

Conditions

1. (a) The activities authorised by this resource consent shall cease within five years from date of commencement of the works.
- (b) The lapse date for the purposes of section 125 shall be 31 December 2031.
2. This consent authorises the drilling, rock breaking, blasting, capital dredging, and deposition of the following quantities of dredge spoil:
 - (a) Up to a maximum of 120,000 cubic metres of soft sediments comprising of:
 - i) approximately 100,000 cubic metres of predominately sand and some silt material; and
 - ii) approximately 20,000 cubic metres of predominately silt material ('silts')
 - (b) Up to a maximum of 40,000 cubic metres of rock.
3. The drilling, rock breaking, blasting, and dredging of rock shall only be carried out in the areas of seabed in the harbour entrance channel shown in red on Attachment 1 entitled "Harbour and Channel Dredging Areas", and defined by a centre point at the following co-ordinates (NZTM 2000):

Easting	Northing
1244359	4828749

4. The dredging of soft sediments shall be undertaken using a trailing suction hopper dredge (**TSHD**) and shall only be carried out across areas of seabed in the harbour shown in orange on Attachment 1 entitled "Harbour and Channel Dredging Areas", and defined by centre points at the following co-ordinates (NZTM 2000):

Area	Easting	Northing
Swinging Basin	1243281	4829468
Berths 3 & 4	1242725	4829504
Berths 5 & 6	1242626 & 1242530	4829611 & 4829575
Berths 7 & 8	1242615	4829800

5. The harbour entrance channel shall be dredged to a design depth of 9.70 metres (**m**) chart datum (**CD**), the western swinging basin to a design depth of 9.45 m CD, the eastern swinging basin to a design depth of 9.70 m CD, and Berths 3 to 8 to a design depth of 10.70 m CD. The areas and their respective design depths are shown on Attachment 1 entitled "Harbour and Channel Dredging Areas". The drilling, rock breaking, blasting and dredging area is depicted with GPS co-ordinates on the plan "Dredging Area Perimeter on Toe- Lines" in Attachment 1.
6. The discharge of spoil to water and deposition onto the seabed shall only be carried out in the areas hatched on Attachment 2 entitled "Proposed capital dredging works areas within Bluff Harbour and Foveaux Strait/Tiwai Peninsula", and being within the following NZTM 2000 perimeter co-ordinates:

Dredged Spoil Disposal	Easting	Northing
Sand and silts	1246513.845	4829176.496
	1246312.069	4829195.624
	1245764.657	4828630.816
	1245986.106	4828603.574
Fragmented Rock	1248753.667	4828317.608
	1248607.001	4828124.632
	1249288.851	4827661.488
	1249427.794	4827864.757

7. The Consent Holder shall maintain a record of the *in situ* quantity of all sediments and rock dredged from the seabed in Bluff Harbour and discharged by means of hydrographic surveys and GPS grid references of the sites dredged and sites where discharges occur and shall report these records to the Consent Authority (email: escompliance@es.govt.nz) on the last working day of each month when work is undertaken and a summary report at the conclusion of the works, and upon request.
8. The Consent Holder shall notify the Consent Authority (email: escompliance@es.govt.nz) in writing;
- (a) at least 10 working days prior to commencing any works using the TSHD, and at least 10 working days prior to commencing any works using the backhoe dredger and split hopper barge. The Consent Holder shall include in these notices, indicative annual works programmes; and
- (b) no more than three working days after completion of the works using the TSHD, and after completion of works using the backhoe dredger and split hopper barge.

Timing of Works

9. All drilling, rock breaking, blasting, rock dredging and deposition activities in the areas outlined in Condition (3) shall be limited to the period 1 February to 30 September (inclusive).
- Advice Note:** *The purpose of this condition is to ensure these works avoid the peak marine mammal migration season and peak seabird and fish breeding and coastal feeding seasons.*
10. All soft sediment dredging in the areas outlined in Condition (4) shall be limited to the period 1 April to 30 September (inclusive).
- Advice Note:** *The purpose of this condition is to ensure these works avoid the seagrass (*Zostera muelleri*) flowering and growing season.*
11. Operating Hours:
- (a) Drilling, rock breaking, blasting activities, and dredging using the TSHD shall be limited to the hours between 7.30 am and 6.00 pm; and
- Advice Note:** *The purpose of this condition is to ensure these works occur when marine species are less active and to minimise disturbance to residential and rural receivers.*

- (b) Rock dredging operations may be carried out 24 hours per day, seven days per week.

Trial Drilling and Blasting

12. The Consent Holder shall undertake a trial drilling and blasting exercise in advance of the capital drilling and blasting programme as follows:

- (a) Prior to any other blast event, the Consent Holder shall undertake a trial blast exercise. The trial blast shall be conducted in the area where blasting is proposed. The objective of the trial blasting exercise is to:
- i) determine the charge weights required for rock fragmentation;
 - ii) determine the site-specific vibration attenuation rates and the airborne and underwater noise levels as a function of the charge weights and blast design; and
 - iii) use the data to inform the blast design to ensure that the vibration, underwater noise, and airborne noise levels are compliant with the relevant limits and management measures authorised by this consent.
- (b) The trial blast event shall be monitored as follows:
- i) By three seismographs placed in the ground adjacent to the nearest buildings as defined the following NZTM 2000 co-ordinates and shown on the plan in Attachment 3 entitled “Seismograph monitoring locations”:

Seismograph	Easting	Northing
1	1243732.366	4828792.854
2	1244049.997	4828514.235
3	1244295.985	4828221.213

- The seismographs shall record the peak particle velocity in millimetres per second in the longitudinal, transverse, and vertical directions for the blast event;
- ii) By a sound level meter on the part of the Bluff foreshore that is closest to the trial blast locations. The sound level meter and measurement procedure shall comply with the requirements of NZS6801:2008. The meter shall be set to measure the L_{Zpeak} level of the blast event;
 - iii) By hydrophones located along two transects centred on a blast location area bounded by the following NZTM co-ordinates as shown on the plan at Attachment 4 entitled “Hydrophone monitoring locations”.

	Easting	Northing
L1	1244223.758	4828931.830
L2	1244359.632	4828794.920
L3	1244493.940	4828697.491
L4	1244391.834	4828585.221
L5	1244272.541	4828712.074
L6	1244125.043	4828810.279

- The first transect shall extend from the centre of the blast location into the harbour over a distance of 1000 metres and the second transect from the blast location towards the harbour entrance over a distance of 2000 metres. The hydrophones shall be placed at 1 metre above the sea floor at 100, 200, 500, and 1000 metres along the first transect and 100, 200, 500, 1000, and 2000 metres along the second transect; and
- iv) The hydrophones shall be calibrated and set to record the waveform of the blast event at a minimum sampling rate of 96 kilohertz.
- (c) The results of the monitoring set out in (b) shall be used to inform the blast design for all future blast events to ensure compliance with Conditions (43) and (49) of this consent, and to ensure that the Marine Fauna Observation Zones (MFOZs) are able to be managed to be no greater than those set out in Condition (26).
 - (d) The Consent Holder shall engage a suitably qualified and experienced person to undertake airborne noise measurements of the blast hole drilling exercise as follows:
 - i) The objective of the measurements is to gather sufficient data to demonstrate directly, or by calculation, that compliance with condition 43 will be achieved in all meteorological conditions inside the meteorological window as defined in clause 7.2 of NZS6801:2008;
 - ii) Noise level measurements shall be undertaken in accordance with NZS6801:2008 on the first evening, or night, when drilling is being undertaken and when the meteorological conditions are assisting the propagation of noise towards dwellings on Marine Parade, Bluff, and within the meteorological window as set out above; and
 - iii) The results of the measurements (adjusted as necessary by calculation to represent the levels at the most exposed receiver) shall demonstrate whether the drilling work will comply (or otherwise) with the noise limits in Condition (43) for the remainder of the project.
13. Upon completion of the trial drilling and blast programme required by Condition (12), the Consent Holder shall document and report the findings to the Consent Authority (email: escompliance@es.govt.nz), advising:
- (a) Where the seismographs, sound level meters, and hydrophones were placed and monitored during the drilling and blasting trials, including a map with references to inform (b) and (c) of this condition;
 - (b) The vibration attenuation parameters and demonstration that the vibration limits in this consent will not be exceeded at the nearest structures; and
 - (c) The proposed rock fragmentation and associated charges, graphed so as to determine the lowest charge necessary to obtain the desired outcomes of rock fragmentation, and avoidance of impacts on the nearest structures, thereby informing the Blast Plan required by Condition (14).
14. The Consent Holder shall provide a Blast Plan with grid references, drilling, photographic records of representative dredged material, and any analysis to the Consent Authority (email: escompliance@es.govt.nz) every four months upon commencement of blasting, and no less than twice during the blasting campaign.

Sediment Control

15. The Consent Holder shall ensure that dredging of the silts from the red coloured area labelled 'Restrictive Dredging Area' on the plan included in Attachment 5 occurs only on outgoing (ebb) tides without overflowing from the TSHD and the use of jets on the suction pipe draghead to minimise the release of sediment from the dredging area.

