similar and relevant dredging consents. Any significant differences in actual dredging noise levels may necessitate reconsideration of a shut-down zone option.

2 Project description

The project is to develop and operate a marine maintenance operations 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. The construction will require the following main components:

- Dredged turning circle including berthing area and berth pocket (Stage 1)
- Deeper dredging to provide for the total reclamation fill needed across both the shipyard and Northport's developments (Stage 2)
- Reclamation of seabed for hardstand and facilities, contained by piled quay walls and sloped rock revetments
- Open piled finger pier jetty for berthing on the northern face
- Potential dredge area for Western Perimeter berthing face
- Road access including the provision of services and utilities to the site
- Paving, drainage, lighting and utility provision across the site
- Associated buildings and facilities

The overall construction period is expected to be about 3 years from mobilisation to completion of the civil infrastructure. Building development for initial establishment is expected to take a further or overlapping 12 to 18 months. Installation and commissioning of the ship lift device is expected to take around 6 months after civil works are complete, depending on whether a floating dry dock or ship lift is selected.

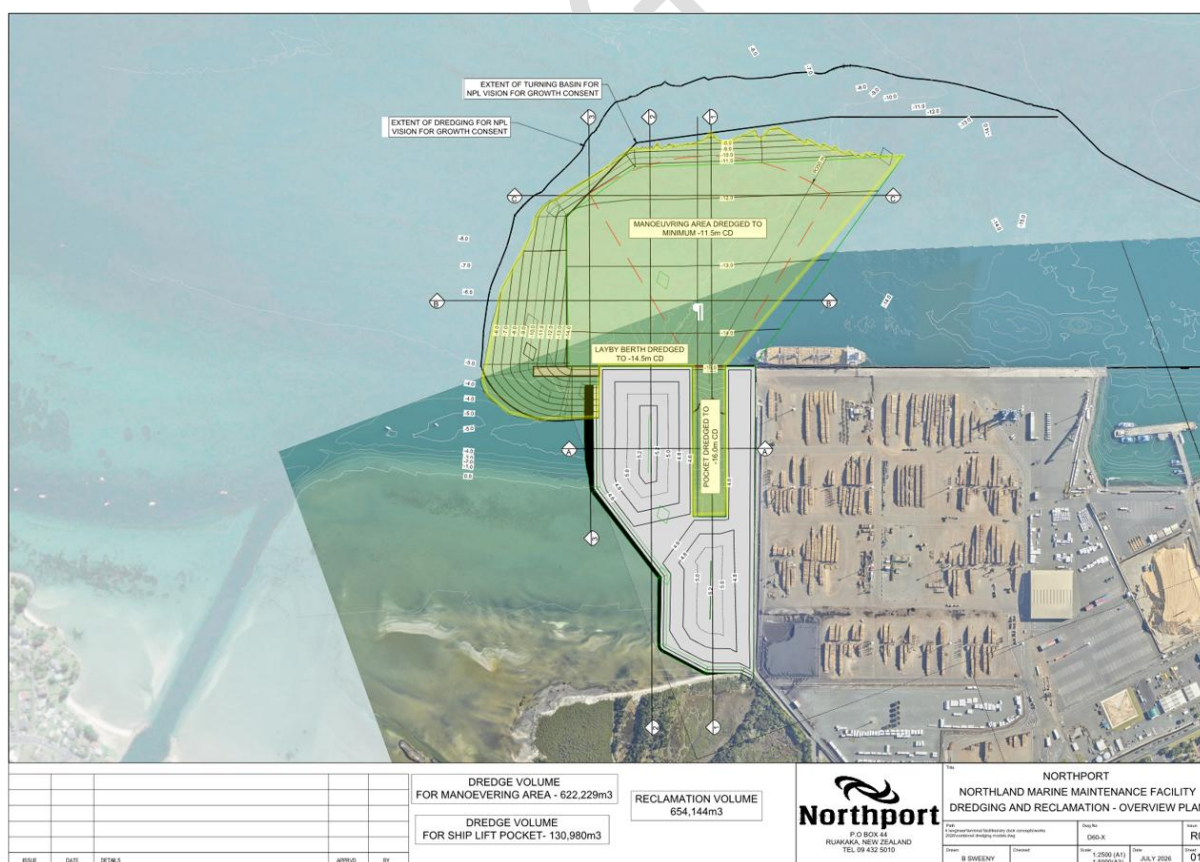


Figure 1: Reclamation footprint (grey area) accommodating the marine maintenance operations facility to the west of Northport's existing port operations. Stage 1 of the dredge area is shown in yellow.

2.1 Land reclamation

It is anticipated the reclamation will be built by forming containment structures (rock revetment with a stabilised core and pile structures) before placing dredging material to fill the containment structure. Temporary bunds may also be created from dredge materials. The methodology is broadly described below:

- **Rock revetment**
Typically constructed from land by end-tipping locally quarried rock (or stabilised dredge/imported fine material) core, with rock armour around the exterior. In deeper water, marine split hopper barges may be used to place larger volumes of material and reduce road haulage. The inner face is typically lined with geofabric to contain fill during dredging and reclamation.
- **Pile structures**
The remainder of the reclamation containment will likely comprise an Anchored Combi-Wall: a steel tube and sheet pile front wall tied back through the reclamation to a rear sheet pile anchor wall. Piles will likely be installed from marine plant, mainly using vibro hammer techniques, with a small proportion hammer-driven to final depth to confirm load capacity. Once the front wall is in place, dredging and reclamation can begin in parallel, allowing the rear anchor wall to be installed from land-based plant on the initial reclamation platform. After the anchor wall is installed, dredging will continue and fill will be placed to final level.
- **Decanting ponds and bunds**
As the pumped dredge spoil will be a slurry (70% water), it will need to be dewatered before use as bulk reclamation fill. This is typically achieved by constructing a series of decanting ponds within the reclamation footprint to progressively dewater the dredge spoil. The decanted water is discharged to the harbour, once it meets the required water quality standards. The dewatered dredge spoil can then be moved into its desired location.

2.2 Dredging methodology

Dredging will likely be undertaken by a Cutter Suction Dredge or a Trailer Suction Hopper Dredge. A Backhoe Dredge may be used for detailed dredging close to structures. Dredged material will generally be pumped into the containment area on the reclamation.

Total dredged material volumes for the reclamation (Stage 1) are anticipated to be approximately 0.7 million m³. A similar volume will be dredged for Stage 2.

The duration of the dredging programme is dependent upon the equipment used but is expected to occur in phases over the entire construction period, likely in the order of 24-36 months for Stage 1.

2.3 Piling methodology (TBC)

The tubular steel piles and sheet piles will be driven as far as possible with vibration methods, then driven to completion with impact/percussive piling. The piling equipment may be marine-based, or land-based plant working off staging (supported by temporary piles).

