Proposed Consent Conditions – Draft dated 27 June 2022

1. The term of this consent is 5 years from date of commencement of works.

2. This consent permits the drilling, rock breaking, blasting, capital dredging and deposition of the following quantities of spoil:

i. Up to a maximum of 120,000 cubic metres of soft sediments comprising of:

a. approximately 100,000 m^3 predominately sand and some silt material and

b. approximately 20,000 m^3 of predominately silt material ('Silts')

ii up to a maximum of 40,000 cubic metres of rock.

3. The drilling, rock breaking, blasting, and dredging of rock shall 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 carried out across areas of seabed in the harbour as shown in orange on Attachment 1 entitled "Harbour and Channel Dredging Areas", and defined by a centre point at the following co-ordinates (NZTM 2000):

Area	Easting	Northing
Swinging Basin	1243281	4829468
Berth 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 m chart datum (CD), the western swinging basin to a design depth of 9.45 m CD and the eastern swinging basin to a design depth of 9.70 m CD and berths 3 & 4, 5 & 6 and 7 & 8 to a design depth of 10.70 m CD. Refer Attachment 1.

6. The discharge of spoil to water and deposition onto the seabed shall 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 defined by the following NZTM 2000 co-ordinates:

Dredged Spoil Disposal	Easting	Northing
Sand and Silts	1246513.845 1246312.069 1245764.657 1245986.106	4829176.496 4829195.624 4828630.816 4828603.574
Fragmented Rock	1248753.667 1248607.001 1249288.851 1249427.794	4828317.608 4828124.632 4827661.488 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 to the Compliance Manager, Environment Southland 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 Compliance Manager, Environment Southland in writing:	
(a) at least 10 working days prior to commencing any works using the trailer suction hopper dredge (TSHD) and at least 10 working days prior to commencing any works using the backhoe dredger and split hopper barge;	HP comment – Discussion was had as to whether the condition could advise the programme (Gannt Chart), reflecting the tidal cycles and total time/months of work. This would assist ES compliance.
(b) no more than 3 working days after completion of the works using the trailer suction hopper dredge (TSHD) and works using the backhoe dredger and split hopper barge.	
Timing of Works	
9. Drilling, rock breaking, blasting, rock dredging and deposition activities shall be limited to the period 1 February to 30 September to avoid the peak marine mammal migration season and peak seabird and fish breeding and coastal feeding seasons.	
10. All soft sediment dredging shall be limited to the period 1 April to 30 September to avoid the seagrass (*Zostera muelleri*) flowering and growing season.	

11. Operating Hours:

a) Drilling, rock breaking and blasting activities and actual dredging operations of the TSHD shall be limited to the hours between 7.30 am and 6 pm when marine species are less active and to minimise disturbance to residential and rural receivers; and

b) Rock dredging operations may be carried out 24 hours, 7 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.

(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.

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 as shown on the plan at 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 mm/s 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”.

<table><tr><td></td><td>Easting</td><td>Northing</td></tr><tr><td>L1</td><td>1244223.758</td><td>4828931.830</td></tr><tr><td>L2</td><td>1244359.632</td><td>4828794.920</td></tr><tr><td>L3</td><td>1244493.940</td><td>4828697.491</td></tr><tr><td>L4</td><td>1244391.834</td><td>4828585.221</td></tr><tr><td>L5</td><td>1244272.541</td><td>4828712.074</td></tr><tr><td>L6</td><td>1244125.043</td><td>4828810.279</td></tr></table>	
The first transect will extend from the centre of the blast location into the harbour over a distance of 1000 m and the second transect from the blast location towards the harbour entrance over a distance of 2000m. The hydrophones shall placed at 1 metre above the sea floor at 100m, 200m, 500m, 1000m along the first transect and 100m, 200m, 500m, 1000m and 2000m along the second transect.	
iv) The hydrophones shall be calibrated and set to record the waveform of the blast event at a minimum sampling rate of 96 kHz.	
(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 the relevant conditions of this consent, and to ensure that the Marine Fauna Observation Zones (MFOZ) are able to be managed to be no greater than those set out in condition 27.	HP Comment – I had raised in the conferencing that this this condition could reference the PPV established for the purpose of condition 54?
(d) The consent holder shall engage a suitably qualified and experienced person to undertake airborne noise measurements of the blast hole drilling exercise.	
i) The objective of the measurements is to gather sufficient data to demonstrate directly or by calculation that compliance with condition 48 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 and within the meteorological window as set out above.	
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 48 for the remainder of the project.	
13. Upon completion of the trial drilling and blast programme, the consent holder shall document and report the findings to the Compliance Manager, Environment Southland, advising:	

(a) Where the seismographs, sound level meters and hydrophones were placed and monitored during the drilling and blasting trials and with a map and map 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 anticipated 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.	
14. The consent holder shall provide a blast plan with grid references, drilling and photographic records of representative dredged material and any analysis to the Compliance Manager, Environment Southland every four months upon commencement of blasting, and no less than twice during ~~any 8 month period of~~ the blasting campaign.	HP questioned during conferencing the one singular campaign of 8 months and see this is now deleted. This is important message to ES and the Commissioners that there is the potential for multiple (reoccurring) blasting campaigns.
Sediment Control	
15. The consent holder shall ensure that dredging of the silts from Berths 5 & 6 basin and Berths 7 & 8 (see Attachment 5) occurs on outgoing (ebb) tides without overflowing and the use of jets to avoid depositing fine silts in Awarua Bay and the upper harbour including seagrass beds.	
16. The consent holder shall ensure that silts dredged from the Berth 5 & 6 basin and Berths 7 & 8 will not be deposited at the sediment disposal site during slack tide when little or no wave action is evident.	
17. When safely practicable, the consent holder shall ensure a TSHD with an "Anti-Turbidity Valve" (ATV or 'Green Valve') is used over the duration of the project.	HP comment - This implies that potentially the green valve will operate anytime dredging occurs. Write Trailing Suction Hopper Dredger in full text. HP comment – I understand the "when safely practicable" part of the condition, but there is no standard or measure for ES to determine compliance or non compliance. My

Commented [SB1]: The stability of any vessel is affected by loose cargo or non-confined water. The TSHD's hopper has to be filled with water for the ATV to work. In circumstances where the cross current is strong and negatively affecting the stability of the TSHD, the TSHD's Master may decide that dredging with the ATV is not safe.

