Before the Expert Fast-track Panel

FTAA-2511-1150

Under	the Fast-track Approvals Act 2024 (**FTAA**)
And	
In the Matter	of an application for approvals by **MCCALLUM BROTHERS LIMITED** for the Te Ākau Bream Bay Sand Extraction Project located at Te Ākau Bream Bay, Northland

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Evidence of Dr Peter Stanley Wilson and Emily Joy Jones on behalf of McCallum Brothers Limited in Response to Invited Comments

(Water Quality)

Dated 12 August 2026

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Introduction

1. My full name is Dr Peter Stanley Wilson.

2. I am a Principal Water Quality Scientist at SLR Consulting. I hold a PhD in marine biogeochemistry from Auckland University of Technology, and Bachelor of Science and Master of Science degrees in chemistry from the University of Waikato.

3. I have 12 years of experience across local government, consulting, and academia. My experience includes resource management, ecological impact assessment, and the design, implementation, analysis, and reporting of environmental monitoring programmes, including regional state of the environment monitoring. I prepare and peer review technical assessments in support of resource consent applications, with a particular focus on water quality and ecological effects associated with wastewater and stormwater discharges to freshwater and marine receiving environments, coastal development, and aquaculture activities, including mussel and finfish farming. I routinely assess environmental effects against relevant national policy statements, national environmental standards, and regional and district planning provisions. I have also prepared and presented expert evidence at council hearings and before the Environment Court.

4. This evidence was co-authored by Emily Jones, who provided input into the response while Dr Wilson was on leave.

5. My full name is Emily Joy Jones.

6. I am a Principal Consultant for Ecology and Marine Sciences at SLR Consulting. I hold a Master of Science in marine science from the University of Otago, a Bachelor of Science in ecology and zoology from Massey University and a Post Graduate Diploma in Planning from Massey University.

7. I have 21 years of experience in environmental consulting as a marine scientist. My experience includes resource management, ecological impact assessment, and the design, implementation, analysis, and reporting of

environmental monitoring programmes, including projects for marine dredging and offshore wastewater discharges. I prepare and peer review technical assessments in support of resource consent applications, with a particular focus on ecological and water quality effects associated with wastewater and stormwater discharges to marine receiving environments, coastal development, and dredging activities. I routinely assess environmental effects against relevant national policy statements, national environmental standards, and regional and district planning provisions. I have also prepared expert evidence for ecological assessments of effects.

8. This evidence is provided as part of McCallum Brothers Limited's (**MBL**) response to comments from invited persons on the Te Ākau Bream Bay Sand Extraction Project (**Project**).

9. I (Dr Peter Wilson) prepared the Water Quality Assessment of Environmental Effects dated 17 December 2025, included as Attachment 9 to the MBL Assessment of Environmental Effects. Dr Wilson also prepared previous evidence in response to Minute 4 (RFI 1) and Minute 6 (RFI 3).

10. Our responses to the comments rely primarily on content from the Water Quality Assessment of Environmental Effects report (Attachment 9) including the Jacobs (2020) Pākiri Water Quality Technical Report (Appendix G of Attachment 9), supplemented by additional information provided in the evidence statements of Dr Peter Wilson (dated 14 May 2026 and 22 May 2026), and the evidence of Mr Shane Elstob (dated 14 May 2026) in response to requests for further information from the Expert Panel in Minute 4 (RFI 1) and Minute 6 (RFI 3).

Code of Conduct

11. Although this is not a hearing before the Environment Court, I confirm that:

    a. We have read and are familiar with the Environment Court's Code of Conduct for Expert Witnesses as specified in the Environment Court's Practice Note 2023 (**Code**); and

    b. The report referred to above, authored by Dr Wilson:

i. Is within our area of expertise (except where we state that we rely upon the technical reports of other expert witnesses provided in support of the application);

ii. Has been prepared in accordance with the Code; and

iii. We have not omitted to consider any material facts known to us that might alter or detract from the opinions expressed.

Scope of Evidence

12. Our evidence responds to the comments from invited persons relating to water quality. This statement responds to specific comments raised by:

    a. New Zealand Institute for Earth Science Limited / Earth Sciences New Zealand (**ESNZ**).

    b. Parliamentary Commissioner for the Environment.

    c. André and Robin LaBonté (LaBonté Coastal Consultants Limited).

13. We have also reviewed the water quality matters raised by other commenters and have sought to address and incorporate those points in our response below. This includes comments from:

    a. Bream Bay Coastal Care Trust.

    b. Department of Conservation.

    c. Langs Cove Residents Association Inc.

    d. New Zealand Conservation Authority.

    e. Northland Regional Council.

    f. Patuharakeke Te Iwi Trust Board & Ngātiwai Trust Board.

    g. Ruakākā Reserve Board Inc.

    h. Waipū Boat & Fishing Club Inc.

i. Waipu Cove Reserve Board.

j. Whangarei Heads Citizens Association.

Specific Response to Comments

Earth Sciences New Zealand

14. We have considered the submission of ESNZ in relation to potential effects of the proposed sand extraction on the seawater intake at the Northland Aquaculture Centre (**NAC**) and their request for consideration of ESNZ monitoring data in the consent conditions.

15. The comment does not propose a specific condition but records in the summary "Earth Science NZ seeks that, if granted, the conditions of consent allow for reviews of the Environmental Monitoring Management Plan to take account of Earth Science NZ monitoring of incoming seawater quality at the NAC. If, following the commencement of the proposed sand extraction operations, this monitoring detects a change in the water quality regime of significance for the NAC's operations, reviews of the Environmental Monitoring Management Plan should be enabled to take account of, and respond to, this information."