2.4 Timeframes

The project is expected to have a 60-month total duration, with the marine side taking up to 36 months. **Figure 2** sets out a concept programme.

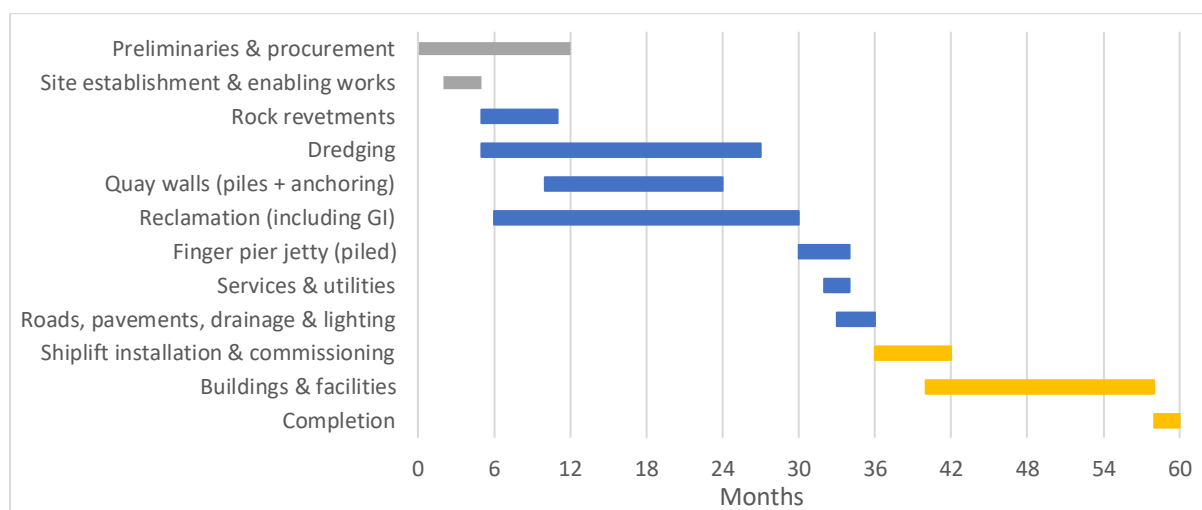


Figure 2: Piling work timeframes.

3 Environmental risk summary

The potential risks to marine mammals associated with the underwater noise generated by general construction, pile driving and dredging activities (along with other effects) have been separately and comprehensively evaluated (Clement, 2026). A summary of the evaluation is presented below in Table 2.

Table 2: Summary of potential effects on relevant marine mammal species (adapted from Clement, 2026).

Potential effect	Likelihood of effect	Significance level of unmitigated effect	Significance level of residual effect
General construction activities			
Behavioural/masking	NA/Low	Nil to negligible	Nil to negligible
Physical injury (TTS)	NA/Low	Nil to negligible	Nil to negligible
Pile driving activities			
Physical injury (PTS/TTS)	Moderate to high	More than minor to significant	Negligible to less than minor (TTS) Negligible (PTS)
Displacement effects	Moderate to high (behavioural) High (masking)	Less than minor to more than minor	Negligible to less than minor
Dredging activities			
Behavioural/masking	Low to moderate	Nil to Less than minor	Nil to Less than minor
Physical injury (PTS/TTS)	NA (PTS) Low to moderate (TTS)	Nil to Less than minor	Nil to Less than minor
Other potential effects			
Vessel strike	Low	Less than minor	Negligible to Less than minor
Entanglement	NA to Low	Nil to Less than minor	Nil to Negligible
Habitat Loss	NA to Low	Nil to Negligible	Nil to Negligible

Table notes:

Likelihood of effect: Not Applicable (NA), Low (< 25%), Moderate (25–75%), High (> 75%)

Significance level: Nil (no effects at all), Negligible (effect too small to be discernible or of concern), Less than Minor (discernible effect but too small to affect others), Minor (noticeable but will not cause any significant adverse effects), More than Minor (noticeable that may cause adverse impact but could be mitigated), Significant (noticeable and will have serious adverse impact but could be potential for mitigation).

TTS: Temporary auditory threshold shift

PTS: Permanent auditory threshold shift.

4 Control measures

Control measures are needed to safeguard local and visiting marine mammals from underwater noise effects (piling and dredging) and other effects of the construction activities.

The main activity with the potential to adversely affect marine mammals is pile driving and the associated underwater noise, and to a lesser extent, dredging (Clement, 2026). Vessel strike and possible entanglement are considered low risk and are discussed separately.

The key recommended control measures and actions are outlined in four sections:

- **Section 4.1:** Operational Best Management Practices
- **Section 4.2:** Control measures to minimise pile driving effects
- **Section 4.3:** Control measures to minimise dredging effects
- **Section 4.4:** Control measures to minimise other effects

These measures are described in more detail in the following sections.

4.1 Operational Best Management Practices

During all phases of the Project, vessel operations shall avoid, as far as practicable, any interaction with marine mammals and any activities which attract marine mammals should not occur. To ensure this is achieved, the Contractor will follow these operational management practices:

- All project vessels to adhere to DOC best boating guidelines around marine mammals to minimise any avoidance responses (see Appendix B).
- Crew members are not permitted to carry out activities that could attract marine mammals to the project site (e.g., fishing) or feeding other wildlife (e.g., birds, fish).
- Minimise above-water and underwater noise (all construction activities) to reduce the attraction of marine wildlife, including:
 - Regular maintenance of all in-water equipment and vessels (e.g., lubrication and repair of winches, generators) to reduce the production of underwater noise. Regular maintenance records should be kept up-to-date and available for NRC or DOC to review upon request.
 - Ensure that all noise suppression equipment, such as mufflers and ventilation baffles are maintained in good working order.
- Use only the minimum amount of artificial lighting necessary to reduce attraction of prey fish and predators.

4.2 Control measures to minimise pile driving effects

Marine mammals use sound for communication, orientation, foraging and predator avoidance. An increase in underwater noise can impact marine mammals, resulting in avoidance of noisy areas, behavioural changes, auditory masking, or physical injury. Because of the moderate to high-risk rating associated with piling and the potential for several noise-sensitive species to occur in the harbour area, the following control measures must be employed to manage the risks of pile driving activities on marine mammals:

- Adoption of Best Practicable Option for noise emissions (**Section 4.2.1**)
- Verification of the *in-situ* noise levels produced from pile driving activities (**Section 4.2.2**)

- Monitoring by qualified and experienced Marine Mammal Observers (MMOs) and establishment of observation and shut-down zones
- Use of real-time acoustic detection instrument to assist the visual observations
- Daily pre-works surveys (by boat) of the upper harbour area before piling commences
- Establishment of central contact point with DOC and with local and regional marinas (discussed in Section 6)

4.2.1 Best Practicable Option for noise emissions

Adopting the best practicable option for noise emissions is the most effective option for minimising underwater noise in the first instance.