	thinking is measures such as wind speed, wave height, current strength, could be measureable standards, rather than a decision by the Consent Holder.
18. The consent holder shall implement adaptive receptor-based dredge management involving a three-tiered trigger threshold system based on turbidity (NTU) and duration (days). This will be informed by turbidity meters that when exceeded, require sediment management responses, as set out in the following table and in Adaptive Marine Management Plan (AMMP). The AMMP shall be updated to incorporate the adapted trigger levels monitoring regime and shall be submitted to the Compliance Manager, Environment Southland within 20 working days prior to consented activities commencing. Any other changes or revisions to the AMMP shall be certified by the Compliance Manager, Environment Southland 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

HP original comments (below) from ~~conferencing~~, recognsing that a "Note of 15min intervals for the NTU logger", yet decision making/responses and management actions seem to be on a daily average:

HP Comment- Daily average, but surely eith 30min or hourly average is possible to collect and report, and the Tier 1 triggers; is there an expectation that all of those actions are necessary, or just some, or what order? I assume the data loggers can collect every 30mins or 60 mins, which could see a greater range (and peaks).

Commented [SB2]: All coordinates match the image in Attachment 6.

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. **Tiwai wharf seagrass beds**	17 NTU (daily average during Berths 5 & 6 Basin, and Berths 7 & 8 Silts dredging only).	7 NTU (daily average during Berths 5 & 6 Basin, and Berths 7 & 8 Silts dredging only).	13 NTU (daily average during Berths 5 & 6 Basin, and Berths 7 & 8 Silts dredging only).	Check equipment/ data accuracy to verify exceedance. Review natural events, areas of dredging activity and marine (shipping)	Undertake all actions as set out when Tier 1 trigger limit is reached. Undertake management of dredging process to reduce	Notify ES within 24 hours of exceedance. Undertake all actions as set out when Tier 2 trigger limit is reached. Cease dredging deposition in the vicinity of the monitoring station(s) showing exceedance until daily average is	HP Comment- Also, if a daily average, but the dredging is on a slack or outgoing tide (6 hours), then the daily (24 hr?) average is not really representative of the effecs. There will be peaks which more regular NTU loggin will occur. If loggers are being used, why not obtain 30m intervals and then calculate the daily average and weekly average for the times when dredging occurs. HP Comment- To suspend dredging is a question for how long is it suspended. For a secified period or until the next tidal cycle. Is this until the XX NTY from Tier 1 is achieved and is this within a specified proximity to the dredgingg/discharge? HP Comment – is no discharge from the green valve an option?

Commented [SB3]: Footnote added to Attachment 6 with logger positions and brief rationale.

	(Easting 1244111.5, Northing 4829434.9) **Rabbit Island seagrass beds (Easting 1243324.5, Northing 4831932.5)**	8 NTU (weekly average during dredging of all other zones)			operations with expert advisor. Relocation of dredge to non-berth zones.	turbidity. This could include: ▪ Relocation of dredge to non-berth zones as indicated in Attachment 8. ▪ Reduce dredging frequency. ▪ Operate dredge in non-overflow mode. If turbidity levels are not reducing then cease dredging in vicinity of monitoring station(s) showing exceedance.	below compliance limit. Records of actions undertaken when daily average compliance limit exceeded during dredging to be provided to ES. This may include any photographic records.		

				Dredging to cease between flood tide and high tide in Berths 5 & 6 Basin, and Berths 7 & 8 (Attachment 8). Dredging in this area can restart once the ebb tide has commenced. Records of actions taken when Tier 1 and Tier 2 exceedances occur during dredging to be provided to ES on request.			
Turbidity meters placed at the following locations shown on the plan at Attachment 6 entitled "Turbidity logger locations." **Sediment disposal site (Easting 1245651.9, Northing 4828299.7)** **Motupōhue mātaitai (Easting 1244689.5, Northing 4827256.5)**	24 NTU (daily average during Berths 5 & 6 Basin, and Berths 7 & 8 deposition only)	9 NTU (daily average during Berths 5 & 6 Basin, and Berths 7 & 8 deposition only)	17 NTU (daily average during Berths 5 & 6 Basin, and Berths 7 & 8 deposition only)	Deposition of sediment from Berths 5 & 6 Basin, and Berths 7 & 8 (Attachment 8) to cease at sediment disposal site during slack tide when little or no wave action is evident.			
	12 NTU (weekly average during deposition of all other zones)						

Seagrass bed control site (Easting 1241519.2, Northing 4829934.9)	**Reference site only**	
Advice Note: Turbidity loggers shall be set to record NTU in 15 minute intervals.		
19. The consent holder shall spot monitor coastal water quality beyond a mixing zone of 200 m during the dredging of sediments from Berths 5 & 6 and 7 & 8 (Attachment 7) and during deposition of these sediments. This shall involve the use of a secchi disc and a meter placed upstream of the mixing zones and downstream of the mixing zones. The placement of these devices serve to confirm the discharges will not diminish ambient visual clarity by more than 20 percent, change the natural temperature of the water by more than 3 degrees Celsius and the concentration of dissolved oxygen by less than 80% saturation beyond the mixing zones.	HP comment after discussion in the conferencing; that if 100m is justified what is the scientific basis to this. Simon Beale's comment provide some justification, albeit a very different environment, less turbid and confined river reach. Also – refer my previous comments on the limit of 200m or what constitutes beyond 200m (i.e. could this be 300m)??	
Bathymetric Surveys		
20. The consent holder shall undertake a baseline bathymetric survey of the areas to be dredged 1 month and the sediment disposal areas 12 months prior to the commencement of the capital dredging works.		
21. The consent holder shall undertake repeat surveys post disposal activities at the same positions as undertaken during the baseline survey at period of every 6 months until such time as the bathymetric surveys show that the seabed in the disposal area has reverted back to the equilibrium.		
22. The consent holder shall report the survey findings within 10 working days of receiving the bathymetric survey results to the Compliance Manager, Environment Southland.		
Weight of Explosive Charge and Drill Depth		

Commented [SB4]: Mixing zone based on consent issued by Ecan for Kaiapoi Marine Precinct Marina Basin Dredging. This dredging project is located in tidal reach of Kaiapoi River. Condition 12, CRC185348 specifies 200 m mixing zone as per Schedule 5 of the Canterbury Land and Water Regional Plan.

