

South Port Responses to s 92 Requests

No.	Item of request	Response	Section updates in AEE & Tech reports
1	<p>Can you please provide the rationale and scenarios which justify the 10 year term of consent sought? Section 1.4 of the application outlines that this term is to “cover any eventualities that arise beyond the control of South Port that could lead to a delay in the project,” and to “provide a margin of safety to the project in the event that circumstances arise beyond South Port’s control that would require the project to be deferred for a period of time.” We would appreciate if you could provide what scenarios could (hypothetically) occur where a 10-year term might be necessary to give effect to 8 months of programmed works. This information is necessary for our consideration of an appropriate term of consent.</p>	<p>The scenarios that could significantly delay the project are:</p> <ul style="list-style-type: none"> • Contractor availability (longer lead in times for specialist contractors) • Significant downturn in global commodities • Global pandemic • If MSC (Mediterranean Shipping Company) left South Port <p>We are motivated to complete the capital dredging programme within a one 8-month period however we need a contingency to be able to return the following year if the works is delayed for any reason. South Port therefore requests a 24month period to complete the capital dredging project once commenced to accommodate shipping delays, weather delays, restrictive consent conditions, environmental conditions, breakdowns and other unforeseen circumstances.</p> <p>We request a 10-year consent to provide flexibility. It allows us to postpone the work for 8 years if economic conditions don’t suit. It will then allow us to do the capital dredging in year 9 and 10.</p> <p>When the contractor establishes; we trigger the 24-month deadline to complete dredging.</p>	<p>Exec Summary and Section 1.4, AEE.</p>

		(Please note under current maintenance consent we can undertake maintenance dredging at any time).	
2	In relation to question 1, please provide an updated risk matrix (Table 5-3) that includes the programme as a risk item, and assess what risk profile you consider the programming of the works to be. This information will help us evaluate the practicable reality of the term of consent.	See attached risk matrix. This indicates that the programme is a low risk item given the allowance provided for delays caused by weather and shipping movements, etc. Additionally, the programme includes a mobilisation period pre-Christmas to ensure a start up date for drilling, rock breaking, blasting and dredging of 1 February and ending 30 September.	Figure 2-9, AEE. Table 5-3, AEE.
3	Please advise if consent is being sought for a one off event of dredging, rock breaking, drilling, blasting and deposition over 8 months, or if you envisage that there will be multiple campaigns (repeats) of these works. This information is requested because while the programme depicts 7 months for all the works, the application could be also construed to be intermittent works, potentially over 10 years.	Consent is being sought for a one-off event, spanning 8 months. This may extend over two years if the works are delayed for the reasons stated above. There will be no multiple capital dredging campaigns.	Exec Summary and Section 1.4, AEE. Section 3.3, Marine Env. Effects Assess. Section 1.1, MM Effects Assess. Addendum 2, Bird Survey report.
4	Figure 2-9 illustrates Project Programme work from mid February to mid September (7 months), yet 8 months or 6-8 months is described elsewhere in the application, which includes 5.5 months for drilling and blasting works. Also, Page 9 of application document states that rock removal will be a 3 step process including 46 days of blasting over a 5 month timeline. Can you please confirm that works, if it is a one off event, can be managed to 7 months (or the specified number of months), and to revise Figure 2-9 to include the rock breaking works. If your programme differs from some of the inconsistencies, please clarify what the programme of works is in light of your answers to questions 1 and 2 (above). Further to this, potentially the rock breaking could be aligned with the	<p>We acknowledge the confusion caused by this inconsistency and will amend the application to be more specific.</p> <p>The programme as attached has been amended. This shows that the drilling, rock breaking, blasting and dredging project programme, including trail drilling and blasting commences at the beginning of February and finishing at the end of September, spanning a 8 month period. This timeframe includes some allowance for delays caused by weather and shipping movements.</p> <p>Please note that rock breaking will occur in tandem with the drilling and blasting phase of the project.</p>	Exec Summary and Section 1.4, AEE. Figure 2-9, AEE. Section 3.3, Marine Env. Effects Assess. Section 1.1, MM Effects Assess. Addendum 2, Bird Survey report.

	drilling and blasting programme, which may simply require that clarification. This information is sought for clarity.		
5	Please clarify the proposed timing of the works. The marine ecology assessment of effects report states that little blue penguin breeding occurs from September to March and that seagrass flowering occurs from December to March, however, Condition 7 allows drilling, blasting dredging and deposition to occur from 1 March to 31 October annually.	Drilling, rock breaking and blasting will occur between 1 February and 30 September, as shown on the attached revised programme chart.	Exec Summary and Section 1.4, AEE. Figure 2-9, AEE. Section 3.3, Marine Env. Effects Assess. Section 1.1, MM Effects Assess. Addendum 2, Bird Survey report.
6	Condition 9 restricts drilling and blasting and soft sediment dredging activities to daylight hours from 7:30am to 6 pm in order to avoid the dawn and dusk periods where many marine organisms are most active. This timing, however, over the autumn, winter and early spring periods would potentially allow drilling, blasting and dredging activities to occur during the dawn and dusk periods due to the reduced daylight hours. Please clarify that drilling, blasting and rock breaking activity will be restricted to daylight hours that avoid the dawn and dusk periods by using timing related to sunrise and sunset, e.g. from one hour after sunrise until one hour before sunset.	Drilling, rock breaking, blasting and dredging will take place between the hours of 7.30 am to 6 pm during the period 1 February to 30 September. This timeframe attempts to reduce the effects on marine species during periods where they are more active (i.e. autumn and spring) without compromising the ability of the activity to be completed within the proposed timeframe. The assessed effects of this timeframe on birds is provided in our response to Q 45.	Exec Summary and Section 1.4, AEE. Figure 2-9, AEE. Section 3.3, Marine Env. Effects Assess. Section 1.1, MM Effects Assess. Addendum 2, Bird Survey report.
7	In association with question 4 (above), the marine considerations on project programme indicate 5.5 months for drilling and blasting, and Appendix 8 references 6-8 months. Can you advise that Appendix 8 marine mammal assessment is based on one-off event of works, rather than intermittent works over a longer period, or in campaigns over the course of 10 years. If the assessment is not restricted to the 6-8 months of works, we would like to understand the	We can confirm that the marine mammal assessment (Appendix 8) is based on a one-off 8 month drilling, blasting and dredging programme, commencing 1 February and finishing 30 September.	Section 4, MM Effects Assessment.

	longer term effects on marine mammals. I am requesting this information because it is not clear if the assessment considers the potential to exercise the consents on multiple occasions over 10 years.		
8	Deemed Coastal Permit. s.384A(2) RMA sets an expiry of exercising the Deemed Coastal Permit on 30 September 2026. Can you please advise that you will not have any need to exercise the Deemed Coastal Permit after 30 September 2026, in the event that you are granted consent beyond 2026. The reason this information is sought, is to understand what additional consents you might need if you can no longer rely on the deemed coastal permit.	Dredging in reliance on the deemed coastal permit would occur and be concluded prior to its expiry of September 2026. South Port is seeking a term of 10 years as discussed above. Assuming consent is granted for this period, South Port can rely on this consent to undertake dredging of the channel if this was to occur beyond the expiry date of the deemed coastal permit of September 2026.	Exec Summary and Section 1.1, AEE.
9	The maximum volume of 120,000 m3 of sediment and 40,000 m3 of rock is proposed to be dredged from the harbour and deposited offshore from Tiwai Peninsula. Is this maximum volume over the 10 years or for the 7 (or 8) months. Or, is this the maximum for any campaign of dredging?	These are the maximum volumes for the one-off capital dredging campaign that will span one year or possibly two years as noted above. These volumes exceed the permitted maintenance dredging volumes.	Section 1.4, AEE.
	Ecological Effects		
10	In section 5.4.6 of the application; states that disposal of rock on a sandy seabed will create stable rocky reef habitat which will be colonized by algae, will become a nursery area for fish and other marine organisms and will be an ecological benefit to the location over the existing habitat. Can you please provide evidence to support the assertion and show that such ecological benefit is likely to accrue as a result of rock deposition, e.g. documented studies that show ecological benefit as a result of the placement of rocky reef structures in similar sandy seabed environments?	Reference to ecological benefit deleted.	Section 5.4.6, AEE.