The following will be considered to reduce source noise and establish the best practicable option:

- Evaluate new developments in piling technology and alternative piling or mitigation methods (e.g., augering, bottom driving, etc.) that could reduce the overall noise footprint.
- Use vibration driving methods where possible to minimise impact driving
- Using the smallest possible pile size that meets the operational need. The smaller the pile, generally the lower the noise level, subject to different piling methodologies.
- The use of 'soft- start' or 'ramping up' procedures (as described in **Section 4.2.4**), in which pile driving energy is gradually increased to normal operating levels, to give nearby animals (i.e. close to or just outside the Marine Mammal Observation Zone (MMOZ)) an opportunity to move away from the area before sound levels increase to an extent that may cause discomfort or injury. This process is also expected to help mediate more moderate and some low behavioural responses from nearby animals, giving them a chance to habituate to the pulses of sound over time before increasing the noise level.
- Use of a sacrificial, non-metallic (e.g., timber) hammer cushion cap between the hammer and the top of the pile to reduce wear.
- Modifying the pile strike by changing the contact time of the hammer can theoretically reduce the noise generated by the impact through a reduction in the amplitude of the pile vibration. If used, this modification needs to be tested in the context of this proposal and will likely need to be used in combination with other proposed actions to result in any significant reduction.

4.2.2 Verification of *in-situ* underwater noise levels

Acoustic monitoring to characterise *in-situ* noise levels should be undertaken as soon as possible once works commence. The purpose of the monitoring is to confirm that the actual noise levels associated with activities are as anticipated by the modelling. Using these measurements, the predictive underwater noise propagation modelling (Pine, 2026) will be validated by the Underwater Noise Specialist. The Marine Mammal Specialist will then recommend any modifications to the proposed management measures (i.e., size of shut-down zones). This monitoring may use the installed real-time acoustic monitoring network (see **Section 5.1.2**) or be undertaken separately.

To characterise the underwater noise, measurements of the underwater noise shall be taken as soon as practicable and during normal operating conditions:

- Piling
 - on each of the different pile diameters used and pile methods (vibro and impact)
 - for sufficient time to characterise the noise produced by the piling activity
 - measured as the single strike Sound Exposure Level (SEL) that will be accumulated over a 24-hr period.

- SEL shall be derived from the maximum combined noise within mid- to higher water depths (not the surficial layer), from the impact driven and vibro-driven piling operations over sufficient time to obtain sufficient SELs for the day.
- Dredging
 - for each method of dredging
 - during the sediment extraction phase, from when the bucket/drag-head/cutter-head enters the water and sediment is being loaded into the hopper/barge.
 - during pumping of sediment to shore.

The methodology for collecting the underwater noise measurements should include:

- Measurements taken during good weather conditions (Beaufort scale 0-3) to minimise natural noise sources (waves etc).
- Use of real-time acoustic recording buoys, or specifically deployed SoundTrap hydrophones. The installation of either instrument shall be undertaken in accordance with advice from an underwater noise expert with experience in this type of monitoring.
- Additional mobile noise measurements may be collected, also using hydrophones (such as SoundTrap recorders). This will be achieved by:
 - Deploying a recorder(s) from a small vessel with a tether to reduce noise contamination from the vessel.
 - Measuring sound at multiple locations around the pile driving source (i.e., multiple bearings), multiple distances (log based, i.e., 50 m, 100 m, 200 m, 500 m, 1000 m) and at two depths for each location: 1-2 m and 5 m or mid depth in shallow water locations. Noting that harbour geometry, navigation issues and water depth will restrict the placement of instruments.
 - Recordings should be of sufficient duration to capture the variations in piling noise during pile driving.
 - Noise levels will be measured to validate the propagation loss model used in the underwater noise models.

4.2.3 Establish Marine Mammal Observation Zones

Based on the mitigated modelling scenarios (confined bubble curtain) for the largest diameter piles, the following scenarios need to be protected by shut-down procedures and associated observation zones:

1. A whale (of any species) enters the outer channel and crosses into the area where TTS effects may occur.
2. A dolphin or killer whale enters the middle portion of the harbour (around Northport and the project site), where TTS effects on those species may occur.
3. A dolphin or killer whale is west of the project site, in the portion of the harbour up to One Tree Point/Manganese Point, and travelling east.
4. A whale is anywhere in the harbour, west of the project site.

To mitigate the effects associated with the scenarios, four marine mammal observation zones shall be established:

1. An outer channel zone (OCMMOZ) for whales and leopard seals. This shall comprise the area west of a line from Home Point to the No.12 channel marker.
2. A main marine mammal observation zone (MMOZ) that extends **500 m** from the source to protect bottlenose and common dolphins, orca and fur seals from TTS effects.

3. An Extended marine mammal observation zone (EMMOZ) to ensure the noise levels do not discourage bottlenose and common dolphins, orca and fur seals from transiting past the project site and out into Bream Bay.
4. An upper harbour marine mammal observation zone (UHMMOZ) to ensure the noise levels do not cause TTS effects on baleen whales or discourage baleen whales from transiting past the project site and out into Bream Bay.

The procedures for each zone and the required responses are set out in the following sections. The preliminary location of the zones and MMO's is set out in **Figure 3**.



Figure 3. MMO zones. OCMMOZ (green). MMOZ (orange), EMMOZ (blue) and UHMMOZ (west of yellow line)

4.2.4 Standard operating procedures (SOPs) for Marine Mammal Observers (all zones)

This section discusses several standard operating procedures (SOPs) that must be undertaken by contractors and Marine Mammal Observers (MMOs) during piling activities to protect against underwater noise effects. These include pre-start, soft-start, normal operation, stand-by operation, shut-down procedures and post-piling observation. Specific requirements for each zone are set out in **Section 4.2.4-4.2.8**.

The MMO shall be familiar with these SOPs and will document the process. A record must be kept of all sightings, delayed start-up or enforced shut-downs due to presence of marine mammals. Details of any shut-down event should be captured on the Marine Mammal Sighting Form (see Appendix A).

4.2.4.1 MMO duties

Monitoring of the zones will involve experienced MMOs undertaking observations across the zone to identify if marine mammals are approaching the zones, or are present in the zones. The MMOs are mostly land-based and shall maintain an effective lookout from an elevated position with a clear view of the zones. If boat-based MMOs are required, they shall observe from an appropriate vessel that provides for a clear, unobstructed, view of the waters in front of the vessel. The anticipated location of the MMOs needed are set out in Figure 3a and Figure 3b. The MMO(s) will be

continuously scanning for the presence of marine mammals prior to, during and following any pile driving activities (which will take place during daylight hours only).