Commented [SB5]: Dredging areas are much more subject to a changing sea bottom (due to traffic, siltation, current, etc.) then the (stable/undisturbed) Spoil Grounds.

23. The maximum weight of explosive placed in each drilled hole shall be no more than 25 kg. Each drilled hole shall be no less than one metre in depth.

Protection of Marine Fauna

24. Establishment of designated marine fauna observation zones (MFOZ) will follow and give effect to the guidelines in the Marine Mammal Management Plan (MMMP) and the Marine Fauna Operational Plan (MFOP).

25. The consent holder shall establish a MFOZ around blasting and rock breaking activities. The aim is to avoid both permanent and temporary hearing injuries from blasting and rock breaking activities.

26. MFOZs will:

(i) have zones estimated and managed separately for each of the four marine fauna groups as specified in Condition 27;

(ii) 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

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

27. The minimum size of MFOZs are provided in the tables below. These MFOZs will be applied until *in situ* underwater noise data is collected to confirm the actual size of MFOZs. 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 increased or decreased in reliance on a report by a suitably qualified and experienced marine mammal expert that certifies adjustments to these zones are appropriate, which is provided to Environment Southland before changes are implemented. The PTS and TTS zones validated during the trail drilling and blasting programme shall apply upon approval from the Compliance Manager, Environment Southland.

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

	Activity	**HF cetaceans** (eg. Hector's dolphins	**MF cetaceans** (e.g. bottlenose dolphins, killer whales	**LF 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	

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

		HF cetaceans (eg. Hector's dolphins	**MF cetaceans** (e.g. bottlenose dolphins, killer whales	**LF 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

28. The consent holder shall engage suitably trained and experienced Marine Fauna Observers (MFOs) who will 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. Ideally, the MFO will maintain a watch of the MFOZ for at least 1 hour after operations have ceased. However, 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.

29. The Consent Holder shall ensure that all Marine Fauna Observers (MFOs) attend and successfully complete an appropriate MFO course. The course will be developed and run by one or more appropriately qualified and experienced marine fauna experts. The course will include the following, but is not limited to:

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

Simon Beale comments are to address my initial questioning – as to why SP would not just use range finders. I am comfortable with them doing training, but the means of compliance (with a reasonable level of accuracy) is not prescribed.

d. marine fauna behaviours

Commented [SB6]: There will be a module in the training course about the accurate measurement of distance by MFOs and using objects at a known distance is one of them. We encourage MFOs to take a range of measurements of objects of known distance throughout the day to practice and that is normally recorded so you have an audit trail about it. Basically, they will mainly used distance to objects of known distance like channel markers (which are estimated in advance from charts, google maps or using a handheld GPS) and for sightings that aren't near any markers, then simple inclinometers and a bunch of maths to figure out your distance. All taught on the course and routinely done by MMOs and MFOs round NZ and Australia.

e. measures to be taken if marine fauna are sighted including an understanding of the requirements of the Marine Mammal Management Plan, Marine Fauna Operational Plan and marine fauna conditions associated with this consent	
f. reporting requirements	
g. health and safety requirements specific to undertaking the observations	
30. In the event that any marine mammal, penguin, seabirds 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(s), penguins, shags or sharks have been observed to move out of the MFOZ or (ii) the marine mammal(s), penguins, seabirds or sharks seen within the zone has not been seen to leave the MFOZ but has not been seen for more than 30 minutes. Sufficient dedicated MFOs will be placed around the activity site to ensure full visual coverage of the PTS zone and to maximise visual coverage of the TTS zone.	
31. The consent holder shall adhere to the standard operating procedures for the MFOZ set out in the Marine Mammal Management Plan and the Marine Fauna Operational Plan during blasting and rock breaking operations.	
32. A marine fauna sighting log to record any marine mammal(s), penguins, seabirds and sharks sighted (date and time), and actions taken, shall be prepared, and maintained. These records shall be provided to the Council's Environmental Compliance Manager and the Department of Conservation at fortnightly intervals ~~and at the conclusion of the project, and upon request~~. A summary report shall be provided at the conclusion of the project.	Agreed to this change, as suggested in the conferencing.
33. 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 commences. This pre-start blast only occurs once the MFOs have assessed that no marine mammals, seabirds and shark species are present within 100 metres of the blast site. The consent holder shall ensure a period of 90 seconds passes before normal blasting commences to enable marine mammals, penguins, seabirds, sharks, benthic fish and highly mobile mollusc species (squid and octopus) to exit the TTS and mortality zone.	
34. The consent holder shall report any mortality or injury to marine mammals, little penguin, seabirds and large fish to the Compliance Manager, Environment Southland and the Department of Conservation within 24 hours of a blasting event.	
35. In the event that the pre-start blast is causing mortality to small marine fish species and is creating a feeding flock of gulls and terns, the consent holder shall revise this deterrence measure or discard completely.	

36. 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, penguins, seabirds, sharks and other fish from the harbour entrance channel and surrounding waters.	
37. The consent holder shall undertake daily inspections to ensure ropes or lines used during the works are kept taut as far as is safely practicable to avoid the potential for marine mammals to become entangled in the lines.	
38. 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 avoid the potential for marine mammal injury or mortality.	
39. 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 2 weeks of the trial drilling and blasting programme. The updated MMMP and MFOP shall be submitted to the Compliance Manager, Environment Southland within 20 working days prior to consented activities commencing. Any other changes or revisions to the MMMP or MFOP shall be certified by the Compliance Manager, Environment Southland as complying with the conditions of consent, prior to any changes being implemented.	HP comment – Suggested changes incorporated. Good.
Little penguin	
40. To compensate for any potential residual 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 to be spent on predator control targeting areas where little penguin nest on Bluff Hill Motupōhue.	HP comment – so this is an offered offset condition, in light of the s.42A report and hearing questions? I assume this is an offset and not a bond, so while it addresses the issue I raise in part, it does not perform the function of a bond.
Biosecurity	
41. The consent holder shall inspect the dredge, barge, tug and split hopper barges for fouling organisms, including *Undaria pinnatifida* and other "exclusion species included in the Southland Regional Pest Management Plan (SRPMP), no more than one week prior to the vessels entering Bluff Harbour.	