16. The Consent Holder shall ensure that silts dredged from the red coloured area labelled 'Restrictive Dredging Area' on the plan included in Attachment 5 are not deposited at the sediment disposal site during slack tide when little or no wave action is evident.
17. The Consent Holder shall implement an adaptive receptor-based dredge management approach during the dredging involving a three-tiered trigger threshold system based on turbidity (**NTU**) and duration (days) in accordance with Table 1. This management approach shall be informed by turbidity meters that, when exceeded, require sediment management responses as set out in Table 1 and in an Adaptive Marine Management Plan (**AMMP**). The AMMP shall be updated to incorporate the adopted trigger levels monitoring regime and shall be submitted to the Consent Authority (email: escompliance@es.govt.nz) within 20 working days prior to activities subject to this consent commencing. Any other changes or revisions to the AMMP shall be certified by the Consent Authority as complying with the conditions of consent, prior to any changes being implemented.

Table 1: Trigger levels and associated management actions.

Monitoring Locations	Tier 3 Compliance Limit	Response Triggers		Management Action		
		Tier 1 (For internal use only)	Tier 2 (For internal use only)	Tier 1 trigger reached	Tier 2 trigger reached	Tier 3 compliance limit reached
<p>Turbidity meters placed at the following locations in Bluff Harbour as shown on the plan at Attachment 6 entitled "Turbidity logger locations." All coordinates are in NZTM 2000.</p> <p>Tiwai wharf seagrass beds (Easting 1244111.5, Northing 4829434.9)</p> <p>Rabbit Island seagrass beds (Easting 1243324.5, Northing 4831932.5)</p>	<p>17 NTU (daily average during dredging within the red coloured area labelled 'Restrictive Dredging Area' on the plan included in Attachment 5 only).</p>	<p>7 NTU (daily average during dredging within the red coloured area labelled 'Restrictive Dredging Area' on the plan included in Attachment 5 only).</p>	<p>13 NTU (daily average during dredging within the red coloured area labelled 'Restrictive Dredging Area' on the plan included in Attachment 5 only).</p>	<p>Check equipment/ data accuracy to verify exceedance.</p> <p>Review natural events, areas of dredging activity and marine (shipping) operations with expert advisor.</p> <p>Possible relocation of dredge to non-berth zones.</p>	<p>Undertake all actions as set out when Tier 1 trigger limit is reached.</p> <p>Undertake management of dredging process to reduce turbidity. This could include:</p> <ul style="list-style-type: none"> ▪ Relocation of dredge to non-berth zones. ▪ Reduce dredging frequency. ▪ Operate dredge in non-overflow mode. <p>If turbidity levels are not reducing then cease dredging in vicinity of monitoring station(s) showing exceedance.</p>	<p>Notify the Consent Authority within 12 hours of exceedance.</p> <p>Undertake all actions as set out when Tier 2 trigger limit is reached.</p> <p>Cease dredging or deposition in the vicinity of the monitoring station(s) showing exceedance until daily average is below compliance limit.</p> <p>Records of actions undertaken when daily average compliance limit exceeded during dredging to be provided to the Consent Authority. This may include any photographic records.</p>
	<p>8 NTU (weekly average during dredging of all other zones)</p>					

				<p>Dredging to cease between flood tide and high tide in the red coloured area labelled 'Restrictive Dredging Area' on the plan included in Attachment 5. Dredging in this area can restart once the ebb tide has commenced.</p> <p>Records of actions taken when Tier 1 and Tier 2 exceedances occur during dredging to be provided to the Consent Authority on request.</p>
<p>Turbidity meters placed at the following locations shown on the plan at Attachment 6 entitled "Turbidity logger locations."</p> <p>Sediment disposal site (Easting 1245651.9, Northing 4828299.7)</p> <p>Motupōhue mātaimai (Easting 1244689.5, Northing 4827256.5)</p>	<p>24 NTU (daily average during deposition of material from the red coloured area labelled 'Restrictive Dredging Area' on the plan included in Attachment 5 only)</p>	<p>9 NTU (daily average during deposition of material from the red coloured area labelled 'Restrictive Dredging Area' on the plan included in Attachment 5 only)</p>	<p>17 NTU (daily average during deposition of material from the red coloured area labelled 'Restrictive Dredging Area' on the plan included in Attachment 5 only)</p>	<p>Deposition of sediment from the red coloured area labelled 'Restrictive Dredging Area' on the plan included in Attachment 5 to cease at sediment disposal site during slack tide when little or no wave action is evident.</p>
	<p>12 NTU (weekly average during deposition of all other zones)</p>			
<p>Seagrass bed control site (Easting 1241519.2, Northing 4829934.9)</p>	<p>Reference site only</p>			

Advice Note: Turbidity loggers will be set to record NTU in 15 minute intervals.

18. The Consent Holder shall, once each day that dredging occurs, spot-monitor coastal water quality at the edge of the mixing zones of 200 m during the dredging of sediments from the red coloured area labelled 'Restrictive Dredging Area' on the plan included in Attachment 5 and during deposition of these sediments. This shall involve the use of a Secchi disc and a calibrated meter (capable of measuring pH, temperature and dissolved oxygen) placed upstream and downstream of the mixing zones as shown on the plan included in Attachment 7. The discharges shall not result in any of the following effects based on the results of upstream and downstream monitoring:
- a) reduce the ambient visual clarity by more than 20 percent;
 - b) change the pH;

- c) change the natural temperature of the water by more than 3 degrees Celsius; and
- d) change the concentration of dissolved oxygen by less than 80% saturation beyond the mixing zones.

Bathymetric Surveys

- 19. The Consent Holder shall undertake a baseline bathymetric survey of the areas to be dredged within one month prior to the commencement of the capital dredging works, and a baseline bathymetric survey of the sediment disposal areas within 12 months prior to the commencement of the material being disposed there.
- 20. The Consent Holder shall undertake repeat bathymetric surveys following sediment disposal activities, at the same positions as undertaken during the baseline survey required by Condition (19), at least every six months until such time as the bathymetric surveys show that the dispersal of sediment deposited on the seabed in the disposal area has occurred as predicted in the modelling and there is no more than an average of a 1 metre increase in elevation above the baseline bathymetric survey across the disposal site.
- 21. The Consent Holder shall report the bathymetric survey findings within 10 working days of receiving the bathymetric survey results to the Consent Authority (email: escompliance@es.govt.nz).

Weight of Explosive Charge and Drill Depth

- 22. The weight of explosive placed in each drilled hole shall not exceed 25 kilograms. Each drilled hole shall be no less than one metre in depth.

Protection of Marine Fauna

- 23. The Consent Holder shall establish marine fauna observation zones MFOZs around blasting and rock breaking activities.
***Advice Note:** The aim of establishing and monitoring the MFOZs is to avoid both permanent and temporary hearing injuries to marine fauna from blasting and rock breaking activities.*
- 24. Establishment of designated MFOZs shall follow and give effect to the guidelines in the Marine Mammal Management Plan (**MMMP**) and the Marine Fauna Operational Plan (**MFOP**).
- 25. The MFOZ required by Condition (23) shall:
 - (a) have zones estimated and managed separately for each of the four marine fauna groups as specified in Condition (26);
 - (b) have distances for zones based on the modelled extent of estimated permanent threshold shift (**PTS**) and temporary threshold shift (**TTS**) for each type of activity based on marine mammal acoustic technical guidance from the National Marine Fisheries Service of the U.S. Department of Commerce (NOAA 2018); and

(c) if required, be modified following the measurement of *in situ* underwater noise data from the trial drilling and blasting programme required by Condition (12) to ensure that zones are based on measured rather than estimated noise levels.

26. The minimum sizes of MFOZs are provided in Tables 2 and 3. These MFOZs shall be applied until *in situ* underwater noise data are collected to confirm the actual size of MFOZs.

(a) Based on the outcomes of the validation of underwater noise levels as required by Conditions 12(b)(iii), and (iv), the PTS and TTS zones may be decreased as recommended by a suitably qualified and experienced marine mammal expert that certifies adjustments to these zones are appropriate. The recommendations are to be provided to and certified by the Consent Authority as being supported by a suitably qualified expert before changes are implemented.

Table 2: Estimated minimum size (metres) of MFOZs based on largest blasting scenario aimed at avoiding permanent hearing injuries for each fauna group.

Activity	High Frequency cetaceans (e.g. Hector's dolphins)	Medium Frequency cetaceans (e.g. bottlenose dolphins, killer whales)	Low Frequency cetaceans (e.g. Southern right whale, humpback whale)	Seals, Seabirds, sharks (e.g. NZ sea lion, NZ fur seal, penguins, sharks)
Blasting	841	345	730	107
Rockbreaking	175	19	181	11

Table 3: Estimated minimum size (metres) of MFOZs based on largest blasting scenario aimed at avoiding temporary hearing injuries for each fauna group.