	Noise Effects		
11	<p>With reference to the noise Assessments, through AEE and Styles Reports (Appendices 24 and 25). Additional to this information in the application please provide an assessment of s.16 RMA (duty to avoid unreasonable noise). Section 16 seeks that the applicant <i>shall adopt the best practicable option to ensure that the emission of noise from that land or water does not exceed a reasonable level.</i> Please clarify if this assessment is in the application, and if not, to provide an assessment, such as to what noise effects could be inferred on aquatic, bird and human life. What could be referred from this on aquatic life and human life? And, what measures are proposed to minimize noise effects of drilling, rock breaking and blasting?</p>	<p>The Styles Group report addresses this request in considerable detail. Styles Group have worked with the project team to design the works, refine the methods, timings and mitigation measures to minimise the noise effects are far as practicable. Styles Group considers that the methodology described in the application represents the best practicable option (BPO) as defined in s2 and required by 16 of the Resource Management Act insofar as acoustics is concerned.</p> <p>The measures proposed to minimise the noise effects arising from the project works are set out in detail in the Styles Group report.</p> <p>The final paragraph of the Styles Group report (p38) states that: <i>“We consider that the project noise levels will be reasonable, taking into account the duration of the project, the range of noise mitigation and management measures proposed by the applicant, and the predicted noise levels at the receivers.”</i></p> <p>This conclusion relates specifically to ‘reasonable noise’ as required by s16 of the RMA, and insofar as acoustics is concerned.</p>	<p>Airborne acoustic assessment: Executive summary, Sections 12.3.4 Indoor noise effects, 12.4 Bluff Campground, 14.1 Mitigation Options and Conclusion.</p>
12	<p>With reference noise Assessments - Styles Report (Appendix 24 and 15). It appears there is a reliance on construction noise in accordance with NZS 6803, but there does not appear to be an assessment under s.326 (326 Meaning of excessive noise). Please provide an assessment under s.326 RMA, and how</p>	<p>The provisions of s326, 327 and 328 of the RMA are not relevant to the management of effects for a project of this nature. Mr Styles has significant experience in advising on large construction projects, as well as assisting Councils to carry out their functions under the excessive noise provisions in sections 326 to 328. These</p>	<p>Airborne acoustic assessment: Executive summary, Sections 12.3.4 Indoor noise effects, 12.4 Bluff Campground, 14.1 Mitigation Options and Conclusion.</p>

	<p>South Port would respond to complaints about “excessive noise”.</p>	<p>provisions are known as the ‘party noise’ provisions. Mr Styles is not aware of any project of this nature where these sections of the Act are mentioned or referred to. Large projects have resource consents or designations in place with conditions specifying noise limits, noise management plans and communication with the complainant and any other affected receivers. These are the appropriate devices for managing noise levels and complaints.</p> <p>The consent holder is proposing to respond to complaints about noise from the project. The response will be dealt with by the procedures and noise limits set out in the draft volunteered resource consent conditions. The Council would respond in the same way if it was required to. These conditions propose clear procedures and noise limits that must be met.</p> <p>This approach is strongly preferred over the relatively ill-defined procedures and assessments required by sections 326 to 328 of the RMA.</p>	
13	<p>Appendix 1 provides the proposed conditions of consent, including conditions 34-37 which sets noise levels limits, at residential and rural receivers. Can you clarify if you mean residential and rural zones? Also, can you outline why the Business 2 zone has been omitted, or if that is to be included what the likely effects are also on that Business 2 zone? Additional to conditions 34-37, we note there is no noise limits set as conditions between 6pm and 8pm, and between 6.30am and 7.30am which we would like to understand what the likely effects are during those hours omitted in the conditions 34-35? Can you please</p>	<p>This question has three components:</p> <p>Residential and Rural receivers</p> <p>Where the Styles Group report mentions residential and rural ‘receivers’, it is referring to the individual buildings and activities within those zones. It is best practice to refer to ‘receivers’ rather than zones, as there may not be any receiver of noise at the edge of the zone boundary. NZS6803:1999 is clear that the effects are only to be assessed at buildings that are occupied when the works are underway. If a building is not occupied, there is no noise limit to comply with.</p>	<p>Airborne acoustic assessment: Executive summary, Sections 12.3.4 Indoor noise effects, 12.4 Bluff Campground, 14.1 Mitigation Options and Conclusion.</p>

<p>provide answers to assist our evaluation of the effects and your answers will provide clarity as to what is intended by the current proposed conditions.</p>	<p>The Styles Group report deliberately refers to receivers rather than zones for the reasons set out above.</p> <p>Business 2 Effects on Business 2 receivers are addressed in Section 5.2.3 of our Assessment. The Business 2 receivers are located inside the OCB (refer Figure 4 of the Styles Group report). Section 5.2.3 of the Styles Group report states: <i>“We recommend that the project noise levels comply with the recommended upper limits for long term construction noise set out in Table 2 of NZS 6803:1999 for noise received by industrial and business receivers.”</i></p> <p>The proposed project noise standards for receivers inside the OCB are set out in Section 6.1.1 of the Styles Group report. This states: <i>“We recommend that the guideline limits for long term construction noise set out in Tables 1 (residential) and 2 (commercial) of NZS 6803 form the project noise standards for all works affecting receivers inside the OCB. The noise level predictions we have undertaken demonstrate that compliance with these noise limits is readily achievable”</i></p> <p>The effects on the receivers in the Business 2 zone are no greater than what is provided for and anticipated by the permitted construction noise provisions in the Plan. The noise effects from the project will be very similar to the operational noise levels permitted by the port noise controls in R11 of the District Plan.</p>	
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14	<p>On page 942 (Noise Level Predictions) we would like some clarification; Will this rock breaker operate for 12 hours per day? Or, what specified hours? This clarification is sought because, it can only be assumed that Styles Group has modelled this noise attenuation from rock breaking, noting the noise level predictions are greatest of 58 dB LAeq at any residential receiver.</p>	<p>The noise level predictions in the Styles Group report are based on the continuous operation of the rock breaker over an assessment period of 15 to 60 minutes in accordance with NZS6803:1999. In other words, the noise level predictions are based on 100% of the time for the rock breaker operating.</p>	<p>Airborne acoustic assessment: Executive summary, Sections 12.3.4 Indoor noise effects, 12.4 Bluff Campground, 14.1 Mitigation Options and Conclusion.</p>
15	<p>On page 671 (Appendix 12 - Airborne Noise Assessment); we would like some clarification or justification about what noise is generated from the backhoe operations. Why, or what justification does Styles Group have given they have decided to deviate further from the NZS 6803 Standards that the night-time noise limit for harbour channel dredging works is proposed to be increased by 5dB, from 45dB LAeq to 50dB LAeq?</p>	<p>This request appears to comprise two questions. The Styles Group report addresses both components of the request.</p> <p>The noise level predictions for backhoe dredging activities are set out in Section 10 of the Styles Group report. Noise level predictions are provided taking into account a variety of meteorological conditions. The predictions demonstrate that:</p> <p><i>“Noise levels will always be less than 45dB LAeq when meteorological conditions impede propagation towards Bluff. These noise levels may be experienced on at least 41% of the nights dredging may take place.</i></p> <p><i>When meteorological conditions assist propagation towards Bluff, 23 dwellings will</i></p>	<p>Airborne acoustic assessment: Executive summary, Sections 12.3.4 Indoor noise effects, 12.4 Bluff Campground, 14.1 Mitigation Options and Conclusion.</p>

receive noise levels between 46dB L_{Aeq} and 50dB L_{Aeq} for various dredging positions. All other dwellings will experience noise levels no greater than 45dB L_{Aeq} . These noise levels may be experienced no more than approximately 59% of the total number of nights that dredging may take place.”

Section 12.3 of the Styles Group report provides a detailed assessment of the effects of adopting a night-time Project Noise Standard that is 5dB higher than the recommended noise limits in NZS 6803 (i.e. 50 dB L_{Aeq}). As the night-time noise levels will be experienced when they are indoors, the focus of our assessment is the noise levels that will be experienced by the Bluff receivers inside their dwellings, including potential sleep disturbance effects.

Our Assessment sets out that if the dwellings are exposed to noise levels of up to 50 dB L_{Aeq} then:

- The noise levels inside the homes will be approximately 35 dB L_{Aeq} if the occupants’ windows are slightly open,
- The noise levels inside the homes will be approximately 20- 25 dB L_{Aeq} if the occupants’ windows are closed.