42. 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 NZ and Environment Southland.	
43. The consent holder shall provide Council's Environmental Compliance Manager with updated biofouling management plans from the dredge operators prior to commencement of the works.	
44. The consent holder shall use MPI accredited operators to undertake inspections and cleaning of vessels.	
45. An inspection report shall be submitted to Council's Environmental Compliance Manager prior to the dredge equipment entering Bluff Harbour detailing the timing, method, and findings of the inspection.	
46. The consent holder shall monitor the fixed quadrat locations on the seabed within the blast zone (as per Condition 62) at 3 months, 12 months and then annually for up to 3 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 will be reported to Biosecurity NZ and Environment Southland for management purposes.	HP comment – accepted change, as suggested.
47. If the consent holder deploys the dredged vessel directly from overseas than a BMP is required to be prepared and implemented in accordance with conditions 47.3 to 47.7.	
47.1 At least two months prior to arrival of the dredge vessel in New Zealand, the consent holder shall provide a BMP to the Compliance Manager, Environment Southland. A copy of the BMP shall be provided at the same time to Tangata Whenua.	
47.2. The purpose of the BMP shall be to reduce the risk of a biosecurity incursion.	
47.3 The BMP shall include, but not be limited to, the following:	
47.3.1 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);	
47.3.2 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;	

47.3.3 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.	
47.3.4 Findings from any previous inspections;	
47.3.5 A description of the risk mitigation taken prior to arrival in New Zealand, including but not limited to:	
47.3.5.1 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;	
47.3.5.2 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;	
47.3.5.3 Additional risk mitigation planned during transit to New Zealand, including expected procedures for ballast water management;	
47.3.5.4 Expected desiccation period of above-water surfaces on arrival to New Zealand (i.e. period of air exposure since last dredging operations);	
47.3.5.6 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	
47.3.5.7 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.	
47.4. The BMP shall be prepared by a person who is suitably qualified in managing the risk of biosecurity incursions and shall be appointed by the consent holder following consultation with MPI.	
Certification of BMP	
47.5. The BMP shall be certified by the Compliance Manager, Environment Southland ~~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 and the consent holder shall undertake all activities authorised by this consent in accordance with the approved BMP.	
47.6. Any amendment of the BMP shall be certified by the Compliance Manager, Environment Southland 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 amended BMP.	
47.7. A copy of the BMP and all amended BMPs shall be provided to Tangata Whenua immediately following certification.	

Commented [SB7]: Deleted to be consistent with other conditions relating to certification.

Noise Control

48. The consent holder shall ensure that the noise emissions arising from all drilling, rock breaking and dredging work complies with the Project Noise Standards set out in the following table:

Time of Week	Time Period	Noise limits					
		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		

Commented [SB8]: Overlap due to spill over into Saturday morning. See left column.

49. Compliance with the Project Noise Standards including during the trial drilling and blasting programme, is to be measured and assessed 1m 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.	
50. The air overpressure from blasting shall comply with a limit of 120dBC L_{peak} at any property containing a building with windows.	
51. The Project Noise Standards and the noise limits in Condition 48 (blasting) 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.	HP comment – ok, this is understandable now.
52. 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.	
53. 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.	
Vibration Control	
54. The consent holder shall ensure that the peak particle velocity (PPV) as measured by the seimographs as set out in Condition 12(b)(i) shall comply with the German Standard DIN 4150-3 1999.	
Monitoring and Reporting	
55. The methodologies and reporting outputs for the following monitoring outlined in condition 56-62 is attached as Attachment 8. These methodologies shall be adhered to where practicable and any deviations shall be justified within the reports. All reports will be provided to the Compliance Manger, Environment Southland within the timeframes stated for certification.	
Soft Sediment Benthic Monitoring	
56. 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, polycyclic aromatic hydrocarbons, phosphorus, tributyltin, sulphate, and sediment particle size analysis.	HP comment - This had changed from 3 months to one month….why? Also whatever term is determined, what is the frequency of monitoring weekly samples?

Commented [SB9]: Any occupiers of buildings covered under this condition.

Commented [SB10]: All figures in Attachment 8 concerning mātaitai and disposal areas have been updated

• Harbour site (Easting 1242608.13; Northing 4831600.78);	
• Motupōhue mātaitai 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 Council's Environmental Compliance Manager within three months of completion of analysis of the sediment samples as outlined in Attachment 8.	
Seagrass Monitoring	
57. 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 particle size analysis, sediment chemistry analysis, 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 Compliance Manager, Environment Southland within three months of completion of the post sediment dredging assessment as outlined in Attachment 8.	HP comment – can't this methodology be a condition of consent be provided now? Potentially, three months after completion, no change to the method can be made after the event.
Rocky Reef Benthic Monitoring	
Rock Disposal Site	
58. 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	