	High Frequency cetaceans (e.g. Hector's dolphins)	Medium Frequency cetaceans (e.g. bottlenose dolphins, killer whales)	Low Frequency cetaceans (e.g. Southern right whale, humpback whale)	Seals, Seabirds, sharks (e.g. NZ sea lion, NZ fur seal, penguins, sharks)
Blasting	1470	1607	2001	711
Rockbreaking	1080	65	1050	28

27. (a) The Consent Holder shall engage suitably trained and experienced Marine Fauna Observers (**MFOs**) who shall be responsible for observing the MFOZ at least 60 minutes prior to:

- i) detonation of charges during blasting activities; and
 - ii) commencement of rock breaking activities.
 - (b) Subject to clause (i) of this condition, the MFO shall maintain a watch of the MFOZ for at least one hour after operations have ceased. The full hour of observations may be reduced if there is less than an hour between the end of operations and when it becomes too dark to continue observations.
28. The Consent Holder shall ensure that all MFOs have attended and successfully completed an appropriate MFO course and shall provide evidence of this to the Consent Authority upon request. The course shall be developed and run by one or more appropriately qualified and experienced marine fauna experts. The course shall include, but not necessarily be limited to, the following:
- (a) types of marine fauna (e.g., marine mammals, seabirds, penguins, sharks) likely to be present in the area and how to identify them;
 - (b) search and scanning protocols and methods to be used including poor visibility protocols;
 - (c) the estimation of distance to a sighting;
 - (d) marine fauna behaviours;
 - (e) measures to be taken if marine fauna are sighted including an understanding of the requirements of the MMMP, MFOP, and the marine fauna conditions associated with this consent;
 - (f) reporting requirements; and
 - (g) health and safety requirements specific to undertaking the observations.
29. (a) In the event that any marine mammal, seabird (including penguins and shags), or shark is observed inside the MFOZ, or is likely to enter the MFOZ, detonation of charges or rock breaking shall cease until either:
- i) the marine mammal, seabird, and/or shark has/have been observed to move out of the MFOZ; or
 - ii) the marine mammal, seabird, and/or shark seen within the MFOZ has not been seen to leave the MFOZ but has not been seen for more than 30 minutes.
- (b) Sufficient dedicated MFOs shall be placed around the activity site to ensure full visual coverage of the MFOZs outlined in Table 2 (based on PTS) and to maximise visual coverage of the MFOZs outlined in Table 3 (based on TTS).
30. The Consent Holder shall adhere to the standard operating procedures for the MFOZs set out in the MMMP and the MFOP during blasting and rock breaking operations.
31. A marine fauna sighting log to record any marine mammals, seabirds, and/or sharks sighted (date and time), and actions taken, shall be prepared and maintained.

- (a) These records shall be provided to the Consent Authority (email: escompliance@es.govt.nz) and the Department of Conservation at fortnightly intervals during the blasting and rock breaking activities; and
 - (b) A summary report shall be provided to the Consent Authority at the conclusion of the project.
32. Subject to Condition (34), the Consent Holder shall activate an initial pre-start blast (i.e., open water blast of low peak pressure) to remove mobile species from the harbour entrance channel and surrounding waters before blasting of the seabed commences. The pre-start blast shall comply with the following:
- (a) The pre-start blast shall only occur once the MFOs have assessed that no marine mammals, seabirds, and/or sharks are present within 100 metres of the blast site; and
 - (b) A period of at least 90 seconds passes after the pre-start blast before normal blasting of the seabed commences to enable marine mammals, seabirds, sharks, benthic fish, and highly mobile mollusc species (squid and octopus) to exit the TTS and mortality zone.
33. The Consent Holder shall report any mortality or injury to marine mammals, seabirds, and/or large fish to the Consent Authority (email: escompliance@es.govt.nz) and the Department of Conservation within 24 hours of any blasting event.
34. In the event that the pre-start blast is causing mortality to small marine fish species and is creating a feeding flock of seabirds (e.g. gulls or terns), the Consent Holder shall revise this deterrence measure or discard it completely.
35. The Consent Holder shall operate an acoustic harassment device at least one hour prior to, and at all times during, rock-breaking and blasting operations to deter marine mammals, seabirds, sharks, and other fish from the harbour entrance channel and surrounding waters.
36. The Consent Holder shall, at the start of each day of works, ensure all marine vessels are checked to ensure all ropes and/or lines used during the works are taut as far as is safely practicable to minimise the potential for marine mammals to become entangled in the lines.
37. The Consent Holder shall, in advance of the work, undertake inductions with all project personnel about appropriate behaviour around marine mammals, and vessel master's responsibilities under the Marine Mammals Protection Act 1992. These include speed limits to minimise the potential for marine mammal injury or mortality.
38. The MMMP and MFOP shall be updated with the latest set of acoustic monitoring results and the results of validation of the acoustic propagation modelling within two weeks of the trial drilling and blasting programme required by Condition (12). The updated MMMP and MFOP shall be submitted to the Consent Authority (email: escompliance@es.govt.nz) at least 20 working days prior to the activities authorised by the consent commencing. Any other changes or revisions to the MMMP or MFOP shall be certified in writing by the Consent Authority to ensure consistency with the conditions of this consent.

Little penguin

39. To compensate for any potential adverse effects of the works on little penguin breeding and foraging habitat, the Consent Holder shall donate \$50,000 to the Bluff Hill Motupōhue Environment Trust in four instalments. The first instalment of \$20,000 shall be paid no later than 10 days after consent is granted and a further \$10,000 provided on 1 August 2023, 1 August 2024, and 1 August 2025. Evidence of the payments shall be provided to the Consent Authority upon request. The money may be spent at the discretion of the Trust.

Advice Note: This condition was volunteered by the Consent Holder to provide funding to the Trust to undertake works such as establishing nesting boxes, predator control, weed control and or vegetation planting to improve habitat for the little penguin.

Biosecurity

40. (a) The Consent Holder shall inspect the TSHD, barge, tug, and split hopper barges for fouling organisms, including *Undaria pinnatifida* and other “exclusion” species specified in the Southland Regional Pest Management Plan (**SRPMP**), no more than one week prior to the vessels entering Bluff Harbour.
- (b) If such organisms are found, the Consent Holder shall ensure that the organisms are removed and disposed of to a designated refuse site on land, and any “exclusion” species identified in the SRPMP are reported to Biosecurity New Zealand and the Consent Authority.
- (c) The Consent Holder shall provide the Consent Authority (email: escompliance@es.govt.nz) with updated biofouling management plans from the dredge operators prior to commencement of the works.
- (d) The Consent Holder shall use Ministry for Primary Industries accredited operators to undertake inspections and cleaning of vessels.
- (e) An inspection report shall be submitted to the Consent Authority (email: escompliance@es.govt.nz) prior to the dredge equipment entering Bluff Harbour detailing the timing, method, and findings of the inspection.
41. The Consent Holder shall monitor the fixed quadrat locations on the seabed within the blast zone (as per Condition (61)) at three months, 12 months and then annually for up to three years following completion of the works for the presence of *Undaria pinnatifida*, and “exclusion” species identified in the SRPMP. Any pest marine organism detected during this period shall be removed from the zone and disposed of to a designated refuse site on land. This sighting shall be reported to Biosecurity New Zealand and the Consent Authority for management purposes.
42. (a) If the Consent Holder deploys the dredge vessel directly from overseas then a Biosecurity Management Plan (**BMP**) shall be prepared and implemented in accordance with clauses (d)-(h) of this condition.
- (b) At least two months prior to arrival of the dredge vessel in New Zealand, the Consent Holder shall provide a BMP to the Consent Authority. A copy of the BMP shall be provided at the same time to Te Ao Marama Incorporated.
- (c) The purpose of the BMP shall be to reduce the risk of a biosecurity incursion.
- (d) The BMP shall include, but not be limited to, the following:
- i) Description of the dredge vessel and its attributes that affect risk, including key operational attributes (e.g. voyage speed, periods of time idle), maintenance history (including prior inspection and cleaning undertaken), and voyage history since last dry-docking and antifouling (e.g. countries visited and duration of stay);
 - ii) Description of the key source of potential marine biosecurity risk from ballast water, sediments and biofouling. This should cover the hull, niche areas, and associated equipment, and consider both submerged and above-water surfaces;
 - iii) An assessment of the biosecurity risks to Authorised Marine Farming Activities from activities authorised by this consent and the methods to be used to minimise those risk to the greatest extent practicable.

- iv) Findings from any previous inspections; and
- v) A description of the risk mitigation taken prior to arrival in New Zealand, including but not limited to:
 - A Routine preventative treatment measures and their efficacy, including the age and condition of the anti-fouling coating, and marine growth prevention systems for sea chests and internal sea water systems;
 - B Specific treatment for submerged and above-water surfaces that will be undertaken to address import health standards (**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;
 - C Additional risk mitigation planned during transit to New Zealand, including expected procedures for ballast water management;
 - D Expected desiccation period of above-water surfaces on arrival to New Zealand (i.e. period of air exposure since last dredging operations);
 - E The nature and extent of pre-border inspections that will be undertaken (e.g. at the overseas port of departure) to verify compliance with IHS and CRMS requirements; and
 - F Record keeping and documentation of all mitigation undertaken (i.e. prior to and during transit to New Zealand) to enable border verification if requested by the Ministry for Primary Industries or its successor, and to facilitate final clearance.
- (e) The BMP shall be prepared by a person who is suitably qualified and experienced in managing the risk of biosecurity incursions and shall be appointed by the Consent Holder following consultation with MPI.
- (f) The BMP shall be certified by the Consent Authority acting in a technical certification capacity certifying the BMP complies with conditions of this consent prior to the first commencement of dredging authorised by this consent. The Consent Holder shall undertake all activities authorised by this consent in accordance with the certified BMP.
- (g) Any amendment of the BMP shall be certified by the Consent Authority acting in a technical certification capacity certifying the amendment also complies with the conditions of this consent. The Consent Holder shall undertake all activities authorised by this consent in accordance with the certified amended BMP.
- (h) A copy of the BMP and all amended BMPs shall be provided to Te Ao Marama Incorporated immediately following certification.