Section 12.3.1 of the Styles Group notes that “a level of 35dB L_{Aeq} is commonly regarded as providing an adequate level of amenity for bedrooms overnight. Many District Plans specify 35dB L_{Aeq} as a noise limit for inside bedrooms where dwellings are located in noisy

		<i>areas, such as in town centres, mixed use zones, next to roads, airports, ports or other noisy infrastructure”.</i>	
	Proposed Conditions of Consent		
16	Condition 38 sets a three month reporting period on the Soft Sediment Benthic Monitoring condition, which requires some rewording of the condition to make it clear it is sampling, sending to labs and then reporting. Please provide additional information so that we can evaluate why three months is appropriate for the sampling after the works is complete, because to understand the actual and potential effects of heavy metals, polycyclic aromatic hydrocarbons, phosphorus, tributyltin, sulphate, and sediment particle size, it would be prudent to monitor much more quickly after the dredging and then a stipulated period when the seabed has settled (i.e., when effects are stabilised to more of a natural environment).	<p>“Sediment should be sampled at the Harbour Control Site within 3 months of dredging completion and tested for sediment chemistry and particle size analysis. Results should be compared to historic results compiled in Appendix C.” – Marine Assessment of Effects (Miller & Davis, 2021).</p> <p>The condition proposed that the sampling and reporting will be completed <u>within 3 months</u>. This is a reasonable timeframe for sampling, laboratory analysis and reporting to occur within given that the laboratory testing can take between 10 days and 3 weeks (for particle size and TOC) and in general a report takes between 3-4 weeks to turn around. Further to this, given the location of the site, weather, tides and the ongoing capital dredging works will have a significant impact on when the field sampling can be completed therefore to further restrict this component may create inadvertent non-compliance.</p>	No amendments required.
17	Condition 43 (Appendix 1) is an ultra vires condition, as it relies on a third party. Please remove this condition, or if it is volunteered then state this, and it could only be assumed that Te Rūnanga o Awarua will need to submit in the notified process outlining what they wish to achieve from condition 43. Furthermore, that condition is restricted to <i>within the proposed site during dredging and a post-dredging assessment</i> , but that may not report on the wider impact on	<p>It is a volunteered condition of consent. This condition aligns with the CIA requirements that Te Rūnanga o Awarua have involvement with the proposed methodology and site selection. See point 16 above regarding the proposed 3 months timeframe for the sampling and reporting to be completed within.</p> <p>The rūnanga are kaitiaki for the mātatitai and have mahinga kai locations that are of special importance to</p>	No amendments required.

	<p>Motupōhue Mātaitai. Can you provide an assessment as to why three months is appropriate as the final assessment of the impacts, when we need to assess the actual and potential effects, including those within three months of the works. Can you please remove or revise condition 43, and provide a supporting assessment to what the effects are in the absence of a condition that gives certainty to measure compliance by Environment Southland.</p>	<p>locals and iwi, therefore it is appropriate that they are included within the methodology process and site selection. This monitoring is to validate the predicted low likelihood of any adverse effects and provide assurance to kaitiaki of this location that their mahinga kai will not be adversely affected by the short duration of the proposed soft sediment dredging. It is also important to liaise with the local kaitiaki as a temporary rāhui on the assessment location may be required to reduce error in the assessment caused by recreational harvesting of pāua.</p>	
18	<p>Further to the questions under point 16 and 17 (above), please advise why you have not recommended monitoring during the works, as this is when actual impacts occur? In relation to this question and also in the case of condition 43, it would be beneficial for us to understand what you consider as “health status monitoring” over time from when the works commence to a specified period after works cease. We would like to know what it is that South Port are proposing to measure or how it might be of benefit to managing the actual and potential effects of the proposed works?</p>	<p>Monitoring is recommended during the works, as you have quoted in Point 17. Monitoring of the soft sediment in the inner harbour will be captured within the seagrass monitoring which includes soft sediment sampling.</p> <p>Health status monitoring is assessing the health of the biota in question such as for seagrass this can be assessed via blade length and above ground biomass. Health status monitoring of pāua beds refers to the cultural health index (CHI) alongside ecological indicators of rocky reef species health such presence of sensitive filter feeders. More detail is provided in Point 27 below.</p>	<p>No amendments required.</p>
19	<p>Condition 45 (Appendix 1). Please advise why you have omitted occupiers of properties, and why notification shall only occur “<i>predominately on Marine Parade</i>”. Acoustic modelling may prove that noise lifts and owners or occupiers could be effected by noise levels beyond Marine Parade. This information</p>	<p>Acoustic modelling by Styles Group shows that noise levels generated by the dredge will slightly exceed the NZS 6803 nighttime standard of 45 dB L_{Aeq} under certain meteorological conditions, at certain residences along Marine Parade.</p>	<p>Proposed condition 45 amended.</p>

	<p>is required for us to evaluate the noise effects on all potential receiving environments.</p>	<p>Proposed Condition 34 also limits the noise emissions at the most exposed dwellings along Marine Parade to no more than 50dB LAeq at night time. The proposed conditions do not therefore allow for a situation where <i>“Acoustic modelling may prove that noise lifts and owners or occupiers could be effected by noise levels beyond Marine Parade”</i>.</p> <p>The acoustic modelling carried out by Styles Group clearly shows that residences beyond these properties will be subject to noise levels less than the NZS 6803 1999 nighttime noise standard.</p> <p>Please also refer to the response provided by the Styles Group to Q15.</p>	
20	<p>In respect to Condition 12 (Appendix 1) which states “The Final placement of the turbidity meters shall be subject to consultation and confirmation from Te Runanga o Awarua. Condition 12 is ultra vires (reliant on a third party), and it should be ES that determine where the turbidity meters should be placed. Should South Port chose to also have additional turbidity metres placed to satisfy Runanga, then that could be done as a side agreement. However, in stating that we would appreciate your advice on where you propose to install turbidity meters in your response to this s.92 letter.</p>	<p>Condition 12 has been volunteered as a condition of consent by South Port.</p> <p>The proposed placement of the turbidity meters is stated in Condition 12. However, it is also stated that final placement will be in consultation with Te Rūnanga o Awarua as one of the proposed locations sits within the mātaītai and it would be appropriate to ensure we have it located in a sensitive mahinga kai area or in an area where local iwi have historic data.</p>	<p>No amendments required.</p>
21	<p>In respect to Condition 14 (Appendix 1); How long after the blasting will marine mammal observation be in place? 60min before and how long afterwards? After the blasting some marine mammals may be</p>	<p>The Marine Mammal Management Plan (Section 3.1.1; p. 13) states: <i>“Post-blast observations – The Marine Mammal Observer(s) should maintain a watch of the MMOZ (and beyond) for at least 1 hour after blasting</i></p>	<p>No amendments required.</p>

	<p>“drawn into the zone” or attracted to the zone due to the noise, and we would like to know how those marine mammal effects will be mitigated.</p>	<p><i>activity has ceased (or as long as daylight allows). In particular, observers are looking for any indication of marine mammal presence in the wider vicinity to evaluate the duration of effect that blasting activities might be having on species or any direct impact”.</i></p>	
22	<p>In respect to Condition 17 (Appendix 1), Condition 17 Recording marine mammal sightings (date and time) without a reference of the blasting and GPS of the marine mammal. How will that information be collected, and how do you propose Environment Southland to evaluate the effectiveness of marine monitoring in the absence of GPS or other references?</p>	<p>A couple of different methods will be used by the Marine Mammal Observers (MMO) to estimate distance to a marine mammal sighting and therefore its location in the absence of GPS data. The main method will be using reticule binoculars and inclinometers. These allow the MMO to accurately measure the distance to a sighting from the centre of the blast by taking a compass bearing and vertical angle from a location of known height (i.e., observation platform) and knowing the location of observation platform in relation to the centre of the blast. Also given the shape of the harbour channel, it will be possible for MMOs to estimate the distance from the blast to the edge of the Marine Mammal Observation Zone (MMOZ), and therefore use landmarks to quickly assess marine mammal locations. For example, the edge of MMOZ is 500m from centre of blast and a channel marker is also 500m from centre of blast, therefore any marine mammals inside of the channel marker are inside the MMOZ and action taken immediately. These methods are included in the MMO Training course so all MMOs will be familiar with them. Evaluating the effectiveness of monitoring can take several forms: (i) MMOs will practice regularly taking distance measurements to objects of known distance such as channel markers and vessels. This normally happens first thing in the day and at regular intervals throughout the day. These results are recorded and will be available for review by Environment Southland and</p>	<p>No amendments required.</p>