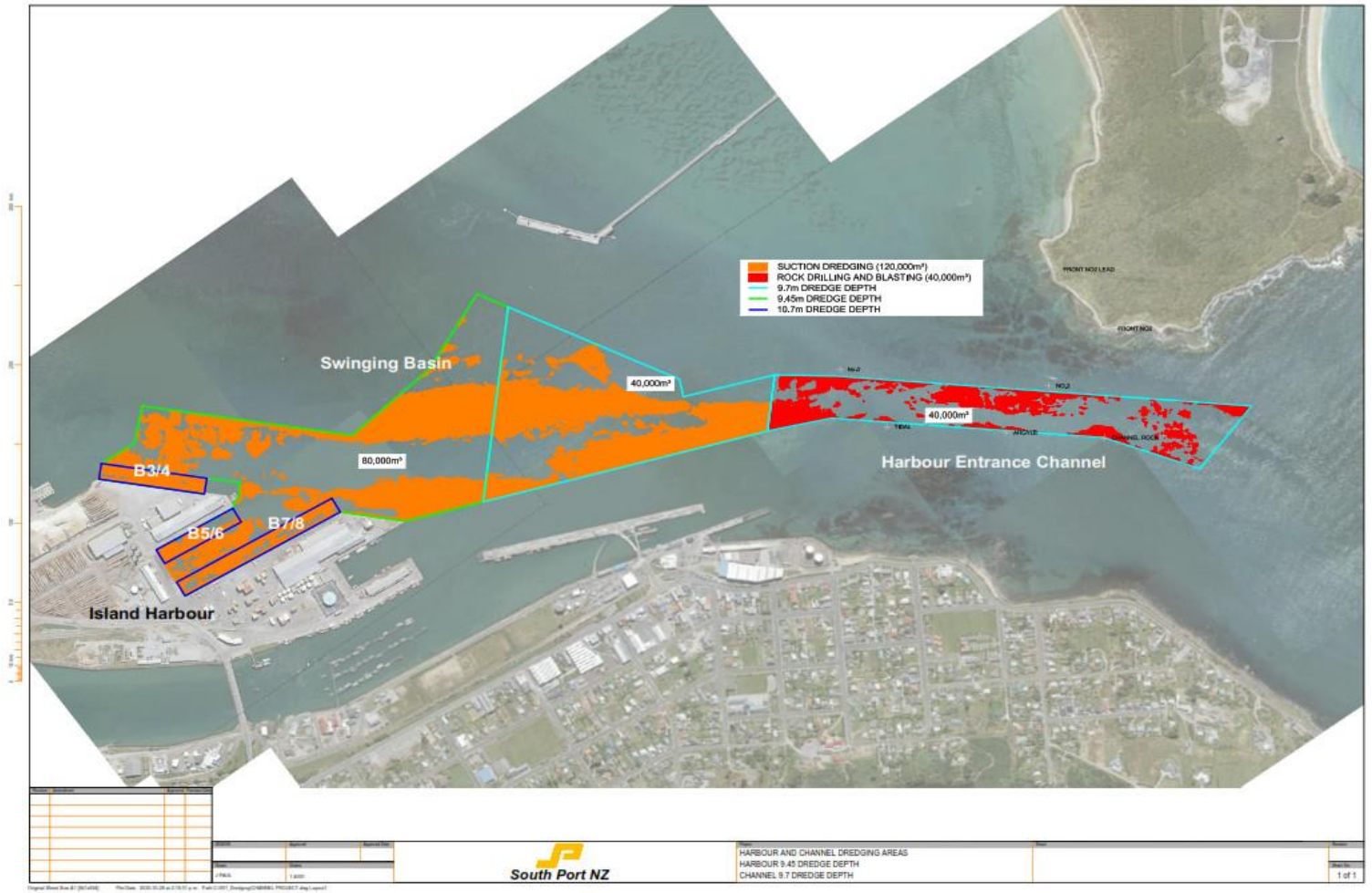
assessments shall also be completed. Monitoring shall be undertaken at 3 months, 12 months, 36 months and 60 months following completion of the works.	
59. A report detailing the methodologies and findings of the rock disposal site monitoring shall be provided to the Compliance Manager, Environment Southland within three months following each survey, with the exception of the initial 3 month survey results which will be included in the 12 month survey report as outlined in Attachment 8.	
Motupōhue Mātaitai Monitoring	
60. The consent holder will undertake an Ecological Impact Assessment within the Motupōhue mātaitai. This assessment will include monitoring of paua beds and rocky reef habitat within the mātaitai with a baseline, during sediment dredging and post-sediment dredging assessments.	HP comment - To be specific as the mātaitai is a vast area, doing this monitoring at the north eastern extent of the mātaitai is important. Or, is this assessment for the wider Maitaitai health for another relationship driver.
A report detailing the methodologies and findings of the Motupōhue mātaitai rocky reef monitoring shall be provided to the Compliance Manager, Environment Southland and Te Rūnanga o Awarua within three months of completion of the post sediment dredging assessment as outlined in Attachment 8.	Original HP Comment – the report coming three months after the completion is pointless, if ES disagreed with the method of the EIA. This requires a new condition outlinging the requirement for the mtethod, and ES technical Certification, then the execution of the EIA and associated reportings.
Bluff Harbour Entrance Channel	
61. 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 will be taken of the site and assessed for changes in biomass and species assemblages. Monitoring shall be undertaken within 6 months prior to the works to establish a baseline, then at 3 months, 12 months and 36 months.	
Please note: rocky reef habitats do not exhibit seasonal variability.	
62. A report detailing the methodologies and findings of the Bluff Harbour Entrance Channel monitoring shall be provided to the Compliance Manager, Environment Southland within three months following each	

survey, with the exception of the initial 3 month survey results which will be included in the 12 month survey report, as outlined in Attachment 8.	
Advice note: The removal of epifauna within the blasting zone is currently permitted under the deemed coastal permit. Conditions 61 and 62 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.	Original HP Comment - - Don't you mean it is "authorised" through the Deemed Coastal Permit, rather than "permitted". Is this advice note necessary, because in the event that the findings were adverse effects, ES might be able to do something about it, or consider how the effects played out in comparison to the way they were assessed in this consent. Also, this could be be another reason why bonding South Port is not unreasonable, if the findings were different to that assessed. Then the bond can be used to rectify through translocation or epifauna and/or algal cover.
Public Notification	
63. 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.	