All efforts should be made by MMOs to regularly scan areas beyond the designated zones to identify animals that are heading towards the MMOZ they are observing. If animals are sighted outside, but travelling towards the zone, the piling contractor shall be informed and prepare for a shut-down if the animal crosses into the zone.

4.2.4.2 Pre-start procedure

To minimise the risk to any species already present in the zone, a pre-start scan should be undertaken by all MMOs first thing in the morning (and after any extended breaks in piling greater than one hour) for at least 30 minutes prior to piling commencing. If any animal(s) are present in or near to the MMOZ prior to pile driving commencing, operations will be suspended until the animal(s) has relocated out of the MMOZ.

MMOs should focus on the MMOZ but should also scan beyond the zone and up to a 1 km radius from the source, where visibility allows.

4.2.4.3 Soft-start procedure

If marine mammals have not been sighted within the MMOZ or are unlikely to enter the MMOZ during the pre-start procedure, the soft-start procedure may commence with the piling impact energy gradually increased over a 10-minute period. The soft-start procedure may alert marine mammals to the presence of the piling rig and enable animals to move away to distances where injury is unlikely.

The soft-start procedure should also be used after long breaks of more than 30 minutes in piling activity when associated visual observations have ceased. Visual observations for marine mammals within the MMOZ should be maintained by the MMO(s) throughout soft-starts.

In some instances, such as pile testing which requires immediate full energy, soft-starts will not be possible. Testing situations will only occur in optimal visibility conditions (i.e., MMO can easily and confidently observe the MMOZ for the required period) when the designated MMO shall ensure that the exclusion zone has been closely monitored for 30 minutes and that no mammals have been present in that period.

4.2.4.4 Normal operating procedure

If marine mammals have not been sighted within or are not likely to enter the MMOZ during the soft-start procedure, piling may start at full impact energy. MMO(s) should continuously undertake visual observations during piling activities and shut-down periods. After breaks longer than 30 minutes in piling activity and visual observations, or if visual observations are hampered by poor visibility, the pre-start procedure should be used.

4.2.4.5 Stand-by operating procedure

If a marine mammal is sighted near the observation zone during the soft-start or normal operating procedures, the operator of the piling rig should be placed on stand-by ready to shut-down the piling rig. The MMO(s) should continuously monitor the marine mammal in sight.

4.2.4.6 Shut-down procedure

If a marine mammal is sighted within or about to enter the shut-down zone, the piling activity must cease immediately. If a shut-down procedure occurred and marine mammals have been observed to move outside the observation zone, or 30 minutes have lapsed since the last marine mammal sighting, then piling activities should recommence using the soft-start procedure. If marine

mammals are detected in the observation zone and poor visibility sets in, operations should switch to poor visibility procedures.

4.2.4.7 Post-piling observations

The MMO(s) should maintain a watch of the observation zone (and beyond) for at least 30 minutes after pile driving activity has ceased (or as long as daylight allows). Observers are looking for any indication of marine mammal presence in the wider vicinity to evaluate the duration of effect that piling activities might be having.

4.2.4.8 Poor visibility procedure

Poor visibility is defined as sea fog (on the water surface), winds greater than 20 kts and/or rain or sun glare that obstructs more than 50 percent of the observation zone. If any of these conditions occurs to an extent that makes it too difficult for the MMO to visually inspect the observation zone for marine mammals, then piling activities should be postponed until conditions improve. If the observation zone is prone to strong sea chop or afternoon sea breezes (i.e. wind greater than 20 kts), and does not adversely affect piling operations, an additional MMO should be employed at a second observation location to ensure adequate coverage of the observation zone.

If, during periods of poor visibility, there are more than three shut-downs due to marine mammals within an observation zone, piling activities must cease for the remainder of the day.

4.2.5 Outer Channel MMOZ (OCMMOZ)

The purpose of the OCMMOZ is to protect whale species from TTS effects (from piling) by instituting the control measures set out in the SOPs. Based on communication with DOC and social media, the OCMMOZ will be temporarily enacted after the first sighting of a whale or leopard seal in the wider Whangārei region (i.e., Bream Bay to Tutukaka). The OCMMOZ will continue to be monitored for at least 48 hrs (during daylight hours) or until further sightings have been confirmed. After 48 hrs, with no further confirmed whale or leopard seal sightings, the MMO can cease monitoring this zone.

When the OCMMOZ is active, the MMO will be stationed at Home Point, with a clear view to the north west across the channel and Mair Bank. The OCMMOZ extends up the harbour in a westward direction from a line bisecting Home Point and the No.12 channel marker (red). If a whale crosses this line and enters the OCMMOZ, piling must cease.

The MMO shall keep a watch for all marine mammals and notify the other MMOs if another marine mammal is sighted, particularly if it is heading westward up the harbour. The MMOs shall keep watch of the sighted marine mammals until it is confirmed that the next MMO has picked up the sighting.

4.2.6 Marine Mammal Observation Zone (MMOZ)

The MMOZ is set at a radius (from the piling activities) that will protect dolphins and killer whales (which are the most common marine mammals in the harbour) from TTS effects. The MMOZ shall extend 500m from the piling activity.

Three MMOs are needed, one on the southern shore near the construction activities, one on the northern shore at Lort Point and a third on the southern shore. The Lort Point MMO is to provide early warning of marine mammals transiting up the harbour towards the MMOZ and to assist confirming when mammals leave the MMOZ during a shut-down.

A third roving MMO will be available to deploy as needed, this MMO will typically deploy on the southern shore opposite Lort Point, but may move to One Tree Point (see EMMOZ) or be vessel based as needed.

4.2.7 Extended MMOZ (EMMOZ)

The purpose of the EMMOZ is to prevent:

- dolphins and killer whales from exiting the harbour due to elevated noise levels creating a 'behavioural barrier' to transiting past the site. This may occur if mammals are in the upper harbour outside the EMMOZ or the MMOZ and then wish to travel eastwards past the site and out into Bream Bay.
- TTS effects on baleen whales and pinnipeds. Note: It is anticipated that baleen whales will only be present between July and September when baleen whales are in the region.

The EMMOZ is the area of the harbour west of the MMOZ up to a line bisecting One Tree Point and Manganese Point.

Shut-downs are required:

- If any marine mammal enters the EMMOZ and is transiting in an eastward direction, piling must cease until the mammal exits the EMMOZ in a westward direction or transits through the MMOZ and the SOPs are satisfied for the MMOZ.
- If a baleen whale or pinniped is sighted in the EMMOZ, irrespective of travel direction.