		<p>can be available to assess the accuracy of distance measurements; (ii) all other members of the project team and the public will be encouraged to look out for marine mammals and report any sightings directly to the MMO. Records will be kept of who first sights a marine mammal; (iii) records will be kept of all marine mammal sightings including as they move towards, into and out again of the MMOZ. All records and data sheets will be made available to Environment Southland. Depending on the number of marine mammal sightings and shutdowns, a separate report may be provided by South Port.</p>	
23	<p>In the conditions (Appendix 1) where there is references to 25kg charges, what conditions would you recommend where the charge is less than 25kg, or no condition is required what the environmental effects are?</p>	<p>The MMOZ as stated in Condition 13 correlates with the modelled extent of the TTS arising from the detonation of a maximum charge of 25 kg. Effects on marine mammals when charges of a lesser weight are detonated will result in a smaller TTS, being less in area than the designated MMOZ. This condition represents a conservative approach to ensure protection of marine mammals under all blast scenarios by applying a fixed MMOZ based on the 25kg charge size even when the charge size is smaller than this.</p>	<p>No amendments required.</p>
24	<p>In respect to Condition 39 (Appendix 1), Seagrass monitoring; the condition states there will be fixed quadrats with monitoring for percentage cover, water clarity, sediment grain size, sediment quality. Can you advise how many quadrats will there be? What is the sampling design? What kind of statistical analyses will be undertaken to demonstrate effects and at what level of significance?</p>	<p>The methodology outlined in response 24, 26 and 27 will be refined following consultation with iwi and incorporated into the adaptive marine management plan (AMMP) which will be submitted to ES for approval prior to work commencing.</p> <p>Monitoring of seagrass beds is to validate the assessment of predicted effects of the soft sediment dredging. It is anticipated that the avoidance and mitigation procedures in place will reduce the risk of</p>	<p>Section 4, Adaptive marine management plan (AMMP).</p>

		<p>adverse effects regarding the suspension and deposition of fine sediment on the marine ecology of the area. However, as there are sensitive species identified in the vicinity, such as seagrass, it is deemed appropriate to provide further assurance via monitoring. The avoidance measure is to dredge outside of seagrass flowering and growth periods. The mitigation measures include dredging areas with fine silts identified on the outgoing tide only and the use of a green valve when dredging sediment with a fine particle size. Given the measures in place, it would be difficult to discern an effect of this activity due to the low likelihood of an effect occurring and the high flow and naturally turbid nature of the environment. Monitoring of seagrass beds is a precautionary condition as the risk and magnitude of effect from this activity is low when considering the short time frame of the activity and timing during a period of low growth.</p> <p>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 activity commencing to capture seasonal variability. Seagrass monitoring will occur twice during the activity, and post work monitoring will be completed within one month of the activity's completion. A report will be provided within three months of the final sampling. Two sites will be monitored in seagrass beds with higher likelihood of deposition, as indicated by hydrodynamic modelling i.e. Rabbit Island (Easting 1242832.631; Northing 4832323.527) and Tiwai Wharf (Easting 1244270.155;</p>	
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		<p>Northing 4829583.095). A control site is proposed to be located further from the activity (Easting 1241561.286; Northing 4830051.256). These are the proposed sites however, final site selection will occur with input from Environment Southland and rūnanga, in alignment with the MOU between Te Rūnanga o Awarua and South Port. At each site, three 30 m transects will be set up with a 1 m² quadrat every 10 m. These quadrats will be assessed for seagrass percentage cover, and cores will be collected to assess change in blade length and above ground biomass. These indicators allow an assessment of bed health despite seasonal variability (Wood & Lavery, 2000)¹. Water clarity and sediment parameters will also be assessed alongside each monitoring event and include analysis of sediment particle size and heavy metal analysis to further ascertain any changes which may be attributable to dredging activity. A two factor-nested ANOVA will be used to test between sites. Posthoc tukey tests will 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.</p>	
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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>

25	<p>In respect to Condition 40 (Appendix 1); Bluff Harbour Entrance Channel Monitoring; the condition requires quantitative benthic monitoring using fixed quadrats for epifauna and algal cover. Includes photographic quadrats. Following completion monitoring will include baseline, 3 months, 12 months and 36 months, how many quadrats will there be? How many photographic quadrats and how will they be analysed? What is the sampling design? What kind of statistical analyses will be undertaken to demonstrate effects and at what level of significance?</p>	<p>This is a volunteered condition as the removal of biota in the channel entrance is an allowable activity under the deemed coastal permit. The purpose of monitoring this location is to provide South Port with rocky reef recolonisation information for any future works.</p> <p>The effects on the channel entrance benthic habitats via dredging is not required to be assessed as part of this application because it can be removed under the current terms of the deemed coastal permit.</p> <p>Under the existing maintenance dredging Coastal Permit 201282-V2 the port is permitted to dredge, dump and deposit on average 12,000 m³ per annum over the term of the consent (maximum 20,000 m³ in one year). This maintenance dredging will be done on an 'as-required' basis. The harbour is a highly modified area.</p> <p>Therefore, natural recolonisation of the affected area is not required to be considered as part of this application.</p>	Section 4, Adaptive marine management plan (AMMP).
26	<p>In respect to Condition 41 (Appendix 1) Rock Disposal Site; the condition expects quantitative benthic monitoring using fixed quadrats testing for infauna, epifauna and algal cover using transects and quadrats. Following completion monitoring will include 3 months, 12 months 36 months and 60 months, how many transects and quadrats will there be? What is the sampling design? What kind of statistical analyses will be undertaken to demonstrate effects and at what level of significance?</p>	<p>The proposed rock deposition area is predominantly shell hash and has low diversity and abundance of infauna and epifauna. The prediction of a low and probably negligible impact of rock disposal at this site can be verified via a monitoring regime. Two 50 m transects will bisect the site from a fixed point (buoy) on an underwater directional bearing to enable replication. Quadrats will be positioned haphazardly within c. 5 m of the transect and the distance along the transect recorded to enable subsequent re-sampling in the same general area. A swim video recording will also</p>	Section 4, Adaptive marine management plan (AMMP).

		be taken for each 50 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.	
27	In respect to Condition 43 (Appendix 1) Mātaitai Monitoring; the condition seeks baseline monitoring of the health of paua beds and rocky reef habitat, and monitoring will occur 3 months prior to works. The methods and sites to be sampled by Te Runanga o Awarua. We would like to know what this means and what it is likely to produce, so would appreciate your advice. The health of paua bed and rock reef habitat doesn't really mean anything specific and we would like to know if it is contaminant loads in paua? Numbers of paua present? Size frequencies? Numbers of harvestable paua? What exactly is to be measured regarding rocky reef habitat? Where? What will this information do in terms of managing the effects of the proposed works?	Motupōhue Mātaitai spans a stretch of high energy rocky coastline with subtidal rocky reef structures. Sponge and ascidian species are abundant along the coastline and growth of macroalgae is depth restricted due to high turbidity resulting from sediment input from nearby rivers and high levels of resuspension. Key epifauna species within southern rocky reefs may also be susceptible to fine suspended sediment as filter feeders (bivalves, sponges, ascidians etc.) by reducing filtration capacity. Pāua are a taonga species important for mahinga kai. Juvenile pāua seek refuge from predators by inhabiting beneath cobbles. Sedimentation may reduce the availability of this key habitat and modify juvenile pāua behaviour (Chew et al., 2013) ² . Previous studies observed rocky reef around Bluff to have sedimentation ranging from 2.6 - 16% (Kettles et al., 2017) ³ . Fine suspended sediment from dredging activities is not anticipated to settle onto the nearshore reef environment within the mātaitai due to the high currents and wave energy in	Section 4, Adaptive marine management plan (AMMP).

² Chew, C. A., Hepburn, C. D., & Stephenson, W. (2013). Low-level sedimentation modifies behaviour in juvenile *Haliotis iris* and may affect their vulnerability to predation. *Marine Biology*, 160(5), 1213–1221. <https://doi.org/10.1007/s00227-013-2173-0>

³ Kettles, H., Smith, F., & Shears, N. (2017). Subtidal reef and rockwall communities of the greater Foveaux Strait region, Southland, New Zealand. *Science for Conservation*, 329.