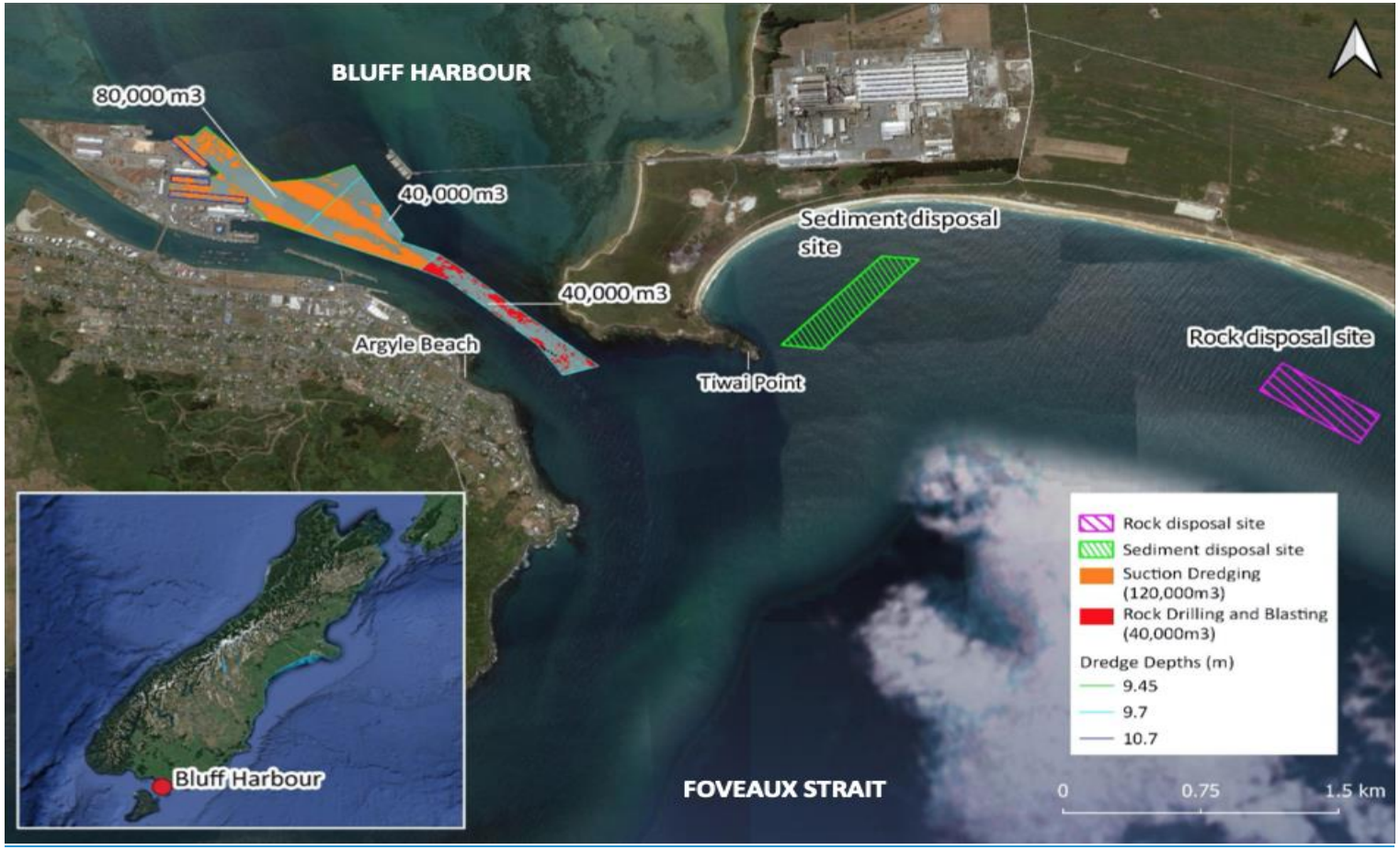
64. The consent holder shall provide 24-hour advance notice to the owners and occupiers of properties on 116 - 262 Marine Parade and 2-12 Gore Street as shown on the plan at Attachment 9 as to when night-time dredging works is likely to occur. The communication should be designed to let the owners know 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.	
65. 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 channel deepening works. The objectives of the plan are to ensure timely and effective response to noise complaints and to achieve appropriate resolutions.	ES original comment has not been addressed – that this condition should include that the annual report is submitted to the Compliance Manager, rather than just "on request".
The plan shall set out:	
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 channel deepening works and shall be provided to the Compliance Manager, Environment Southland on request.	

An aggregated summary of the complaints shall be incorporated into an annual monitoring report.	
Lapse Date	
66. The lapse date for the purposes of section 125 shall be 31 December 2031	

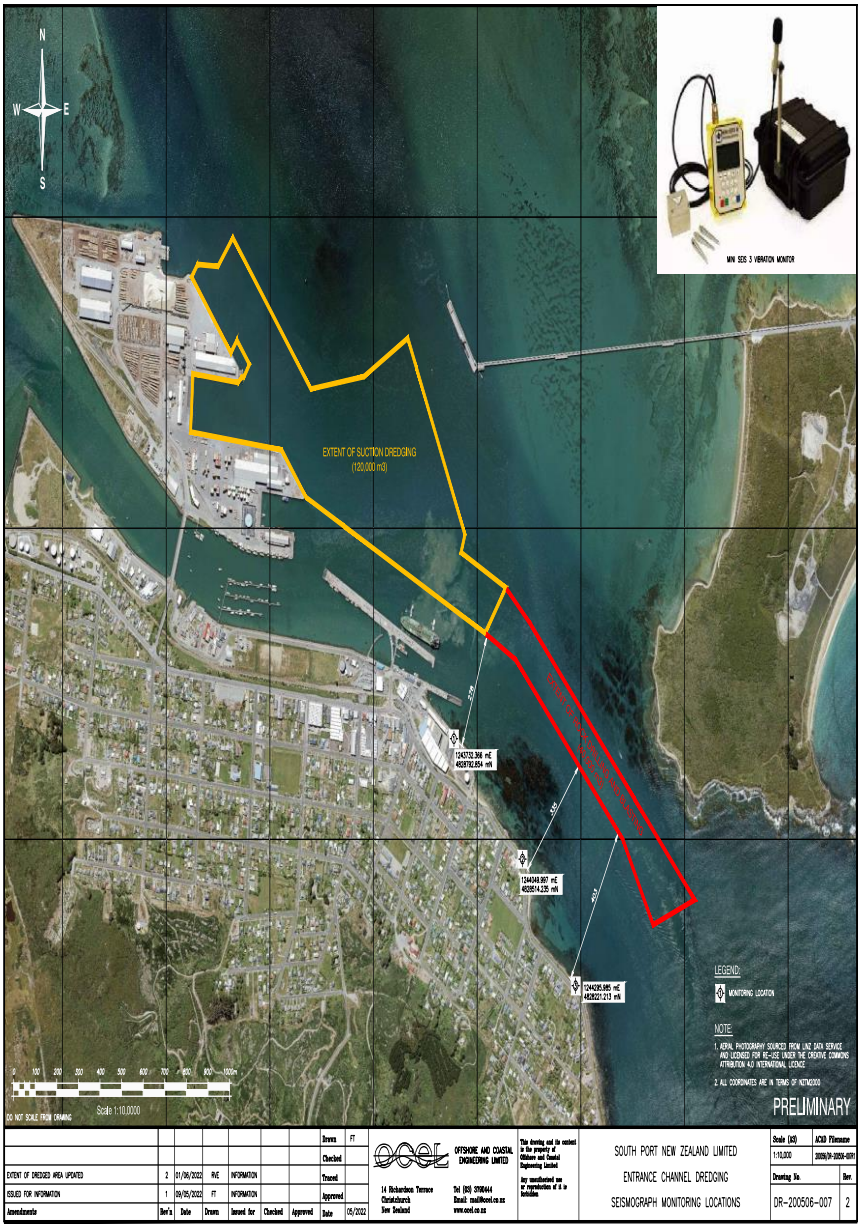
Attachment 1: Harbour and Channel Dredging Areas.