Noise Control

43. The Consent Holder shall ensure that the noise emissions arising from all drilling, rock breaking, and dredging work comply with the Project Noise Standards set out in Table 4:

Table 4: Noise Standards

		Noise limits					
Time of Week	Time Period	Residential/ Rural Receivers		At the ICB		Industrial 1 and Business 2	
		L _{eq} (dBA)	L _{max} (dBA)	L _{eq} (dBA)	L _{max} (dBA)	L _{eq} (dBA)	L _{max} (dBA)
Weekdays (to 0730 Saturday morning)	0630-0730	55	75	55	75	70	85
	0730-1800	70	85	70	85		
	1800-2000	65	80	65	80		
	2000-0730	50	75	55	75		
Saturdays (to 0730 Sunday morning)	0730-1800	70	85	70	85	70	85
	1800-0730	50	75	55	75		
Sundays and public holidays (to 0630 Monday morning)	0730-1800	55	85	55	85	70	85
	1800-0630	50	75	55	75		

44. Compliance with the Project Noise Standards, including during the trial drilling and blasting programme, shall be measured and assessed one metre from the façade of any building that is occupied when the noise is being generated. All measurements and assessments should be conducted in accordance with NZS6803:1999.
45. The air overpressure from blasting shall comply with a limit of 120 dBA L_{peak} at any property containing a building with windows.
46. The Project Noise Standards in Condition (43) do not apply at any property or building under the ownership or control of the Consent Holder or its entities or subsidiaries in the port zone.

47. The Consent Holder shall ensure the hopper barge is lined with fixed timber or an alternative material that prevents rocks impacting on any steel surface of the barge.
48. The Consent Holder shall ensure that all drilling and dredging equipment is regularly maintained, including hydraulic equipment, exhausts, generators, and winches to minimise noise levels above and below water as far as practicable. Records of such maintenance shall be kept and provided to the Consent Authority upon request.

Vibration Control

49. The Consent Holder shall ensure that the peak particle velocity (**PPV**), as measured by the seismographs as set out in Condition (12)(b)(i), shall comply with the German Standard DIN 4150-3 1999.

Monitoring and Reporting

50. The methodologies and reporting outputs outlined in Attachment 8 shall be complied with for the monitoring outlined in Conditions (51) to (57). Any deviations from the methodologies and report outputs shall be agreed to by the Consent Authority in writing before the reporting is completed and shall be justified within the reports. All reports shall be provided to the Consent Authority within the timeframes stated.

Soft Sediment Benthic Monitoring

51. The Consent Holder shall monitor the following soft sediment sites (NZTM 2000) within one month of completion of the sediment dredging works for heavy metals (total arsenic, total chromium, total cadmium, total copper, total nickel, total mercury, total zinc, and total lead), polycyclic aromatic hydrocarbons, total phosphorus, tributyltin, sulphate, and sediment particle size analysis.

- Harbour site (Easting 1242608.13; Northing 4831600.78);
- Motupōhue mātaītai site (Easting 1244378.33; Northing 4826879.52);
- Sediment disposal site (Easting 1246149.02; Northing 4828952.85); and
- Disposal control site (Easting 1247131.85; Northing 4829218.48).

A report detailing the methodologies and findings of this sediment monitoring shall be provided to the Consent Authority within three months of completion of analysis of the sediment samples as outlined in Attachment 8.

Seagrass Monitoring

52. The Consent Holder shall undertake health status monitoring of three seagrass beds pre-, during and post- sediment dredging works. This health status monitoring shall include sediment particle size analysis, heavy metals (total arsenic, total chromium, total cadmium, total copper, total nickel, total mercury, total zinc, and total lead), polycyclic aromatic hydrocarbons, total phosphorus, tributyltin, sulphate, percentage cover, biomass, blade length and water clarity measurements at fixed quadrat locations to allow for comparison. The monitoring sites are (NZTM 2000):

- Seagrass control site (Easting 1241590.13; Northing 4829988.16);
- Seagrass Site 2 (Rabbit Island) (Easting 1243332.66; Northing 4832300.91); and

- Seagrass Site 3 (Tiwai Wharf) (Easting 1244259.76; Northing 4829525.69).

A report detailing the methodologies and findings of this seagrass monitoring shall be provided to the Consent Authority within three months of completion of the post sediment dredging seagrass assessment as outlined in Attachment 8.

Advice Note: Attachment 8 requires this seagrass health status monitoring to be undertaken on three occasions prior to dredging commencing, the earliest of these three occasions being 12 months before dredging. It will be important that the Consent Holder provides for adequate time in its works programme to enable compliance with these monitoring requirements.

Rocky Reef Benthic Monitoring

Rock Disposal Site

53. The Consent Holder shall undertake quantitative benthic monitoring of the rock disposal site at fixed quadrat locations for infauna, epifauna and algal cover using transects and quadrats. Visual rock stability assessments shall also be completed. Monitoring shall be undertaken at three, 12, 36, and 60 months following completion of the works.
54. A report detailing the methodologies and findings of the rock disposal site monitoring shall be provided to the Consent Authority within three months following each survey, with the exception of the initial three month survey results which shall be included in the 12 month survey report as outlined in Attachment 8.

Motupōhue Mātaitai Monitoring

55. The Consent Holder shall undertake an Ecological Impact Assessment within the Motupōhue mātaitai. This assessment shall include monitoring of paua beds and rocky reef habitat within the mātaitai with a baseline, during sediment dredging and post-sediment dredging assessments.
56. A report detailing the methodologies and findings of the Motupōhue mātaitai rocky reef monitoring shall be provided to the Consent Authority and Te Rūnanga o Awarua within three months of completion of the post sediment dredging assessment, as outlined in Attachment 8.

Bluff Harbour Entrance Channel

57. The Consent Holder shall undertake quantitative benthic monitoring of the seabed at fixed quadrat locations within the blasting zone for epifauna and algal cover. Photo quadrats shall be taken of the site and assessed for changes in biomass and species assemblages. Monitoring shall be undertaken within six months prior to the works to establish a baseline, then at three months, 12 months and 36 months following completion of the works.
58. A report detailing the methodologies and findings of the Bluff Harbour Entrance Channel monitoring shall be provided to the Consent Authority within three months following each survey, with the exception of the initial three month survey results which shall be included in the 12 month survey report, as outlined in Attachment 8.

Advice note: The removal of epifauna within the blasting zone is authorised under the deemed coastal permit. Conditions (57) and (58) serve to provide documented marine epifauna recolonisation rates to support future research in this area as opposed to assessing the effects of the blasting activity.

Public Notification

59. The Consent Holder shall provide 24-hour advance notice to the public, including commercial shipping and fishing companies and water based recreational user groups, of scheduled blast events through the following communication channels:
- UHF Marine Channels 14, 16 and 61;
 - Meri Leask – Bluff Fisherman’s Radio;
 - Coastguard Channel 2;
 - Variable Message (LED) Signs – located at strategic locations in Bluff;
 - Physical Project Information station on Port and in the community;
 - Emails; and
 - Posters.
60. The Consent Holder shall provide 24-hour advance notice to the owners and occupiers of properties on 116 to 262 Marine Parade and 2 to 12 Gore Street, Bluff, as shown on the plan in Attachment 9, as to when night-time dredging works is proposed to occur. The communication shall let the owners know about the timing and duration of night-time works, that it will be audible in some meteorological conditions, and that closing bedroom windows will assist to reduce noise levels, particularly during certain meteorological conditions.
61. Prior to this consent being given effect to, the Consent Holder shall implement a complaints management plan to deal with any noise complaints arising from the works authorised by this consent. The objectives of the complaints management plan shall be to ensure timely and effective response to noise complaints and to achieve appropriate resolutions.

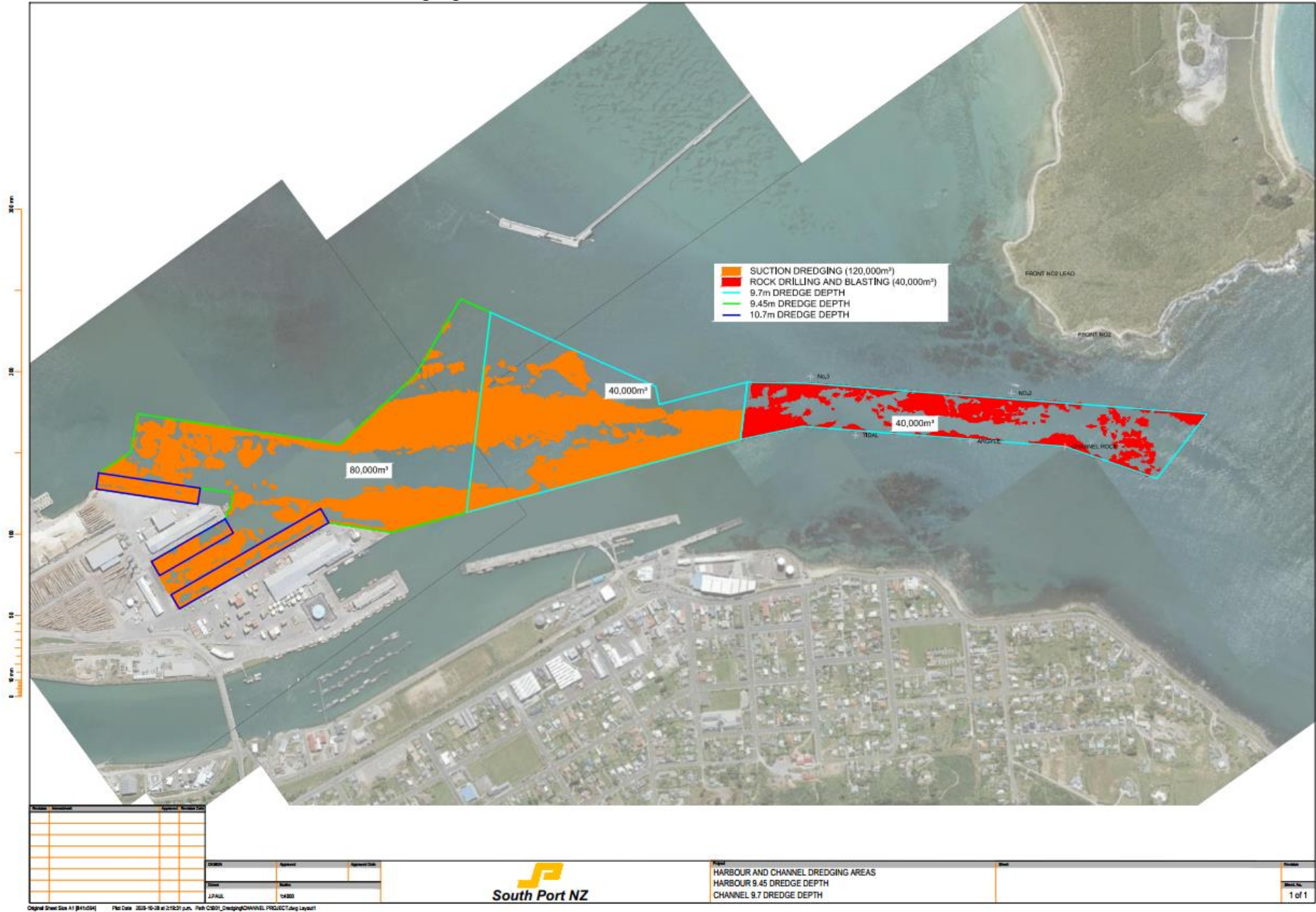
The complaints management plan shall include, but not necessarily be limited to, the following:

1. The procedures for receiving and recording complaints in a project-specific system or database. The system shall be capable of recording all relevant details of the complaint and the complainant, including any specific details of the nature of the complaint and timing of the effect or activity generating the complaint and a description of the weather conditions at the time of complaint, if relevant.
2. The procedures for ensuring that the operators of the equipment or activity giving rise to the noise complaint are notified of the complaint and the specific details in the fastest practicable timeframe (e.g. 15 minutes).
3. The methods and procedures to ensure that the source(s) of noise giving rise to the complaint are reduced as soon as practicable following the identification of the issue(s). This may include repair of faulty or malfunctioning equipment that is generating an unusually high level of noise or ceasing use of such noisy plant or equipment if it is practicable and safe to do so and for the period required to reduce the noise levels to normal.
4. The procedures for responding to the complainant during daylight hours (if they request a response) to advise them of the investigation undertaken, issues found and mitigation measures employed to reduce the noise (if any).
5. Procedures for ensuring that the complaint details, actions, mitigation measures employed and any follow up actions are recorded in the complaints management plan.

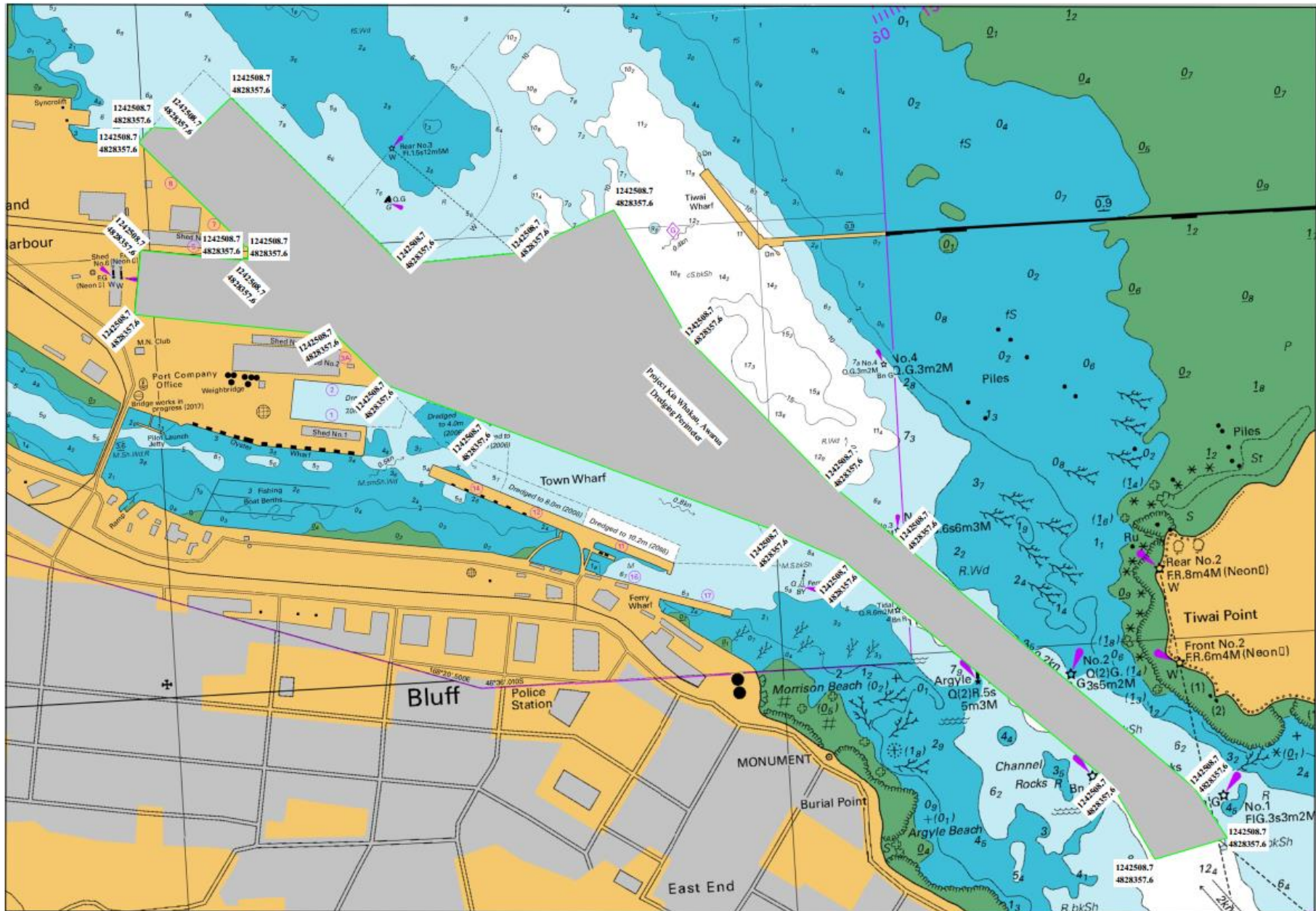
The complaints management plan shall be implemented for the duration of the works authorised by this consent and a copy of it shall be provided to the Consent Authority prior to commencing any activities authorised by this consent.

An aggregated summary of any complaints received by the Consent Holder shall be incorporated into an annual monitoring report and shall be provided to the Consent Authority.

Attachment 1: Harbour and Channel Dredging Areas.