		<p>this area. In addition, due to the transient nature of this activity the ability to capture an ecological effect in this period is anticipated to be challenging. Monitoring the reef community and sediment parameters within the mātaimai will assist in verifying the assessment that the effects on the ecology of the rocky reef will be less than minor. Monitoring within the mātaimai will be co-developed with local rūnanga, in alignment with the MOU between Te Rūnanga o Awarua and South Port. Co-development of methodology is essential as rūnanga may already carry out monitoring within the mātaimai which is likely to guide site selection. The “health status monitoring” of pāua in this context refers to mahinga kai and may be guided by the Ngāi Tahu Marine Cultural Health Index toolkit (Schweikert et al., 2012)⁴. Alongside cultural health monitoring, scientific surveys will be used to assess any changes to the ecology of the rocky reef community based on the deposition of fines (Shears, 2007)⁵. At each site, 50 m transects will be swum at 3 m and 5 m depth bands and quantitative data will be recorded from five 1 m² quadrats along each transect. Quadrats 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 general area. Epifauna and dominant macroalgae will be recorded within each quadrat allowing for calculation of abundance, diversity, and richness metrics. Principal</p>	
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⁴ 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.

⁵ 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.

		<p>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. Sediment parameters will be assessed alongside each monitoring event and include analysis of sediment particle size and heavy metal analysis to further ascertain any changes which may be attributable to dredging activity. Composite samples of sediment properties will be collected from each transect to record grainsize, trace elements and organic matter. 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 assessment) will be 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 approximately one month prior to the activity, twice during the activity, and follow up monitoring will occur within one month of the activity's completion with a report prepared within 3 months of the final monitoring.</p>	
	Cultural Effects		
28	<p>Appendix 23 provides a letter from Letter from Te Ao Marama Inc for Awarua Rūnanga with a statement with "their unconditional approval to the application " to the Capital Dredging Works". However, under s.95E and consideration of cultural effects this letter is not accepted as formal written approval, and as such we need to rely heavily on our evaluation of the CIA. Page 816 (CIA Appendix 16) still outlines that</p>	<p>South Port has recently met the Runanga. A response from the Runanga will be forthcoming shortly which will include a summary table setting out the cultural effects and mitigation measures sought by the Runanga.</p>	<p>Pending.</p>

	<p>“Dredging, blasting of soft and rocky habitat has the potential for significant effects on mana whenua values, rights, and interests”. To evaluate the cultural effects can you please provide an updated CIA that reflects the rock breaking activity? Additionally, the CIA outlines the cultural concepts, activities, places, items (such as archaeology), and landscape, and within the assessment (page 843) but does not actually assess cultural effects (or impacts) but provides recommendations as to what Te Rūnanga o Awarua wants to achieve, or want to achieve in partnership or agreement with South Port Limited. While the Appendix 23 is helpful to appreciate concepts, it does not actually assess the cultural effects. Please provide and updated CIA with the cultural effects from Te Ao Marama Inc on behalf of Te Runanga o Awarua? This information is necessary to evaluate what the actual and potential significant cultural effects are.</p>		
	<p>Ecology</p>		
29	<p>On page 42, Table 4-1 [Disturbance of the seabed or foreshore] it states “<i>natural recolonisation of the affected area is expected to be rapid</i>”. Also, on page 104 under Objective 10.1.1 (Disturbance to the seabed or foreshore) it states “the affected area of the entrance channel will, over time, be recolonised by seaweed and sessile and mobile species such as sea tulips and anemones, invertebrates and fish species such as greenbone and blue cod”. E3S Appendix has identified that they really don’t know what timeframe recolonization will occur, and have suggested a colonisation study as part of the proposed works - a so-called “reef ball” study. E3S have packaged this as a</p>	<p>Within the 12 month timeframe we would expect full recolonisation and a return to baseline conditions, however for robustness we have also recommended a 36 month follow-up survey.</p> <p>Seabed disturbance being ‘rectified’ does not mean a full return to baseline conditions. We expect the benthic recolonisation to begin almost immediately following the conclusion of the works and as is evidenced by the marine mammal acoustic devices within the channel entrance, can expect algae and grazers to be present within 3 months.</p>	Table 4-1, AEE.

	<p>“community science” project and say that it will indicate the rate of colonisation of fresh rock faces. They have also proposed monitoring of the new rocky reef at various intervals (baseline, 3 month, 12 month and 36 month) to document recolonisation. Can you respond with confirmation that “repaid” and “over time”, worse case is connected to the 36 months period of monitoring, and if so, how you constitute that 36 months is “rapid”. Additional to this, please advise if you have considered any offset mitigation in the form of habitat remediation or improvement elsewhere?</p>	<p>Reef balls are ‘packaged’ as a community science project and also provide habitat offset providing additional rocky reef habitat. The reef ball programme also provides educational benefits and SIT are currently utilising this study to further their students education regarding subtidal rocky reef studies.</p>	
30	<p>In relation/ extension to question 29, can South Port offer a timeline for rehabilitation and / or potential offset measures if they are forthcoming from Question 29. This information is required for us to understand the environmental effects.</p>	<p>The timeline is stated in the Q 29 response. Algal growth is expected to be apparent after the first 3 months post-works and grazers will recolonise. Given that the affected areas are only discrete rock pinnacles within the surrounding bedrock we would expect to see an almost return to baseline after 12 months however for robustness we have also recommended a 36 month follow up survey.</p>	<p>No amendments required.</p>
	<p>Policy</p>		
31	<p>On the same topic as points 21-22, Objective 10.1.1 under the Regional Coastal Plan seeks to avoid, remedy or mitigate, which the natural recolonization approach in the AEE does not actively seek the requirements of “avoid, remedy or mitigate”. Please revisit and amend your assessment of Objective 10.1.1 to demonstrate your conclusion?</p>	<p>The commentary to this policy will be amended to remove reference to natural recolonisation given the maintenance dredging and deemed coastal permits allows for ongoing dredging and disturbance of the seabed within the harbour.</p>	<p>Section 9.3, AEE.</p>
32	<p>Further to question 23, Policy 10.1.3 of the Regional Coastal Plan has your assessment which also states “over time” recolonization by seaweed, sessile and mobile species. In light of your answer to questions 21</p>	<p>Same as response to Q 31.</p>	<p>Section 9.3, AEE.</p>

	to 23, please revisit and amend your assessment of Policy 10.1.3 to demonstrate your conclusion?		
33	<p>On page 107 regarding Policy 10.2.4, there is a statement about deposit/dispose dredging material from the coastal marine area onto similar materials. A revisit of your assessment needs to recognize the rock disposal onto shell hash seabed is not aligned with this Policy 10.2.4; please provide a revised assessment? Also, the application asserts that depositing rock on a sandy seabed environment is ecological improvement. Evidence as to the rationale of this assessment is needed; please provide that evidence. The reason for this information being sought is because by extension, this argument would suggest that dumping rock over all sandy seabed habitat to improve it. We would appreciate evidential and defensible data to suggest/support that there is likely to be an improvement in biodiversity, productivity, etc. in order to justify the claim that this represents an improvement.</p>	<p>This policy has been removed from the statutory assessment as the commentary mistakenly referred to a sandy seedbed environment. South Port has specifically targeted an area of thick waves of shell hash that via infaunal assessments and video transects has been established that there are no attached epifaunal species present and that the infaunal communities are very limited. This is largely due to the current unstable benthic substrate.</p>	<p>Section 9.3, AEE.</p>
34	<p>Please provide comment, further to your assessment on page 105; which under Policy 10.1.1 (dredging and excavation) the policy is enabling, and recognizes that the deposition effects includes “the continuance of current uses and activities”. It could be assumed from this that the draught of ships will remain constant. Can you please provide an assessment as to whether you consider the draught of ships will remain constant, or that South Port is likely going to need further dredging over time (the course of 10 years being sought)?</p>	<p>To clarify, the entrance channel currently has a draught of 9.7m. South Port are attempting to get to 10.7m draught (additional 1m) with the <u>capital</u> dredging as applied for under this consent. Once the contractor establishes on site, South Port may require 24 months to complete the work (contract split into 2 x 8-month periods across consecutive years (February to September). However our preference is to complete in one 8-month period.</p> <p>If we haven’t reached 10.7m at the end of the consented capital dredging campaign, we will not be able to dredge to a greater depth owing to the consent</p>	<p>Section 1.1, AEE.</p>