If mammals are suspected, or known, to be in the upper harbour (i.e. to the west of the EMMOZ), an MMO shall be stationed at One Tree Point, or on a vessel in a suitable location to observe the EMMOZ.

4.2.8 Upper Harbour MMOZ

The upper harbour MMOZ is the entire Whangārei Harbour west of the EMMOZ. This zone is large and is expected to receive low to insignificant underwater noise levels. The purpose of this zone is to ensure any mammals that may have transited to the upper harbour overnight are identified and the roving MMOs are stationed appropriately.

Observation of the UHMMOZ will be undertaken via a moving vessel that transits the upper harbour in a zig-zag pattern (across the main channel) first thing in the morning. The vessel shall commence the transit from a convenient location in Port Whangārei and finish at the project site. The vessel must be manned by a skipper and an MMO (which may be the roving MMO) and travel at a speed that balances the need to detect any marine mammals with the time needed to cover the relatively large area. As the purpose of this observation is to detect marine mammals, rather than determine behaviour and species, it is anticipated vessel speeds in the order of 10-15 kts (whilst abiding by all relevant maritime laws) may be appropriate.

If a mammal is detected, the roving MMO shall be stationed as per **Section 4.2.7** during the piling works for that day or until the mammal is detected exiting eastwards.

4.3 Control measures to minimise dredging effects

Dredging activity is expected to take place within a 24-36 months period. The lower-frequency, continuous noise generated by dredging activity is not expected to exceed PTS thresholds for any mammal and TTS is estimated to occur only when an animal is within one metre or less of the operating dredge, regardless of dredge type or location.

As the dredge spoil will be pumped from the dredge platform into the bunded area to form the reclamation (rather than transported and disposed of at another location), the risk of vessel strike of marine mammals from the dredge platform is nil to negligible. Therefore, the main risks are associated with the increase in underwater noise resulting in avoidance of noisy areas, behavioural changes, and auditory masking.

Because of the low to moderate risk rating and the potential for several noise-sensitive species to occur in the harbour area, the following control measures will be employed to manage the risks of dredging activities on marine mammals:

- Adoption of Best Practicable Option for noise emissions
- Verification of the *in-situ* noise levels produced from dredging activities
- Monitoring by trained Marine Mammal Observers (MMOs) and establishment of observation and shut-down zones. The MMO can be part of the crew.
- Establishment of central contact point with DOC and with local and regional marinas (discussed in Section 6)

4.3.1 Adoption of Best Practicable Option for noise emissions

Refer to Section 4.2.1 above.

4.3.2 Verification of the *in-situ* noise levels produced from dredging activities

Refer to Section 4.2.2.

4.3.3 Establish a Dredge Marine Mammal Observation Zone

An exclusion zone will be determined for active dredge vessels, based on in situ noise measurement.

A DMMO will be on watch whenever dredging activities are underway (including transiting) but will be most effective during daylight hours. If a marine mammal comes within the exclusion zone while a dredge vessel is undertaking sediment extraction (and in-situ noise measurement showed elevated noise levels), noise controls shall be instigated to reduce the risk of TTS onset. The controls may include:

- Ceasing/reducing the pumping rate.
- Lifting the drag-head off the seafloor but continuing to pump.
- Ceasing dredging and lifting drag-head off the seafloor.
- Reduction in propulsion effort.
- Cessation of ongoing removal (if a backhoe dredge is in operation).

The on-board observer will communicate to the Dredge Master when a marine mammal is within the shut-down zone of the dredge vessel. The Dredge Master will then implement the control. Once the marine mammals have left the exclusion zone, the observer will advise the Dredge Master that normal operations can resume.

Details of any shut-down event should be captured on an incident reporting form (see **Appendix A**).

4.4 Control measures to minimise other effects

Vessel strike, possible entanglement and habitat loss/prey disturbance have been identified as potential effects resulting from the Project. The risk of these effects is considered low and will be managed by the control measures specified below.

4.4.1 Vessel strike

The dredged material will be used for reclamation (and will not be barged for disposal elsewhere), so the potential for any boat strike of local marine mammals from the dredge vessels is *nil to negligible*. However, there is some risk of vessel strike by associated vessels (used for transporting crew and MMOs) and while the risk is minimal, the following control measures will be employed to manage the risk of vessel strike:

- All project vessels to adopt best boating guidelines for marine mammals (see Appendix B). Encourage other port-related vessels to also adopt these guidelines.
- Formally support a similar protocol to the Hauraki Gulf Transit Protocol for Commercial Shipping that includes speed limits, crew watches and reporting of sightings to reduce any chances of mortality from vessel strikes.
- Liaise with DOC on whale sightings in the wider area.
- In the event of a known marine mammal strike or a fatal marine mammal incident, immediately notify DOC.

4.4.2 Possible entanglement

Marine debris from construction activities presents a possibility of entanglement for marine mammal species with whales, dolphins and pinnipeds often attracted to floating debris. Marine debris from coastal developments may include lost ropes, support buoys, bags and plastics. Loose thin lines and nets (including silt curtains) can pose an entanglement risk, especially when nets, ropes and lines are lost or discarded.

Construction-associated marine debris can be prevented in well-maintained coastal projects with proper waste management programmes. The possible entanglement risks posed by this project will be managed through the following controls:

- Waste management protocols outlined in the Project CEMP/DMP (e.g., secure onboard storage of lines, nets, and waste) to comply with the Maritime Protection Rules Part 180 (Dumping of Waste or Other Matter).
- Hanging silt curtains will be properly tensioned with plenty of spaces between the seabed and material for animals to manoeuvre under and around with few opportunities for entanglement.
- All silt curtains shall be visually inspected every four hours (or two hourly if a mammal has been sighted that day), either from the land or from a vessel. If a marine mammal is sighted within the enclosed curtain, or entangled in any part of the silt curtain, the procedures set out in **Appendix E** shall be followed.
- When deploying (or removing) silt curtain, the MMO shall maintain a watch of the MMOZ to ensure that a mammal doesn't enter the area and be at risk of becoming entangled in the silt curtain. The installation or removal shall not commence (or shall be made safe) if a marine mammal has been sighted within 300m of the works, and can only start/recommence once it has been visually confirmed that the mammal has vacated the MMOZ.

4.4.3 De entanglement procedures

5 Monitoring and reporting

Monitoring and reporting measures will allow the Project Manager and Contractor to adjust mitigation where necessary to manage any risk of impacts on marine mammals. Monitoring and reporting requirements are set out in the following sections.