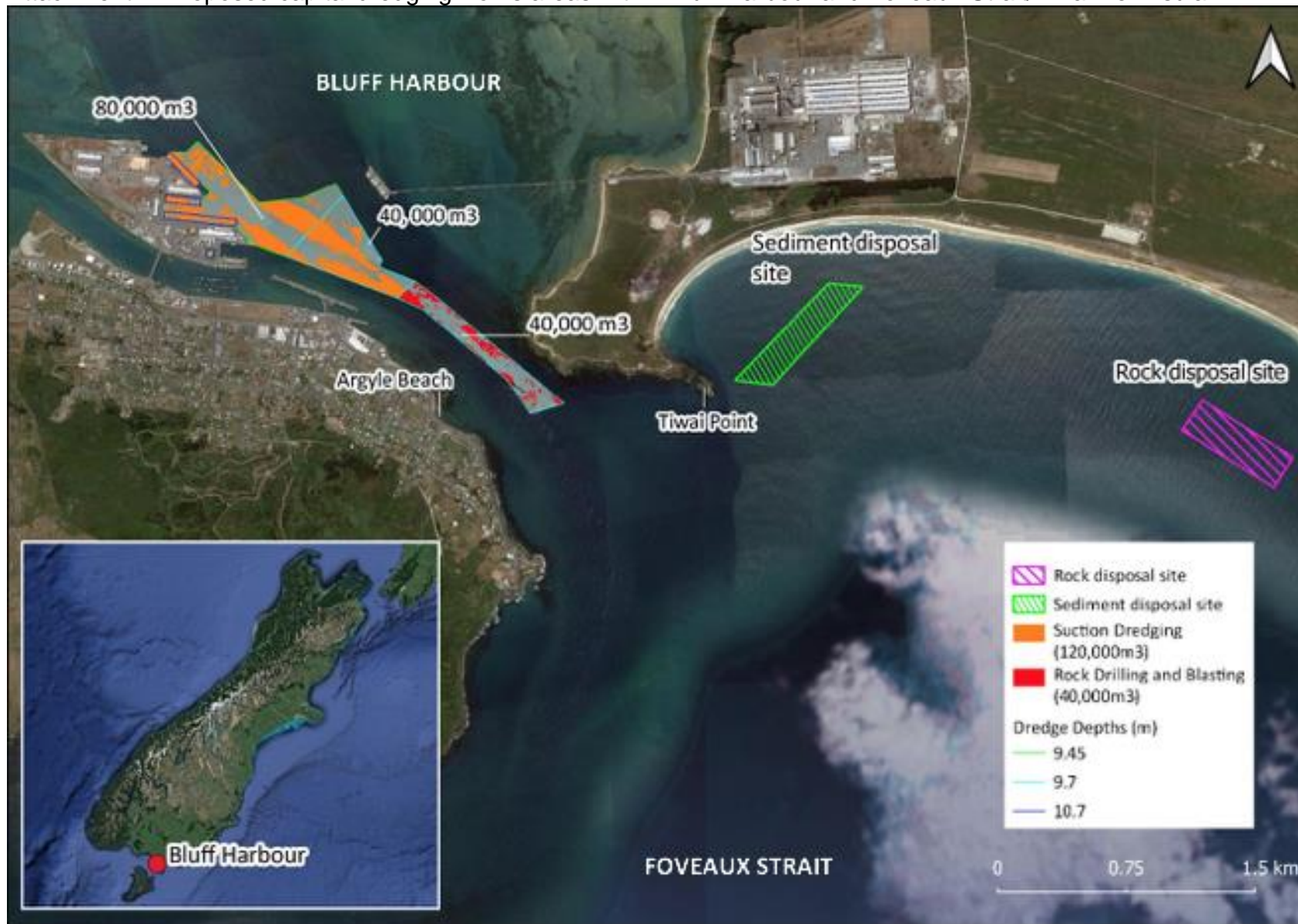


Project Kia Whakau, Awarua

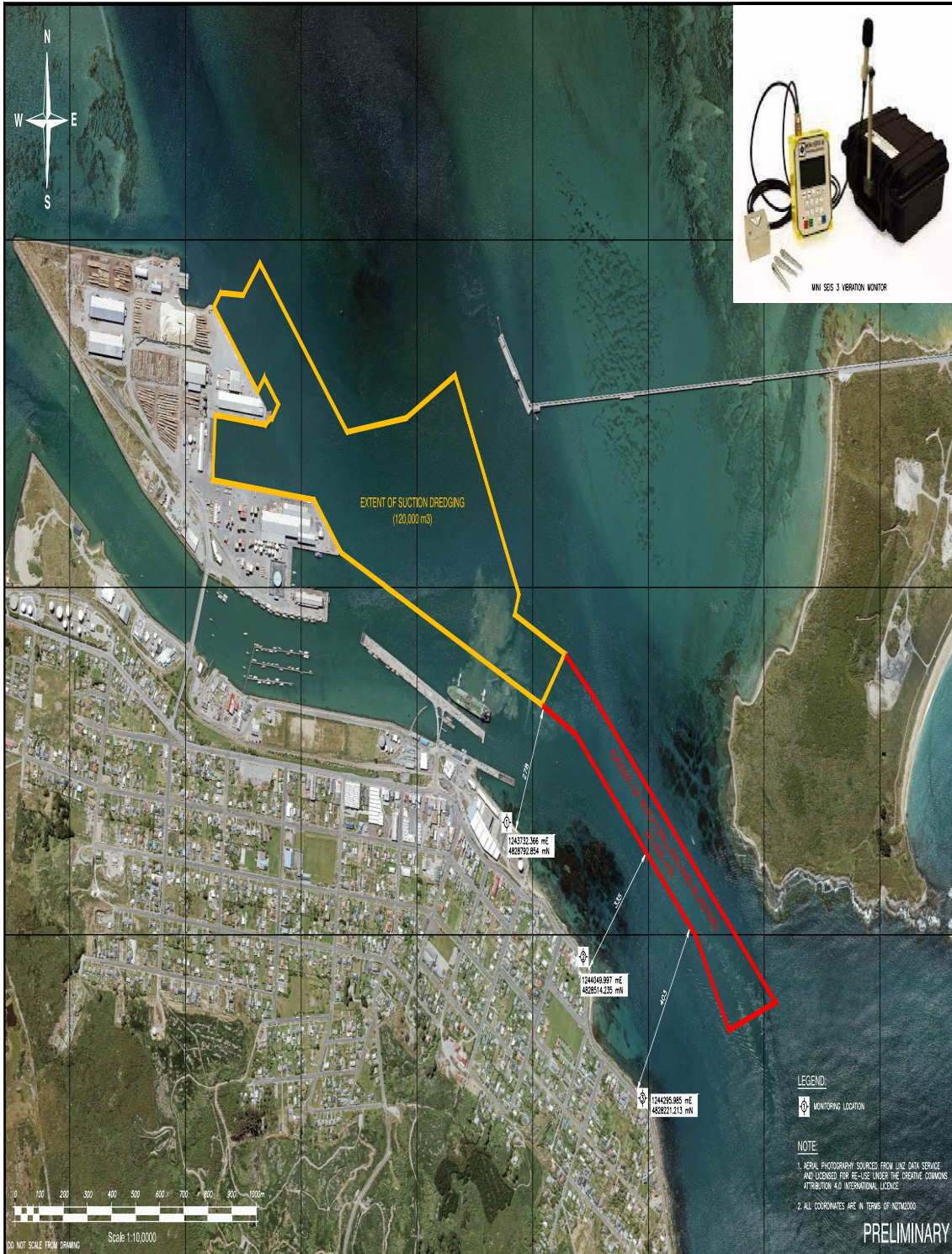


Dredging Area Perimeter on Toe-Lines. Note: Over-Dredging excluded

Attachment 2: Proposed capital dredging works areas within Bluff Harbour and Foveaux Strait/Tiwai Peninsula.



Attachment 3: Seismograph monitoring locations.



										OFFSHORE AND COASTAL ENGINEERING LIMITED		This drawing and its content is the property of Offshore and Coastal Engineering Limited. Any unauthorised use or reproduction of it is forbidden.		SOUTH PORT NEW ZEALAND LIMITED ENTRANCE CHANNEL DREDGING SEISMOGRAPH MONITORING LOCATIONS		Scale (AS) 1:10,000		ACD File Name 20030-00-20030-00P	
										14 Richardson Terrace Christchurch New Zealand		Tel (63) 3766444 Email: info@occel.co.nz www.occel.co.nz		Drawing No. DR-200506-007		Rev. 2			
EXTENT OF DREDGED AREA UPDATED	2	01/06/2022	R/E	INFORMATION					Drawn	FT									
ISSUED FOR INFORMATION	1	09/05/2022	FT	INFORMATION					Checked										
Amendments	Rev'n	Date	Drawn	Issued for	Checked	Approved			Date	05/2022									

PRELIMINARY

LEGEND:
 MONITORING LOCATION

NOTE:
 1. AERIAL PHOTOGRAPHY SOURCED FROM LINZ DATA SERVICE AND LICENSED FOR RE-USE UNDER THE CREATIVE COMMONS ATTRIBUTION 4.0 INTERNATIONAL LICENSE.
 2. ALL COORDINATES ARE IN TERMS OF NZTM2000.

Attachment 4: Hydrophone monitoring locations.

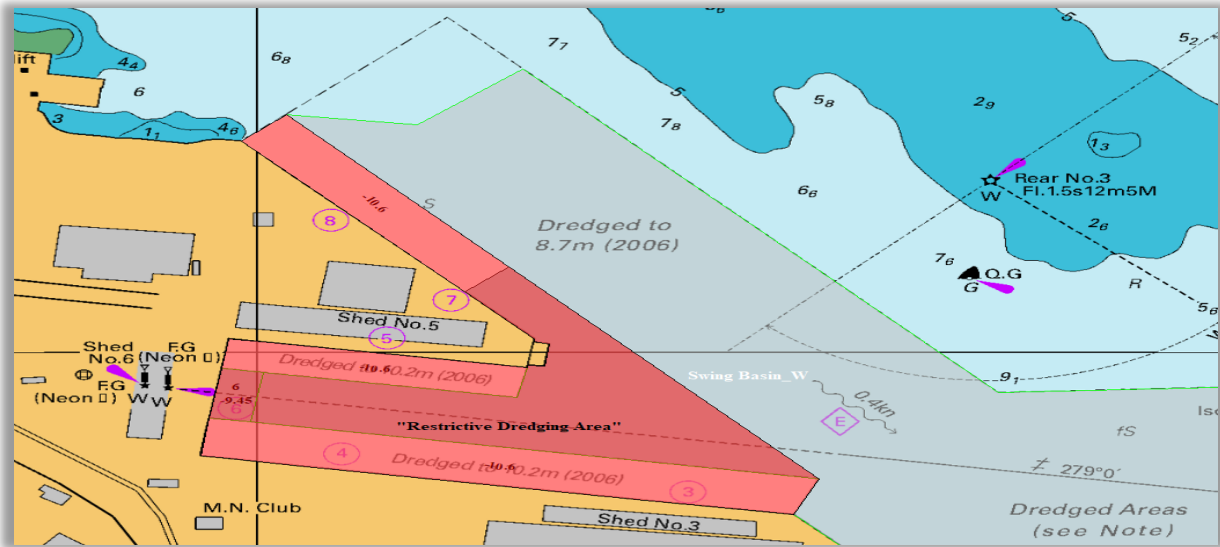
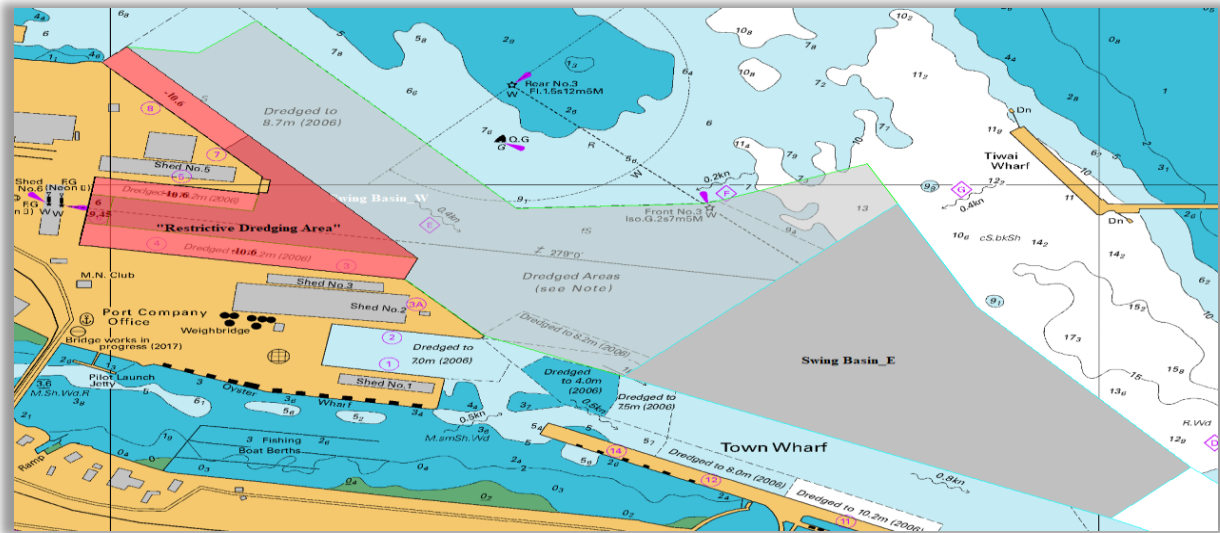