		<p>limit proposed of 160,000m³ for removal of dredged material.</p> <p>However, South Port may need to undertake <u>maintenance</u> dredging in order to maintain navigation channels at this depth. Silt begins to build up immediately and depending on the rate of build-up, South Port may need to undertake maintenance dredging within a few years of completing the capital dredging. Please note – this will be <u>maintenance</u> dredging not <u>capital</u> dredging (South Port has an existing maintenance dredging permit).</p>	
	RMA		
35	<p>On page 112 - Section 9.5.2, and in relation to Section 105 RMA; The assessment states “<i>Monitoring of the sediment disposal site by South Port has not demonstrated any significant adverse effect on infaunal...</i>”. The key to this paragraph is there has been limited monitoring from previous blasting and dredging operations. The monitoring (E3) has focused on the disposal site, rather than the discharges that occur from blasting, breaking and dredging, yet s.107 of the RMA (Section 9.5.3) assessment only addresses the discharges from dredging and disposal. Can you add to your assessment to include all the activities (breaking, blasting and all discharges, and disposal)?</p>	<p>The commentary provided on s 107 RMA will be expanded to include discharges from blasting, rock breaking and dredging, drawing on the underwater blast and noise assessments provided by OCEL and the Styles Group.</p>	<p>Section 9.5.3, AEE.</p>
36	<p>Regarding the risk matrix. The effects of drilling and blasting on seabirds recognises the risks to bird life, and describes the risk by timing the works between</p>	<p>The question about mortality and direct impacts on birds here should not include shorebirds. These species are not going to be in the water, close to the drilling</p>	<p>No amendments required.</p>

	<p>mid April to late August is mostly outside of the breeding season for little penguin, shore birds, gulls and cormorants/shags. Given the policy 6 of the NZCPS direction is to “maintain and enhance ecology”, what level of mortality is acceptable from the drilling and blasting that aligns to the conclusions you have drawn in the AEE? How will Environment Southland know those effects when birds may exit the environment (head out to sea) early and die prematurely? This information is necessary for us to evaluate the effects of the proposal on bird life.</p>	<p>and blasting, so will not be directly impacted, nor have increased potential for mortality.</p> <p>Little penguins, shags/cormorants, and gulls/terns could potentially be directly impacted (be killed or injured) by the drilling and blasting regime. However, the observer scheme that is set up to monitor for the presence of marine mammals, will also be monitoring for the presence of these bird species. Any level of mortality is not acceptable to South Port with the aim of achieving a zero level of mortality of all of these species. The presence of any birds within the ‘exclusion zone’ would require a halt to blasting, and the soft start blasting process should deter any birds not detected by observers, to move away from the blasting area.</p> <p>The timing of the works referred to in this question, of being ‘mostly outside of the breeding season’ mainly relates to little penguins. Gulls/terns and cormorants/shags are going to be present in the area at all times of the year, and will be part of the observation scheme above. However, penguins are most vulnerable as they are restricted to the water, and cannot fly, and it is the timing of the works to a period when penguins are less likely to be in the area (outside of the breeding season), which is important here. The daily timing of works to not be during the key crepuscular periods (i.e.; before 7.30 am and after 6 pm) when penguins are coming and going from burrows, is also a key limiting strategy.</p>	
	<p>Bond</p>		
<p>37</p>	<p>Can you please provide an assessment of what potential bond for this work might be appropriate</p>	<p>In terms of a possible bond, it is important to be clear what work would be subject to the provisions of a bond. The context of this proposal is that the channel is currently authorised to be</p>	

	<p>given the ability to reverse effects on the environment is very complex and requiring some certainty? This information is sought to assist what might be appropriate as a safeguard to managing environmental effects that might not be envisaged by the current AEE.</p>	<p>dredged for maintenance purposes to a draught of 9.7m. The proposed increase to 10.7 is a capital dredging campaign. Assuming that target depth can be reached then the maintenance dredging will be able to be resumed where necessary to maintain this depth. In the event that capital dredging ceases part way through for any reason, then the finished capital campaign will not have reached the target depth, but work will cease and environmental effects will not be on-going. In this sense there would be nothing to "remediate". The channel would be maintained at the eventual capital depth.</p> <p>It is therefore not clear what type of "remediation" could be costed and made subject to a bond, hence none is volunteered. If there is to be a bond, it is assumed any condition would need to be clear what work it is to cover, be costed, and the form of a bond prepared by the consent holder, and submitted for certification by the Resource Consents Manager of ES that it achieves the consented condition parameters.</p>	
	<p>Geotechnical/Geology</p>		
<p>38</p>	<p>Please provide evidence from OCEL that the geological findings, notably the unconfined compressive strength, fracture persistence, spacings and orientations given in the Geosolve Geotechnical Assessment Report dated 21 July 2021 have been considered by updating their original assessments including the Drilling, Blasting and Dredging Methodology (Rev3) and Effects of Underwater Explosions, Shockwaves, Vibration & Noise both provided by OCEL. Any changes in the OCEL reports must be carried through to relevant assessment of effect reports.</p>	<p>The Geosolve Geotechnical Assessment Report will be used to inform the development of the detailed blasting plan by the blasting contractor. The report represents the best available extrapolation of the rock properties evident above water on the sides of the channel out underwater into the channel. The rock to be blasted is underwater out of sight and subject to strong tidal currents. The intertidal window when diving is possible is restricted to less than one hour so the possibility of direct observation of the rock over a wide area by diver or ROV is limited. The fragmentation achieved by each blast and the shape of the resulting rock fragments will be gauged from direct observation of the material recovered during the post blast dredging phase. Drilling records will be kept, cross referenced to the detailed blast plan and photographic records kept of representative dredged material. The blast plan will be</p>	<p>Proposed condition 10 added.</p>

		<p>tuned by the blast superintendent based on these observations and feel for the work.</p> <p>The Geotechnical Assessment report is general in nature which is unavoidable because it is attempting to characterise the properties of the submerged rock. The presence of the predicted pervasive fracturing within the bedrock mass may help dissipate the effects of vibration during blasting but this cannot be accurately calculated in advance. It will however be picked up/reflected by the proposed test blasting on site using small test charges and measuring PPVs at set distances to determine the empirical constants K and n in the PPV equation – $V = K \cdot (R/W^{0.5})^{-n}$.</p>	
39	<p>The Styles Group Report dated 27 August 2021 recommends the use of hydro-hammer rock breaker as an alternative method, or supplementary to the proposed drill and blast method. Please provide confirmation from OCEL that they have reviewed the suitability of using a hydro-hammer rock breaker for the proposed works whilst considering additional information in the Geosolve Geotechnical Assessment report, confirmation should be provided in updated revisions of their original reports. If hydro-hammer rock breaking methods are adopted then all relevant supporting reports must be updated with associated assessments to accommodate these changes. Also for clarification of our understanding of the hydro hammer (rock breaking), we understand spuds are to be used for the pontoon to position itself, but how is</p>	<p>The use of a hydro-hammer rock breaker either as an alternative method or supplementary to the proposed drill and blast method is a viable alternative. OCEL has reviewed the suitability of the rock breaker for the proposed works and note that while it is quieter in terms of generated noise subsea than the blasting operation it will go on for much longer, based on OCEL's experience with rock excavations above ground using rock breakers and explosives. Instead of the sudden explosive release of energy in an instant the rock breaker will take much longer to achieve the required depths. The operator will be remote from the rock break location and not able to directly observe the rock breaker in action and exploit rock weaknesses or fractures. An underwater video camera fixed to the excavator boom will be limited by underwater visibility conditions. A rock breaker could however be useful in</p>	<p>The OCEL Drilling, Blasting and Dredging Methodology report has been updated as Rev 4.</p>

	the actual hydro hammer positioned on the targeted rock?	ensuring that the final slopes in the channel are stable. The slopes can be tested using the excavator bucket to scrape slopes, the rock breaker provides a tougher test of rock stability.	
40	Please confirm that an engineering geologist will be engaged to monitor the drilling, blasting and breaking operations to ensure that the actual ground conditions and geological properties encountered during the works are as outlined in the Geosolve Report. This provision is required to ensure any significant deviations in expected geology and the resultant changes to the final drilling and blasting methodology are recorded.	There is no intention to engage an engineering geologist full time to continuously monitor drilling, blasting and breaking operations, they would be under employed. The bulk of the work is repetitive and routine, underwater out of view, punctuated by blasts once a day. The drilling data and drill positions set by the blast plan will be recorded and the results of the blasting checked by hydrographic survey, after the fragmented rock has been dredged up. The fragmentation achieved and the rock fragment shapes will be assessed by the blast superintendent. Some initial tuning of the blast pattern may occur in an iterative process to get the most efficient pattern. This will be done by the blast superintendent based on experience and practical feel for the work. Videos will be taken of the final rock slopes, by diver or ROV, and used to assess stability. It would be useful for an engineering geologist to be part of this assessment if relatively steep faces need to be assessed.	No amendments required.
41	Borehole logs contained within the Geosolve report note anthropogenic materials such as metal, timber and rope in shallow sediments around the wharf. As anthropogenic materials are likely within the proposed dredge area please provide further information on the methodology to extract, and or dump these anthropogenic materials and any	The Geosolve borehole logs are from previous investigation holes which Geosolve drilled on the landward side of Town Wharf outside of the proposed dredge area. Geosolve report that it is likely that the shallow rubbish observed in these boreholes is largely confined to the immediate vicinity of the wharf as would naturally be expected in this working environment.	No amendments required.