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



Attachment 3: Seismograph monitoring locations.

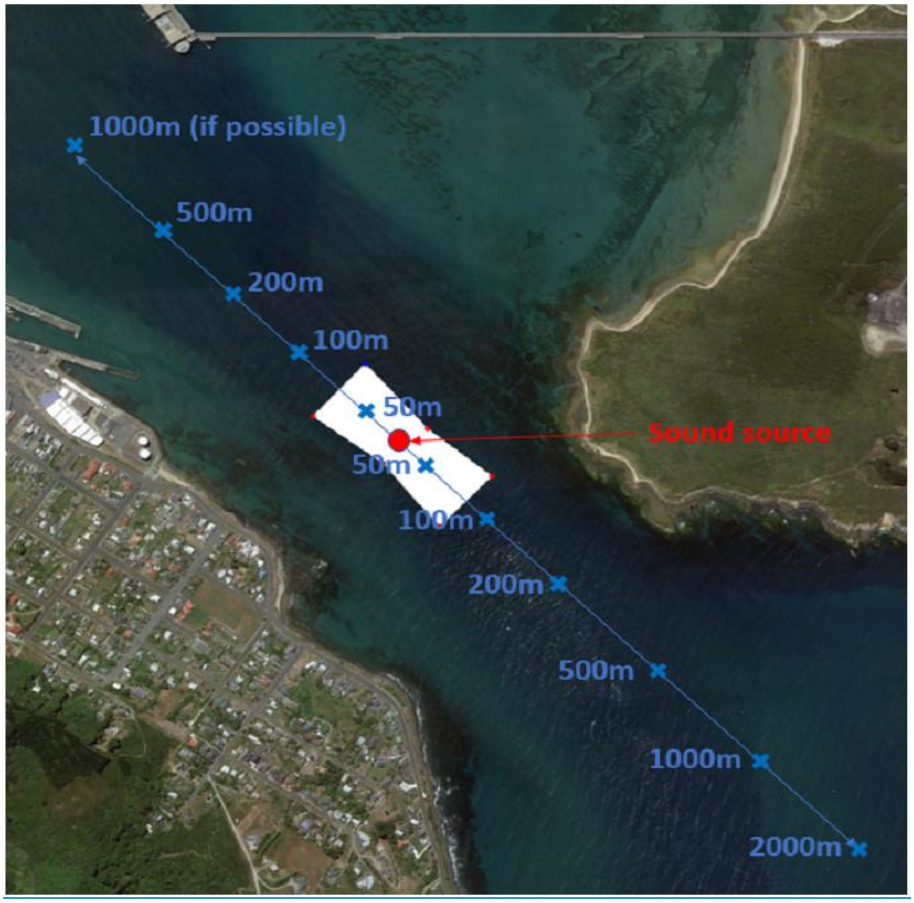


Attachment 4: Hydrophone monitoring locations.

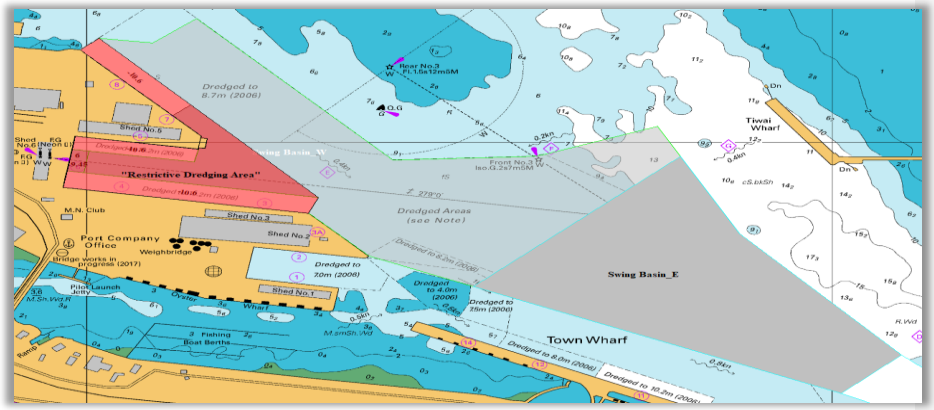
Table 1: Coordinates for polygon points

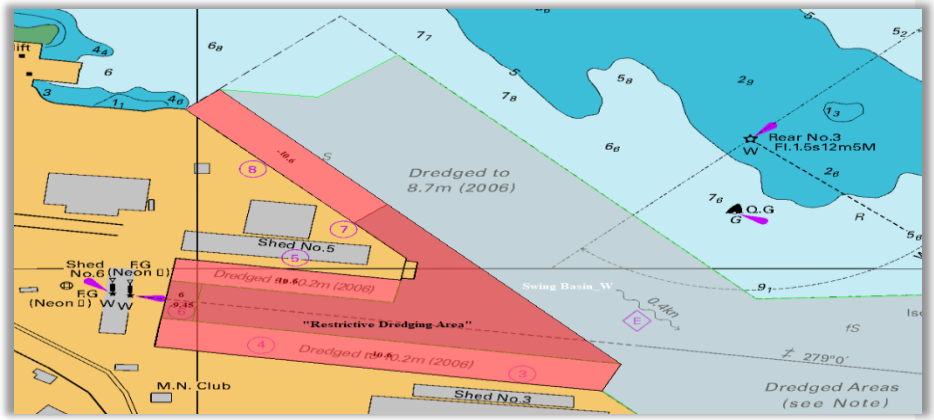
Location	WGS 1984 Lat	WGS 1984 Lon
L1	-46.598761	168.354677
L2	-46.600061	168.356340
L3	-46.601006	168.358013
L4	-46.601959	168.356598
L5	-46.600758	168.355143
L6	-46.599799	168.353299

	New Zealand Traverse Mercator Northing	New Zealand Traverse Mercator 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