Table 1: Coordinates for polygon points

Location	WGS 1984	
	Lat	Lon
L1	-46.598761	168.354677
L2	-46.600061	168.356340
L3	-46.601006	168.358013
L4	-46.601959	168.356598
L5	-46.600758	168.355143
L6	-46.599799	168.353299
New Zealand Traverse Mercator		
	Northing	Easting
L1	4828931.830	1244223.758
L2	4828794.920	1244359.632
L3	4828697.491	1244493.940
L4	4828585.221	1244391.834
L5	4828712.074	1244272.541
L6	4828810.279	1244125.043



Attachment 5: Silt Areas.



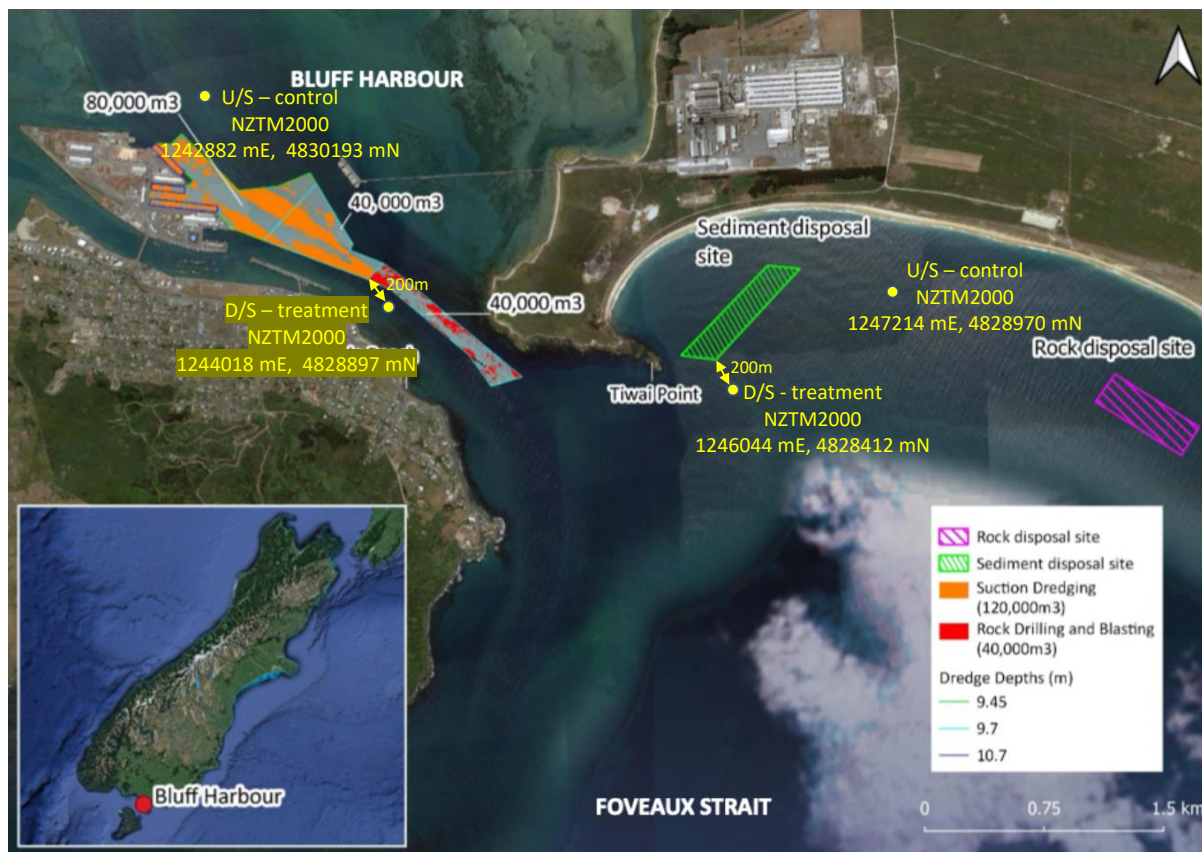
Attachment 6: Turbidity logger locations.



Footnote:

Logger Location		Rationale
Seagrass Sites <i>Please note; turbidity loggers are located at closest edge of seagrass bed to dredge operation.</i>	Tiwai Wharf seagrass	To monitor turbidity from dredging activities at subtidal seagrass bed closest to dredging operation (~800 m from sand dredge location, ~1.2 km from silt dredge location).
	Rabbit Island seagrass	To monitor turbidity from dredging activities at subtidal seagrass bed second closest to dredge operation (~2.2 km from sand and silt dredge locations).
	Control Site	To monitor natural turbidity at seagrass bed within Bluff Harbour system. This location has no tidal nor environmental connectivity with dredge location.
Rocky reef sites <i>Please note; turbidity loggers near rocky reef sites should be placed outside of surf zone for safety purposes.</i>	Disposal site	To monitor turbidity from dredge disposal at rocky reef site (Tiwai Rocks). This location also aims to monitor any turbidity from dredge turbidity re-entering the harbour.
	Mātaitai site	To monitor turbidity from dredge disposal at rocky reef site within the Mōtupohue mātaītai at location closest to sediment disposal site.

Attachment 7: Secchi Disc monitoring locations.



Attachment 8: Monitoring Methodology and Reporting Requirements

Soft Sediment Benthic Monitoring

The Consent Holder shall monitor the following soft sediment sites (NZTM 2000) (Figure 1) within one month of completion of the sediment dredging for heavy metals (total arsenic, total chromium, total cadmium, total copper, total nickel, total mercury, total zinc, and total lead), polycyclic aromatic hydrocarbons, phosphorus, tributyltin, sulphate, and sediment particle size analysis:

- Harbour site (Easting 1242608.13; Northing 4831600.78);
- Motupōhue mātaītai site (Easting 1244378.33; 4826879.52);
- Sediment disposal site (Easting 1246149.02; Northing 4828952.85); and
- Disposal control site (Easting 1247131.85; Northing 4829218.48).

A total of four core samples and a single duplicate sample of the surface 2 centimetres of sediment shall be collected within a 10 m radius of the above locations. Photos and in situ observations shall be recorded for each sample. A report detailing the findings of the sediment monitoring shall be provided to the Compliance Manager, Environment Southland within three months of collection of the sediment samples.



Figure 1: Sediment monitoring locations.

Seagrass Monitoring

The Consent Holder shall undertake health status monitoring of three seagrass beds pre-, during and post- soft sediment dredging works. To capture expected seasonal variability in seagrass condition and discern between temporal change and natural site variability, baseline monitoring of ecological bed health is proposed to occur approximately 12, nine and one month prior to the sediment dredging commencing to capture seasonal variability. Seagrass monitoring shall occur once during the sediment dredging operation, and post-works monitoring shall be completed within one month of the sediment dredging completion. A report detailing the methodology, results and findings of the seagrass assessments shall be provided to the Compliance Manager, Environment Southland within three months of the final post-works assessment.

Two seagrass beds shall be monitored in close proximity to the works, which may have a higher likelihood of deposition if fine sediment becomes suspended in the water column, as indicated by hydrodynamic modelling. A control site is proposed to be located outside the activities range. The monitoring sites are (NZTM 2000) (Figure 2):

- Seagrass control site (Easting 1241590.13; Northing 4829988.16);
- Seagrass Site 2 (Rabbit Island) (Easting 1243332.66; Northing 4832300.91); and
- Seagrass Site 3 (Tiwai Wharf) (Easting 1244259.76; Northing 4829525.69).