	environmental impacts these materials may have on the marine disposal site.	As noted in the response below to Q 42, the proposed dredge areas are well beyond the town wharf and no anthropogenic waste material is expected to be encountered.	
42	Figure 1a given in the Geosolve Report indicates 3 m rock cut in close proximity to the existing wharf structure, please provide a structural assessment showing that a 3 m cut will not destabilize the existing structure through loss of passive ground support to the wharf piles.	Figure 1a incorrectly portrays the extent of the channel deepening works. The actual extent of the channel rock drilling and blasting works are illustrated on Figure 2-2 in the application, well beyond the town wharf.	An updated updated GeoSolve report has been issued. Refer Appendix 22.
	Birds		
43	In respect to noise impacts from drilling and blasting (and we assume rock breaking) on birdlife and penguins that swim, addressed in Appendix 13 (Bird Survey Report), Page 772 has an addendum to Appendix 13, which address the acoustic effects on birds during construction. Penguin effects is addressed in terms of breeding birds, but please provide an assessment of effects on birds feeding (in the water). This information is necessary for us to evaluate the effects of the proposal on bird life.	<p>The impacts of these works on little penguins is mainly restricted to the birds as they come and go to their nests, through increased noise and the impacts of the blasting, drilling, and possible use of rock breaking equipment. However, with regards to possible foraging interactions the following may apply.</p> <p>The channel area where the works are located, is unlikely to be an important feeding location for this species, although it is an area where penguins could forage. Drilling, blasting and rock-breaking are likely to interfere with foraging of penguins in this area, to differing degrees. As per discussion by the Styles Group, drilling is likely to create noise at levels that would interfere with foraging at a range of 0-250m. Blasting is likely to interfere with foraging at much greater distances (as per effects on Otariids which are being used in lieu of data for penguins), and at close range could impact survival of the birds. Thus a soft start prior</p>	No amendments required.

		<p>to blasting is important to deter penguins from being too close, and the observer scheme should be monitoring for any penguins within the blast zone as per those guidelines. The noise produced by rock-breaking could well interfere with foraging from 0-2020m (as assessed by the Styles Group).</p> <p>It is likely that penguins will learn to avoid feeding in this area with the increased noise and traffic associated with the drilling, blasting, and rock-breaking. However, this is not seen as being of major significance, due to the fact that these birds feed over considerable distances during the course of a day (mainly within 10km of their breeding site), and that the area in which these works will impact is a relatively small proportion of their possible foraging area. If 2000m from the rock-breaking is taken as the area in which foraging by penguins might be compromised, this does still leave considerable area outside of this for birds to forage successfully, as the main foraging area for these penguins is likely outside of the Bluff Harbour completely. It should be noted that the 10km range is from the breeding site, so if penguins are not actually breeding, then this foraging range is not restricted within 10km of the breeding site, meaning a much larger distance from Bluff Harbour is possible.</p>	
44	<p>There is discussion in the bird report about requiring observers during blasting operations and a halt to the works if little blue penguins or shag species are in the defined area of potential harm - measures to avoid adverse effects on penguins and shags. This should be included in conditions of consent.</p>	<p>These measures are contained in the Adaptive Marine Management Plan under Section 3.3, i.e.; real-time monitoring of the MMOZ will occur specifically for seabirds.</p>	<p>No amendments required.</p>

45	<p>Cond 7 says that drilling, blasting, dredging and deposition will be limited annually (which suggests multiple years) to a period from 1 March to 31 October. Cond 8 says that soft sediment dredging will occur from 1 April to 31 July to avoid little blue penguin breeding period and seagrass flowering season. While condition 7 states that drilling, blasting, dredging and deposition will be limited annually (which suggests multiple years) to a period from 1 March to 31 October, and condition states that soft sediment dredging will occur from 1 April to 31 July to avoid little blue penguin breeding period and seagrass flowering season; what is the effects of drilling and blasting (and rock breaking) straying into each end of the little blue penguin breeding season as defined by their bird expert (report says breeding is September to March)?</p>	<p>The effect of the works on moulting penguins (late summer through to March) is of a low risk. Any birds that are moulting in burrows near the port are going to be fairly used to noise, traffic, etc and although the increased noise levels through drilling and blasting may be present, it is unlikely to cause significant harm to penguins. Once penguins have finished moulting, they are likely to head back out to sea, and therefore not be coming and going to their burrows. Moulting penguins are restricted to their burrows – they do not come and go when moulting – this is an important point to communicate. The number of penguins nesting/moulting close to works zone is likely to be low, and as the birds finish moulting this number will decrease until all birds have finished their moult.</p> <p>As penguins return to their breeding burrows at the start of the breeding season in August/Sept, they will be coming and going from the area. This is why the observation program, soft start to the blasting operations and imposed working hours have been put in place to limit any impacts on these birds. If penguins do find the level of disturbance higher than what they are prepared to put up with, it is likely they will avoid breeding in the vicinity of the port and works, and find another location nearby where disturbance is not an issue. Although moving to another breeding burrow due to this man-made disturbance is not natural, penguins almost certainly encounter natural events that require a new burrow to be found and used on occasion. As there is unlikely to be a large breeding population of penguins within close proximity to the works, it is not considered that a few displaced pairs would be negatively impacted</p>	No amendments required.
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		<p>in any great way, or the population. Of note is the fact that it would be good to avoid large gaps in the works program during the early part of the breeding season (Aug-Sept). That is a constant drilling and blasting program will have less impact, than one in which there are large gaps of several days or more. These gaps may allow penguins to start breeding, only to be driven away when works resume. Impacts on an already breeding pair would be greater than forcing a pair to establish a burrow elsewhere, whereby they can still have a productive breeding season.</p> <p>As mentioned previously, travel to and from their burrows is mainly restricted to sunrise/sunset as per their crepuscular habits. So during these travel times when they are in the water, limits imposed on work hours for drilling and blasting should lower any risk to penguins.</p> <p>On the whole, with the above mitigation measures in place it is assessed there will be very little impact on little penguins, even though the works could (if they runover due to weather and shipping impacts) overlap slightly with the suspected chick provisioning period (Oct-Dec).</p>	
46	<p>Drilling and blasting will stray into each end of the little penguin breeding season as defined by their bird expert (report says breeding is September to March). Please provide an assessment of the effects that occurs as a result of those works occurring at each end of the breeding season, so that we can evaluate the effects?</p>	The same answer as above applies to this question.	No amendments required.
	Biofouling		

47	<p>In respect to the Biofouling Management Plan, associated assessments (Appendices 14 and 15) and conditions (Appendix 1); Condition 30 states that there will be inspection of vessels, but we would like to know if this is from somebody who is suitably trained or qualified inspectors who could actually recognize unwanted species? Also, how long prior to vessels arrival do these inspections occur? To assist our evaluation, we would appreciate a statement about vessels and equipment having no more than light fouling - defined as small patches (up to 100mm diameter) of visible fouling totalling <5% of the hull and niche areas. A slime layer and/or any species of barnacles are allowable fouling?</p>	<p>South Port will make it a requirement that dredging companies will use MPI accredited contractors to undertake inspections and hull cleaning.</p> <p>MPI require that vessels intending to stay > 21 days in NZ must have a hull clean within 30 days of arrival in NZ. For example, Bay Underwater Services NZ who are MPI accredited is doing an inspection/ hull clean on the Albatros to comply with the long stay requirements in NZ waters as the dredge just returned from her annual dredging campaign at Tweed Heads, Australia.</p>	Proposed condition 34 added.
48	<p>My preference would be for a dedicated Biosecurity Management Plan to be submitted and approved by ES prior to ships and equipment being brought in from overseas or any other area that could facilitate the spread of unwanted organisms (e.g. Lyttleton has Mediterranean fan worm).</p>	<p>South Port does not consider a dedicated biosecurity management plan is necessary as South Port does not expect to be using an overseas dredging company. In the unlikely event an overseas vessel is utilised, the selected Contractor will liaise with MPI to ensure any imported equipment complies with biosecurity legislation (as is the current practice with all international vessels operating in NZ waters).</p> <p>Heron Construction and Dutch Dredging have provided South Port with their Bio-Fouling Management Plans and copies of a vessel specific record books and vessel details. All vessels operate under these management plans prepared in consultation with MPI and MNZ.</p> <p>Please note that South Port has satisfied ES bio security requirements in 2020 when the Dutch Dredging suction</p>	Section 2.4, AEE.