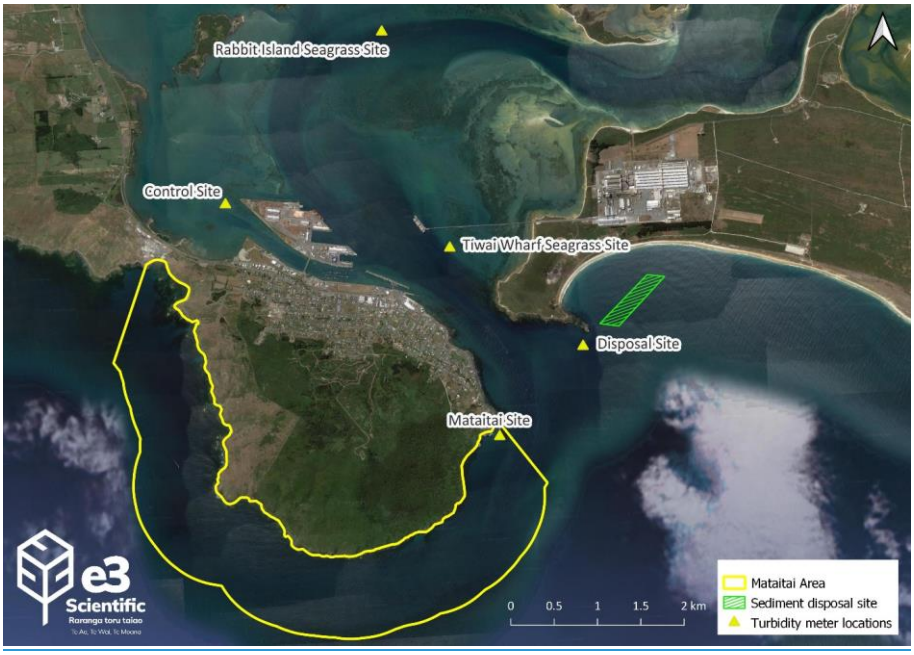


Attachment 5: Silt Areas.





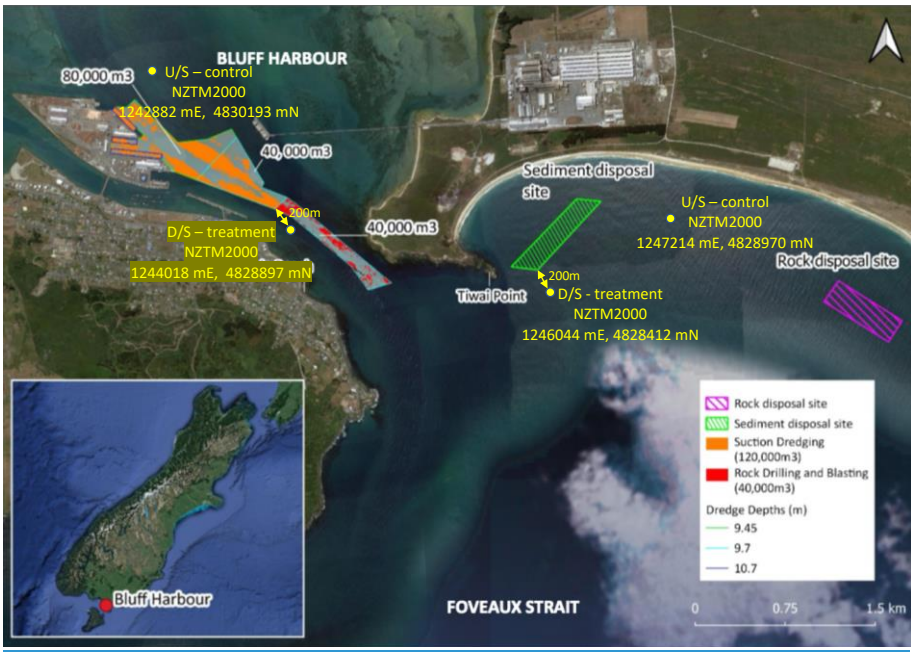
Attachment 6: Turbidity logger locations.



Footnote:

Logger Location		Rationale
Seagrass Sites *Please note: turbidity loggers are located at closest edge of seagrass bed to dredge operation.*	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 *Please note: turbidity loggers near rocky reef sites should be placed outside of surf zone for safety purposes.*	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.
	Matāitai site	To monitor turbidity from dredge disposal at rocky reef site within the Mōtupohue mātaitai 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, polycyclic aromatic hydrocarbons, phosphorus, tributyltin, sulphate and sediment particle size analysis:

- Harbour site (Easting 1242608.13; Northing 4831600.78);
- Motupōhue mātaitai 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 cm of sediment shall be collected within a 10 m^2 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 3 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, 9 and 1 months prior to the sediment dredging commencing to capture seasonal variability. Seagrass monitoring will occur once during the sediment dredging operation, and post-works monitoring will be completed within one month of the sediment dredging completion. A report detailing the methodology, results and findings of the seagrass assessments will be provided to the Compliance Manager, Environment Southland within three months of the final post-works assessment.

Two seagrass beds will 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 will be set up with a 1 m^2 quadrat every 10 m, starting from 0 m (i.e. 3 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 quadrats will be photographed, assessed for seagrass percentage cover, and a core sample will 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 will also be collected at each site during the assessment. Sediment samples of the surface 2 cm will be collected within each quadrat and composited to form a single sample for each transect. This sediment sample will be analysed for particle size and heavy metal to ascertain any changes which may be attributable to dredging activity.

Analysis of the data will 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 will 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 will 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. 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 will 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 within the Motupōhue mātaitai and at each site, 30 m transects will be swum at 3 m and 5 m depth bands. Along each transect five 0.25 m^2 photoquadrats will 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 (%) will be recorded within each quadrat allowing for calculation of abundance, diversity, and richness metrics. Principal component analysis will 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 will also be recorded within each quadrat. A single composite sediment sample will 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) (based on baseline

[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.

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

Sampling will occur within three months prior to the sediment dredging commencing, once during the sediment dredging activity, and a follow-up monitoring will occur within one month of the sediment dredging completion. A report detailing the methodology, results and findings will be provided to the consenting authority within 3 months of the final monitoring.

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 will bisect the site from a fixed point (buoy) on an underwater directional bearing to enable replication. Five 1 m quadrats will 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 will also be taken for each 30 m transect. Epifauna and dominant macroalgae will be recorded within each quadrat allowing for calculation of abundance, diversity, and richness metrics. Principal component analysis will 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 will be provided to the consenting authority within three months following each survey, with the exception of the initial 3 month survey results which will 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 will 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 3 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 will 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 will receive advance notice of night time dredging works.