5.1 Monitoring

Monitoring will be undertaken by the MMO(s), Underwater Acoustics and Marine Mammal Monitoring Expert. Monitoring focuses on behavioural responses of marine mammals to piling and dredging operations using visual observations by the MMO(s) on the piling and dredging platforms (and/or any alternative observation platform/vessel) and passive acoustic detections of marine mammals' presence around the Harbour. Combining this monitoring data will determine marine mammal behavioural responses to the various pile driving activities and noise levels and enable mitigation to be improved, for example, a more effective sized MMOZ or better observation techniques.

5.1.1 Visual monitoring

Before, during and after pile driving operations, the MMO(s) must visually monitor the area around the pre-determined MMOZ from the piling activity as well as scanning the wider area of the Harbour. Each observer will have electronic or hard copies of the Marine Mammal Sighting Forms (Appendix A) with them at all times. When a marine mammal is sighted this will be reported on the sighting form sheets.

- What species of marine mammal is sighted?
- Date and time the marine mammal is sighted?
- At what stage of piling operations is the marine mammal sighted (e.g., pre-start, soft-start, normal operation, stand-by operation, shut-down or post operations)?
- At what approximate distance is the marine mammal visible?
- Heading and distance from the vessel.
- Direction in which the animal is travelling.
- If the marine mammal is present while the pile driving operation changes, what is its reaction (e.g., does it immediately leave, does it leave and return, does it stay)?
- Short description of the animal(s) and their behaviour.
- Mitigation action taken, if any.
- Observer name and position.
- Photographs and video footage are recommended.
- Local weather conditions and sea state.

Marine mammal sightings will be logged and reported according to the form in Appendix A. Through its normal inspection and validation procedures, the consent holder will undertake periodic audits of the MMO performance, qualifications, and effectiveness. The MBIE personnel undertaking the audit(s) will also have attended and passed a DOC-approved MMO training course in accordance with the code of conduct developed by DOC.

5.1.2 Underwater acoustic monitoring

To supplement the MMO observations, provide some means of mammal detection during nighttime and to collect data on the overall presence (and to a limited extent behaviour) of marine mammals in the harbour, a network of real-time underwater acoustic buoys will be installed. A subset of these installed monitors would also be used to confirm effectiveness of noise reduction methods, compliance with the predicted noise levels and the appropriateness of the various observation zones. **Figure 4** sets out the proposed location of the buoys.

This real-time acoustic network will remain for the duration of the project and for 6 months after the piling aspect of the project is complete. The resulting data will be used to undertake a post-works review of the effectiveness of the noise reduction techniques and understand if marine mammals did alter their use of the harbour during the construction works.

The real-time acoustic monitoring will generate real-time alerts when the presence of a mammal is detected. Those alerts will be communicated to all MMOs to assist in their observation duties and resulting shut-down procedures. As the real-time detectors will not provide specific locational data for the detected mammal (detection can be over a 360-degree direction and over variable distances), detections by the real-time instruments will not generate shut-down procedures in themselves. These will be implemented based on visual sightings by the MMOs.

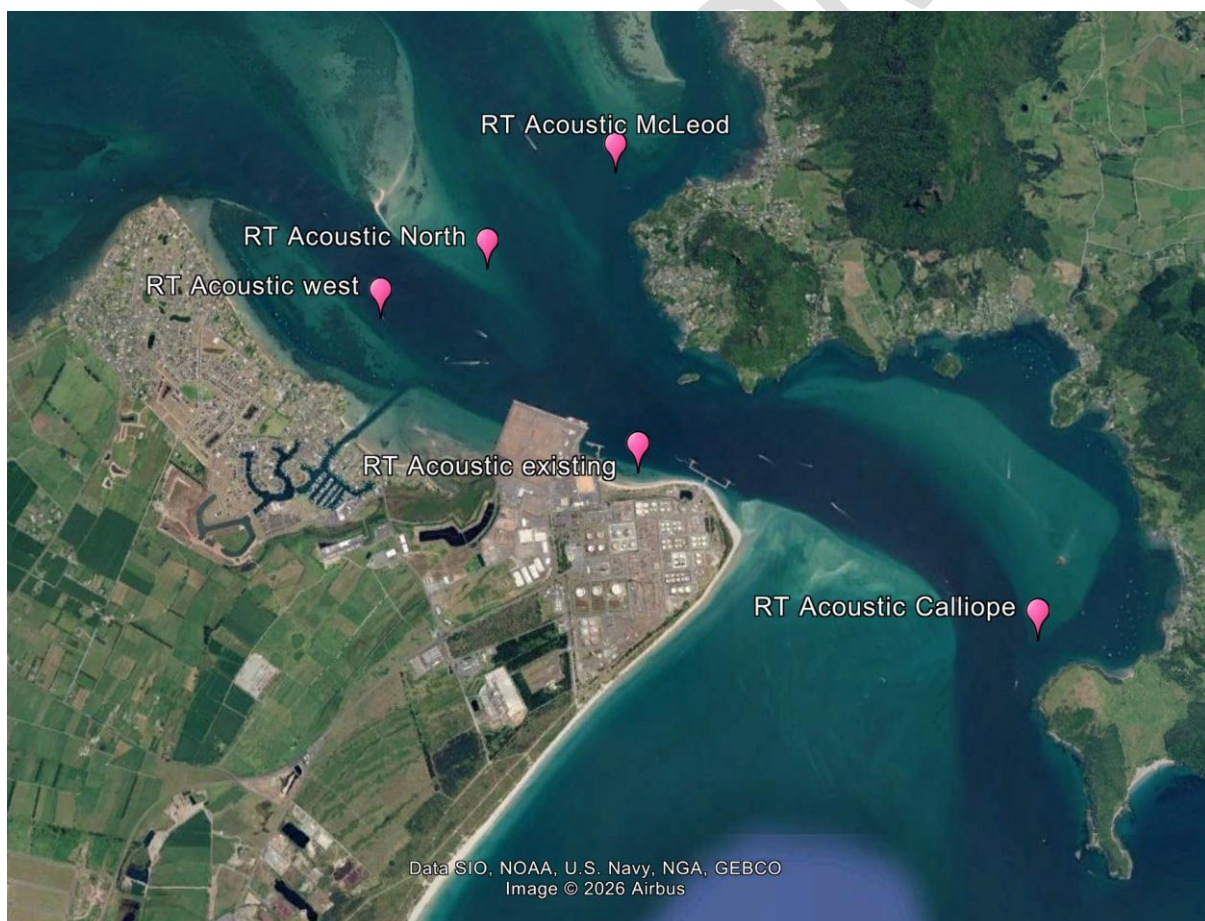


Figure 4: Pink markers illustrate the deployment locations of the five real-time underwater acoustic monitoring stations.

6 Department of Conservation liaison procedures

A two-way liaison with the Department of Conservation shall be established for exchange of regional marine mammal sighting data throughout the project (with a focus on nearby visiting baleen whales or leopard seal sightings).