		<p>dredge completed maintenance dredging at the port. This is specified in the maintenance dredging consent – Condition 9 which states:</p> <p><i>“The consent holder shall inspect the dredge for fouling organisms, in particular Undaria, no more than one week prior to the dredge entering Bluff Harbour, on each period of “catch up” maintenance dredging. 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. An inspection report shall be submitted to Council’s Environmental Compliance Manager prior to the dredge entering Bluff Harbour detailing the timing, method and findings of the inspection.”</i></p>	
	Coastal Processes		
49	<p>Appendix 5 (OCEL -coastal processes assessment) and application section 5.4.5 states that <i>“The seabed levels at the disposal location have remained stable and have not changed significantly over time - as is evident from a comparison of the bathymetry between the initial RWMA/OCEL survey in 1984 and the most recent marine chart - so the sediment dropped on the location has been completely dispersed in the period between hydrographic surveys and the seabed has returned to a state of equilibrium”</i>. However, my reading of the Marine Charts (6721 & 6821) is that the survey for the chart is dated 1983 / 1984, so is the same time as the RWMA/OCEL survey, and hence not evidence of transport away from deposition site.</p>	<p>The results of the Fugro survey in 2020 provide a comparison with the 1984 Marine chart that indicates on visual inspection no major changes in the depths. The bathymetry appears to be stable. The depths shown on the latter are at up to 200 m spacings with only two depth contours. The Fugro results are much more detailed and serve as a good base for future comparisons using bathymetric surveys of similar quality.</p>	<p>OCEL coastal processes assessment updated as Rev 4.</p>

	Therefore, further information, such as a recent bathymetric survey is required to confirm that <i>“the seabed levels at the disposal location have remained stable and have not changed significantly over time”</i> .		
50	Further information is required to confirm the statement in Section 5.3.2 of the application that <i>“The heavier components of the sediment deposited at the disposal site will be easily mobilised due to the shallowness of the site allowing for sediment to be easily mobilised by wave action and currents”</i> , and the statement from the executive summary Appendix 5 (OCEL - coastal processes assessment) that <i>“The existing coastal processes will deal with the higher volumes to be dumped, the mobilisation of the sand by waves will increase because of temporary shallowing and the rate of sand movement away from the disposal site will increase because of the greater volumes of sand mobilised and available to be moved.”</i> This additional information is required as the information presented in Section 3.3 does not address the fact that it is wave period (rather than wave height) which is critical for the movement of seabed sediment under wave action. The information required is the critical wave period to initiate mobilisation at the water depth of the deposition zone, and from the wave hindcast data the frequency that this critical wave period is exceeded and the wave heights associated with these periods.	It is the combination of wave period and wave height that determines sediment mobility. The wave induced water particle velocity varies close to linearly with wave height – at least in simple linear theory. The influence of the wave period is more complicated. The period determines the speed with which the water particle velocity decreases with depth, slowly for long period waves and rapidly, exponentially, for short period waves. The depth to which the wave disturbs the seabed can be simply approximated as half the wave length which is determined by the wave period and the depth. Oceanum are currently developing wave statistics for the harbour entrance using hindcast data that will identify periods and heights and the percentage of time nominated heights and periods are exceeded. This data to be provided once received from Oceanum. As the water depth decreases the wave particle velocity and the potential for mobilisation of sediment increases. Local high spots are subject to increased velocities and are levelled.	OCEL coastal processes assessment updated as Rev 4.
51	In relation to question 45, it is unclear from the proposed monitoring conditions how ES would have certainty that <i>“the existing coastal processes will deal with the higher volumes (of sand) to be dumped.”</i> Can you address this via a pre and post dredging campaign	Pre and post dredging bathymetric survey including the disposal site will be undertaken. This is standard for the channel and harbour entrance to prove that the required design depth has been achieved and there are no risks to navigation following the dredging campaign.	OCEL coastal processes assessment updated as Rev 4

	bathymetric survey being added to the monitoring conditions in your response? This will enable us to understand how and what commitment the proposal has to monitor and report the coastal processes.		
52	Discussions in Appendix 5 (OCEL -coastal processes assessment) on littoral drift directions in different wave approach directions (section 2.2) and the potential positive effect of the sand deposition as a source of beach renourishment material (section 4.1) requires further information on the frequency of wave approach direction to understand how relevant and important the wave directions are for sediment transport. This information should be available from the wave hindcast study referred to in the coastal processes assessment.	Oceanum are currently developing wave statistics for the harbour entrance and Toetoes Bay using hindcast wave data and this will be provided once it is available.	OCEL coastal processes assessment updated as Rev 4.
53	Section 8.2 of the application notes that the option of using the rock as an offshore breakwater /reef to further reduce sea level induced erosion effects on Tiwai Peninsula has been discounted by OCEL as the fragmented rock from blasting will be too small for this purpose. Further information is required on the analysis that formed this opinion as there is not reference to this analysis in the OCEL coastal processes assessment (Application Appendix 5).	The on bottom stability of the rock fragments is calculated in Appendix D of the coastal processes assessment. The rock fragments will not be large enough to form a stable submerged breakwater.	No amendments required.
	General Questions		
54	As a result of the works, please provide an assessment what the effects of use of the harbour (frequency and intensity of vessels) on all harbour users as a result of the dredged and deeper draught in the harbour, and how those effects will be managed by South Port? This information is necessary to understand the	With the current cargo mix the port handles, South Port do not envisage a significant increase in frequency and intensity of vessels following the deepening. On the contrary, exporters may be able to load more on the vessels and therefore the number of vessel calls may reduce.	Section 5.12, AEE.

	<p>consequential operational effects on other users of the harbour.</p>	<p>Volumes may increase by 300,000 tonnes/year. To put into perspective, that is 10 vessels in a 12-month period which is not significant.</p> <p>Note: there is no limit/restriction on number of vessels South Port currently handles.</p>	
55	<p>As a general observation, our marine ecologist would like to gain clarity on timing of the works, as they have picked up from their review that there appear to be some inconsistencies in the timing of the works and how that will be managed to avoid adverse effects on little blue penguin moulting and breeding and seagrass flowering in particular. Works periods don't seem to match with the recommendations of the bird expert. Marine mammal report says that Foveaux Strait area is utilized by Southern Right Whales in winter and early spring as breeding habitat. While the report says that habitat exclusion of MM resulting from the blasting would be more than minor and that there is considerable uncertainty about the extent of the area affected (pg 32). Page 45 says that any exclusion effects are unlikely to be biologically significant on individuals or populations. The report also talks about mitigation actions to reduce impacts (which isn't mitigation at all...its effect reduction). Having an exclusion zone and observers to prevent blasting while MM are in the zone should avoid acute adverse effects on MM and bring the impacts down to minor. The MM Management Plan (pg 16) says that MM use of the area is highly seasonal and blasting</p>	<p>Please refer to the response provided by the bird expert to Q45. This provides an assessment of the timing of the works, crucially in relation to the Little penguin breeding and moulting seasons.</p> <p>Potential effects on marine mammals is provided in the responses to Q's 7, 21 and 22.</p> <p>The limited studies regarding seagrass in NZ have found that generally seagrass flowers between December and March as is stated in the Marine Assessment of Effects. Turner & Schwarz, (2006) also state that within a 3-year study on seagrass in the North Island seagrass beds did not flower at all. Therefore the avoidance of flowering periods is a precautionary approach and the slight incursion of dredging into these generalised nationwide time frames is expected to have less than minor effects on the ecology of the beds. Particularly when coupled with mitigation measures surrounding the tidal timings of dredging fine silts which are the only aspect of the dredging that are likely to affect the seagrass beds in this highly naturally turbid environment. Further to the above, the 12 month pre-works baseline survey (outlined in Point 24 response above) will further assist in the specific delineation of seagrass biology and reproduction within the subtidal beds in Bluff Harbour.</p>	

	<p>activities should not be timed to occur over successive seasons (e.g. back to back summers).</p> <p>Potentially the answers to the initial s.92 questions/points of clarity sought on programme and timing may assist on question 55.</p>	
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