At each site, three 20 m subtidal transects shall be set up with a 1 m² quadrat every 10 m, starting from 0 m (i.e. three quadrats per transect). During the baseline assessment, in the event fixed 10 m quadrat locations do not encounter seagrass, these quadrats may be moved to the nearest seagrass bed and distance along the transect of this quadrat shall be recorded. Future replicate assessments shall then assess these baseline quadrat locations. Each quadrat shall be photographed, assessed for seagrass percentage cover, and a core sample shall be collected to assess change in blade length and seagrass biomass. These indicators allow an assessment of bed health despite seasonal variability (Wood & Lavery, 2000)¹. Water clarity (m) and turbidity (NTU) parameters shall also be collected at each site during the assessment. Sediment samples of the surface 2 centimetres shall be collected within each quadrat and composited to form a single sample for each transect. This sediment sample shall be analysed for sediment particle size, heavy metals (total arsenic, total chromium, total cadmium, total copper, total nickel, total mercury, total zinc, and total lead), polycyclic aromatic hydrocarbons, phosphorus, tributyltin, and sulphate to ascertain any changes which may be attributable to dredging activity.

Analysis of the data shall include statistical analysis to assess changes between sites. Based on the data this could be undertaken using a two factor-nested ANOVA to test between sites. Posthoc tukey tests may also be used to calculate pair-wise comparison of measures between sites. Principal component analysis shall be carried out based on Bray-Curtis dissimilarities, to visualise the variation in community patterns among locations and sites, and how the patterns relate to explanatory variables. Significant reduction in seagrass bed health or change to sediment parameters beyond the natural variability captured in baseline monitoring and at the control site may be attributed to the activity and would require further investigation.

¹ Wood, N., & Lavery, P. (2000). Monitoring seagrass ecosystem health-The role of perception in defining health and indicators. *Ecosystem Health*, 6(2), 134–148. <https://doi.org/10.1046/j.1526-0992.2000.00015.x>



Figure 2: Seagrass (*Zostera muelleri*) monitoring locations.

Rocky Reef Monitoring

Motupōhue Mātaitai Monitoring

The Consent Holder shall undertake an Ecological Impact Assessment within the Motupōhue mātaitai. Methods for monitoring within the mātaitai and specific site guidance have been developed in consultation with tangata whenua (Figure 3). Pāua are a mahinga kai and taonga species and are a species of interest to local rūnanga for “cultural health status” monitoring as well as ecological monitoring. Cultural health status monitoring in this context refers to mahinga kai values and is to be completed in alignment with methods outlined in the Ngāi Tahu Marine Cultural Health Index toolkit (Schweikert et al., 2012)². Alongside cultural health monitoring, scientific ecological surveys shall be used to assess any changes to the ecology of the rocky reef community based on the deposition of fines (Shears, 2007)³.

Two sites are to be surveyed (Figure 3) within the Motupōhue mātaitai and at each site, 30 m transects shall be swum at 3 m and 5 m depth bands. Along each transect five 0.25 m² photoquadrats shall be positioned haphazardly within c. 5 m of the transect in the desired depth range and the distance along the transect recorded to enable subsequent re-sampling in the same area. Epifauna and dominant macroalgae (%) shall be recorded within each quadrat allowing for calculation of abundance, diversity, and richness metrics. Principal component analysis shall be carried out based on Bray-Curtis dissimilarities, to visualise the variation in community patterns among locations and sites, and how the patterns relate to explanatory variables. Percentage cover of sediment shall also be recorded within each quadrat. A single composite sediment sample shall be taken at each depth transect, if sediment is present, and analysed for particle size and heavy metals to further ascertain any changes which may be attributable to dredging activity. Significant ($p < 0.05$) change in sedimentation and the presence/absence and abundance of species sensitive to finer silts (i.e. filter feeders and grazers)

² Schweikert, K., McCarthy, A., Akins, A., Scott, N., Moller, H., Hepburn, C., & Landesberger, F. (2012). A Marine Cultural Health Index for the sustainable management of mahinga kai in Aotearoa – New Zealand. A report for Te Rūnanga o Ngāi Tahu. February 2015, 112.

³ Shears, N. T. (2007). Biogeography, community structure and biological habitat types of subtidal reefs on the South Island West Coast, New Zealand. *Science for Conservation*, 281, 1–53.

(based on baseline assessment) shall be utilised as an indicative measure for ecological health. Significant accumulation of fine sediment with trace elements indicative of port origin shall require further investigation.

Sampling shall occur within three months prior to the sediment dredging commencing, once during the sediment dredging activity, and a follow-up monitoring shall occur within one month of the sediment dredging completion. A report detailing the methodology, results and findings shall be provided to the consenting authority within three months of the final monitoring.

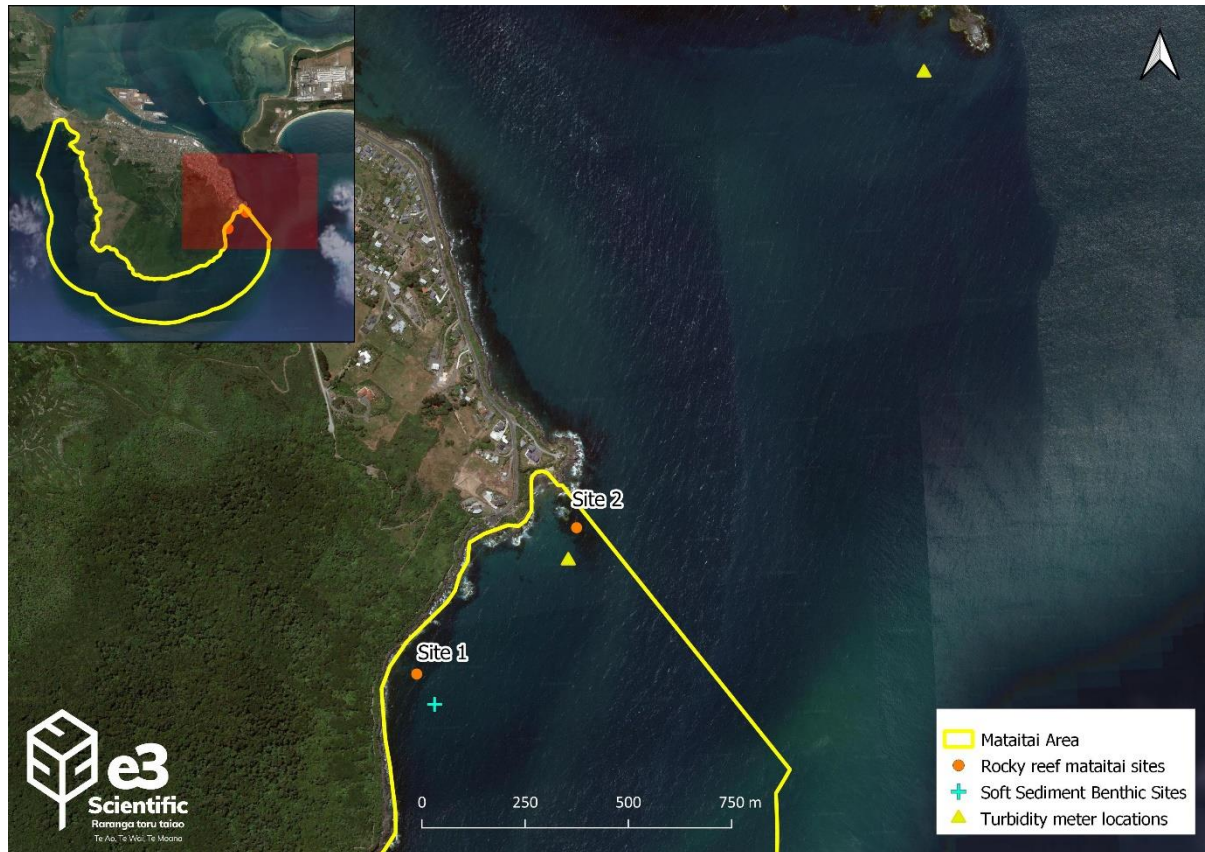


Figure 3: Indicative locations of rocky reef maitaitai sites. Please note; final locations may vary by up to 50 m due to prevalence of appropriate subtidal rocky reef habitat.

Rock Disposal Site

The Consent Holder shall undertake quantitative benthic monitoring of the rock disposal site at fixed quadrat locations for infauna, epifauna and algal cover using transects and quadrats. Two 30 m transects shall bisect the site from a fixed point (buoy) on an underwater directional bearing to enable replication. Five 1 m quadrats shall be positioned haphazardly within c. 5 m of each transect and the distance along the transect recorded to enable subsequent re-sampling in the same general area. A swim video recording shall also be taken for each 30 m transect. Epifauna and dominant macroalgae shall be recorded within each quadrat allowing for calculation of abundance, diversity, and richness metrics. Principal component analysis shall be carried out based on Bray-Curtis dissimilarities, to visualise the variation in community patterns among locations and sites, and how the patterns relate to explanatory variables.

Visual rock stability assessments should also be completed. Monitoring shall be undertaken at 3 months, 12 months, 36 months and 60 months following completion of the rock breaking and deposition works.

A report detailing the methodology, results and overall findings shall be provided to the consenting authority within three months following each survey, with the exception of the initial three month survey results which shall be included in the 12 month survey report.

Bluff Channel

The Consent Holder proposes to undertake quantitative benthic monitoring of the seabed at GPS quadrat locations within the blasting zone for epifauna and algal cover. Photo quadrats shall be taken of the site and assessed for changes in biomass and species assemblages, including dominant species present. Monitoring shall be undertaken within 6 months prior to the works to establish a baseline, then at three months, 12 months and 36 months. Further biennial monitoring could occur at the discretion of South Port to assist in the provision of data.

Please note: there is no seasonal variation within rocky reef communities.

A report detailing the methodology, results and overall findings shall be provided to the consenting authority within three months following the 12 and 36 month surveys.

Attachment 9: Location of residences on Marine Parade who shall receive advance notice of night time dredging works.