With this information, the MMO can anticipate and verify the potential presence or absence of these, and any other species sighted in or near the proposal area. The MMO should also monitor news and social media for any information about marine mammals reported in the wider AOI regions. Any reports of baleen whales or leopard seals being present could potentially lead to additional MMO resources moving onto standby for deployment for the larger EMMOZ.

In addition, the consent holder shall collate and, on a quarterly basis, share any observer sighting data with DOC. Contact persons and contact details:

Table 3: Contact details for information sharing

Name	Organisation	Contact details
TBC	Department of Conservation	
TBC	Marsden Cove Marina	
TBC	Tutukaka Marina	

7 Reporting

The following table sets out the reporting frequency.

Table 4: Written reporting requirements

Information	Timeframe
Marine Mammal Observer watch and sighting forms must be provided to the Project Manager	Weekly
Provide marine mammal observation sheets and any monitoring data to DOC	Quarterly
Noise verification data collated and reported to Project Manager and DOC	Provide relevant reports to DOC within two weeks of providing to Northland Regional Council
Meetings between Project Manager and DOC staff to discuss monitoring results	Every six months during works and on completion of behavioural and noise monitoring report
All data Completion Report	Within one year of completing the project

8 References

Clement D. 2026. Shipyard and drydock facility at Marsden Point, Whangārei Harbour - Potential construction effects on marine mammals. Nelson: Cawthron Institute. Prepared for the Ministry of Business, Innovation and Employment.

Pine M 2026. Assessment of underwater noise effects, Shipyard and Dry dock facility. Styles Group Limited. Prepared for the Ministry of Business, Innovation and Employment.

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.

Prepared for Enviser Ltd by:



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CMEngNZ, CPEng, IntPE

Authorised for Enviser Ltd by:



Libby Manly
Environmental Consultant

10 Appendices

WORKING DRAFT

Appendix A - Marine Mammal Sighting Forms

Date	Pile driver type/name	Pile number	Time at start of encounter	Time at end of encounter
Observer name		Location / position on land		Water depth (metres), Beaufort, glare:
Species		Bearing/angle to animal (when first sighted)	Distance to animal (when first sighted)	
Description (include features: size, colour and pattern, shape and position of dorsal fin, direction and shape of blow)		Total number	Number of adults	
		Number of juveniles	Number of calves	
Behaviour (at start of sighting and any changes observed relative to changes in pile driving activity) (Feeding, resting, travelling, socialising, breaching, bowriding etc – see reference sheets)			Photograph taken	
			Y N Direction of travel (compass) N S NE SW E W SE NW variable stationary	
Direction of travel (relative to platform) Towards Away Parallel (east or west direction) Variable Stationary Other (explain)		Piling activity at first animal detection Normal Soft-start Pre-start Post-observation Stand-by Shut-down	Piling activity at last animal detection Normal Soft-start Pre-start Post-observation Stand-by Shut-down	
Time animals entered mitigation/exclusion zone	Action taken None required Delayed start Stand-by Shut-down		Time animals left mitigation/exclusion zone	
	Length of time mitigation employed			

MARINE MAMMAL OBSERVER WATCH LOG

Observer name and location:

START A NEW LINE FOR EACH NEW START-UP OF PILE DRIVER.

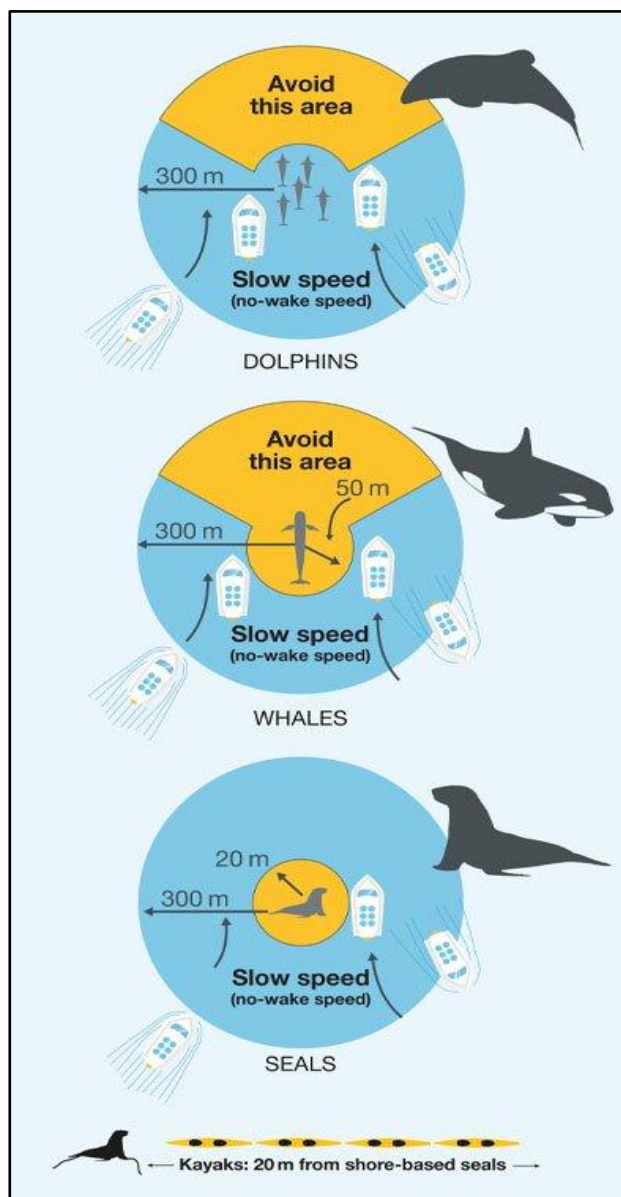
Observer watch start/end times:

RECORD FOR ALL WATCHES EVEN IF NO MARINE MAMMALS ARE SEEN

Piling start/end times.....

Date / time	Pile number	Pre-start		Soft-start		Normal operation		Post-observation	
		Observer initial	Mammals sighted?	Observer initial	Mammals sighted?	Observer initial	Mammals sighted?	Observer initial	Mammals sighted?

Appendix B - DOC guidelines for vessel interactions



Appendix C - Species of interest

Summarised from Clement 2026.

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 31 cetacean (whales, dolphins and porpoises) and three pinniped (seals and sea lions) species along the north-eastern coastline.

Current sighting data and knowledge indicate that no marine mammal species is restricted solely to Whangārei Harbour, but the harbour regularly supports visiting threatened or endangered species, including bottlenose dolphins, orca and southern right whales. Several whale species migrate through the wider Bream Bay area, while Bryde's whales use offshore waters year-round.

The species identified as most likely to be present in the vicinity of the proposal and potentially influenced by the proposed construction activities are:

- Bottlenose dolphin (*Tursiops truncatus*)
- Common dolphin (*Delphinus delphis*)
- Killer whale/orca (*Orcinus orca*)
- Bryde's whale (*Balaenoptera edeni bryde*)

Other species of interest which are seasonal visitors to the wider Bream Bay area are:

- New Zealand fur seal (*Arctocephalus forsteri*)
- Leopard seal (*Hydrurga leptonyx*)
- Southern right whale (*Eubalaena australis*)
- Humpback whale (*Megaptera novaeangliae*)



Photograph 1: Bottlenose dolphin (*Tursiops truncatus*) (Credit: Jason Pratt).



Photograph 2: Common dolphin (*Delphinus delphis*) (Credit: Krista Hupman, NIWA).



Photograph 3: Killer whale/orca (*Orcinus orca*) (Credit: Nathan Pettigrew).



Photograph 4: Bryde's whale (*Balaenoptera edeni bryde*) (Credit: Gabriela Tezanos-Pin).



Photograph 5: New Zealand fur seal/kekeno (*Arctocephalus forsteri*) (Credit: Katherine Clements).



Photograph 6: Leopard seal (*Hydrurga leptonyx*) (Credit: Brent Tandy).



Photograph 7: Humpback whale (*Megaptera novaeangliae*) (Credit: Kaikoura Ocean Research Institute).



Photograph 8: Southern right whale/tohorā (*Eubalaena australis*) (Credit: Derek Quinn/SNPA).

Appendix D - Marine Mammal Observer (MMO) requirements

As many of the control measures are triggered by the sighting of a marine mammal, a key part of these measures is having a MMO on continuous watch throughout pile-driving operations. All MMOs on the project will, at a minimum, have:

- attended and passed a DOC-approved MMO training course in accordance with the code of conduct² developed by the DOC and have MMO experience, or
- attended and passed a MMO training course specialised in construction observing methods and have suitable project experience as an MMO, or
- be a suitably qualified (tertiary degree in a relevant field) and experienced person with a minimum of two-years direct field experience observing marine mammals (research or for commercial projects)

The DOC-approved MMO training course comprises two parts, an online component and a 3-4 day practical, these will cover:

1. Online component
 - NZ law and requirements of the code
 - The role of observers
 - NZ marine mammals
 - Marine mammal acoustics and underwater sound
 - General seismic operations
 - Visual observations
 - Navigation
 - Weather and environmental conditions
 - Passive acoustic monitoring
 - Vessel health and safety
 - General observer issues
2. Practical component
 - MMO equipment
 - Navigation (compass use, bearings etc)
 - Calculating distance (reticule binoculars etc)
 - Plotting marine mammal detections and track logs
 - Marine mammal identification
 - Detection procedures
 - Completing DOC reporting forms

A piling-specific module, developed for Whangārei Harbour's special characteristics and the reclamation project, will supplement the above standard course material.

The observer(s) has two general duties:

1. To detect, record and report the presence of marine mammals within the wider operations area.
2. To enforce noise control measures, including documenting any action taken (if necessary).

² Code of Conduct for Minimising Acoustic Disturbance to Marine Mammals from Seismic Survey Operations
 Enviser Ltd
 Ministry of Business, Innovation and Employment

Appendix E Emergency response disentanglement protocol

Responding to a marine mammal entanglement, particularly of larger animals (e.g. orca or whales), holds significant risk and is a potentially dangerous task. Human safety is of the utmost importance and should always be considered first before attempting to implement the following procedures. People should never enter the water to free an entangled mammal and never attempt to free a mammal alone. A buddy should always be present in case help is required.

Immediately upon sighting any live entangled marine mammal, call the Department of Conservation Whangārei office ([0800 275 362](tel:0800275362)) in the first instance, then 0800 DOCHOT (0800 362468). Specific advice must be sought from DOC's marine mammal disentanglement team, especially for large whales or orca. When able, send an email to the Marine Species Team (marinemammal@doc.govt.nz). Once DOC's marine mammal disentanglement team has provided advice, follow the protocol outlined below.

Smaller mammals (e.g. dolphin's, pinniped)

- Disentanglement should be attempted only from the wharf structure itself or from a vessel (i.e. do not enter the water). If in doubt about how to release the animal, consult further with DOC.
- Release the animal from a line or other obstruction immediately without entering the water.
- Ensure that no line or object remains attached to the animal upon release if possible
- If lines have been cut and the animal is still entangled when it swims off, notify DOC immediately as its marine mammal disentanglement team may be able to carry out other action.
- Ascertain whether any injuries have occurred either to the entangled animal or to the person(s) undertaking the procedure.

Larger mammals (e.g. whales or orca)

Entanglement at the surface (i.e. animal is able to breathe without difficulty)

If a larger mammal, such as a pilot whale or humpback whale, is entangled *at the surface* (and hence is able to breathe), DOC has a trained team that can respond to the entanglement, if necessary. Regardless, DOC must be contacted immediately on 0800 DOCHOT (0800 362468). Note that the closest entanglement response team is not based in the area, so any response can take several hours. However, this is not normally an issue as it is necessary for a live animal to tire over several hours before a team can get close enough to attempt to cut it free.

Entanglement at depth (i.e. animal is unable to breathe or is struggling to breathe)

If the animal is at depth and unable to reach the surface for a breath, there is usually little choice but for the contractor to cut the necessary lines or sediment curtain to free the animal. It is recommended that lines and sediment curtains are cut into small sections (e.g. cut the floats and curtain into small panels that can be dropped) to increase the chance that the animal can free itself. If the animal is surfacing to take breaths, no attempt should be made to cut it free due to the danger it poses (i.e. there is the potential that it may overturn the vessel).

If lines have been cut and the whale is still entangled when it swims off, notify DOC immediately as its marine mammal disentanglement team may be able to carry out other actions. If an animal has been cut free so that it can breathe but is still dragging lines / floats, DOC should be informed immediately so that further disentanglement work can be carried out.

Reporting requirements

All entanglement incidents must be reported. Completed incident forms should be passed to the DOC and iwi representatives and a summary sheet provided to the NRC office within 48 hours.

The following details should be included in the MMO incident database:

- date
- time
- location (as specific as possible, i.e. coordinates)
- species (e.g. dolphin, whale, pinniped) common names, and if possible, scientific species names
- description of animal (e.g. size) and location, and any injuries
- full description of circumstances – including reasons for entanglement (if known), where the entanglement injury has occurred on the animal, actions taken and the outcome
- photos or video detailing each step in any process followed
- if the animal is dead, note the degree of decomposition and follow any additional protocols as discussed with DOC (i.e. disposal, send away for necropsy, etc.).