16. The NAC intake is located approximately 5 km from the sand extraction area. Section 6.3.1.1 of the Water Quality Assessment (Attachment 9) considered potential water quality effects at the NAC using empirical data from the Pākiri plume survey (Jacobs 2020). The Pākiri survey demonstrates that turbidity and suspended sediment concentrations are elevated only in the immediate vicinity of discharge from the *William Fraser*. Turbidity and Total Suspended Solids (**TSS**) reduce to within the range for open coastal waters rapidly and are indistinguishable from ambient conditions within 2 km after approximately 30 minutes. On that basis, the Water Quality Assessment concluded that effects at the NAC intake will be negligible. In their submission, ESNZ considered this conclusion to be reasonable.

17. This conclusion is further supported by a simplified settling velocity analysis I (Dr Wilson) undertook and presented in my evidence in response to

Question 21(f) of Minute 4. In Question 21(f) the Expert Panel asked "*Was any scale analysis ('back-of-the-envelope' calculations) conducted using particle settling speed to test the plausibility of the data?"* My (Dr Wilson) analysis[1] indicated that representative fine to very fine sand particle sizes[2] will settle over timescales of tens of minutes to a few hours, consistent with the rapid reduction in turbidity observed in the field data.

18. ESNZ seeks that, *"in the event that consent is granted, the conditions allow for reviews of the Environmental Monitoring Management Plan (EMMP) to take account of other relevant monitoring data. In particular, we would like to see provision for reviews to consider the results of ESNZ monitoring of incoming seawater quality at the NAC*".[3]

19. It is our opinion that the recommended consent conditions (Attachment 26) already establish an effects-based monitoring and adaptive management regime through the Environmental Monitoring Management Plan (**EMMP**) (Attachment 29). This includes requirements for turbidity monitoring, defined trigger levels requiring investigation and response, regular reporting, and review provisions enabling amendment of the EMMP over time. In our opinion, those existing proposed provisions are sufficiently broad to enable consideration of all relevant information, including external monitoring data such as that collected by ESNZ, where it is appropriate to inform adaptive management responses. There is nothing within the proposed framework that would preclude such information from being taken into account.

20. We also note that, even if changes in water quality were detected at the NAC intake, it would be difficult in practice to attribute those changes to the sand extraction activity. The receiving environment in Te Ākau Bream Bay is a dynamic coastal system, with water quality influenced by a range of natural drivers including wave resuspension, currents, and episodic weather

[1] Wilson response to Minute 4, dated 14 May 2026 at [28] – [35].

[2] Wilson response to Minute 4, dated 14 May 2026 at [18] records "From a water column effects perspective, the most relevant sediment components are the silt and clay fraction (<0.063 mm) and the proportion of very fine sand (0.15–0.063 mm) that remains entrained in the return water. The coarser sand fractions are expected to be retained primarily as product or, where discharged as oversize material, to settle rapidly close to the vessel."

[3] ESNZ comment at page 4.

events. A water quality change detected at the NAC is far more likely to reflect natural variability or unrelated processes, and it would be inherently uncertain and technically challenging to establish a causal link to the proposed activity.

21. While we agree that the results of ESNZ monitoring of incoming seawater quality at the NAC could be relevant in the event that it demonstrates a material and attributable change in water quality, we do not consider that a specific consent condition is required. It is our opinion that an additional consent condition specifically requiring incorporation of NAC monitoring data is unnecessary given the effects-based response framework established with the EMMP and that ESNZ consider the negligible effects conclusion to be reasonable. Also, ESNZ has indicated that provision of such data would remain at its discretion, which further supports retaining flexibility within the existing framework rather than prescribing a specific requirement.

Parliamentary Commissioner for the Environment

22. We have considered the comments of the Parliamentary Commissioner for the Environment regarding the absence of numerical modelling and the reliance on empirical plume observations. Specifically, the Parliamentary Commissioner comments that the Pākiri sediment plume survey was undertaken during relatively calm conditions which represent something close to a best-case scenario for plume dispersion, and that numerical modelling would have allowed an assessment more reflective of actual real-world conditions and would have quantified the uncertainty associated with predicted plume extent, duration, and sediment concentrations. The submission concluded urging the Expert Panel to "*request that numerical modelling of sediment plumes be undertaken for the proposed vessel, the sand extraction method and Bream Bay's environmental conditions*".

23. In Question 22 of Minute 4 (dated 30 April 2026), the Expert Panel asked "*Numerical modelling of the plume from extraction activities of the William Fraser has not been undertaken. Could such modelling be used to help further understand the plume?*"

24. As noted in MBL's response to Minute 4 and as set out in my (Dr Wilson) response dated 14 May 2026, numerical modelling has been considered but was not undertaken as the assessment instead relied on empirical plume data collected while the *William Fraser* was operating under normal conditions at Pākiri. This survey was reported in Jacobs (2020) which was included as Appendix G of the Water Quality Assessment (Attachment 9). This survey provided relevant data that reflected actual discharge characteristics, similar sediment properties, and the same vessel in operation.

25. In my (Dr Wilson) response to Question 22 of Minute 4, I note[4] that numerical modelling of dredge plumes can be a useful tool, particularly for exploring sensitivity to varying environmental conditions, all of which might not be captured by an empirical approach. However, such models rely on assumptions regarding sediment release rates, particle size distributions, settling velocities, hydrodynamic conditions, and turbulence processes, all of which can influence prediction outputs and introduce uncertainty. As such, modelling outputs would require interpretation alongside empirical data, rather than as a substitute for it.

26. In this case, the combination of empirical plume observations, sediment characterisation, site-specific baseline data, and the proposed monitoring framework provides a reasonable basis for assessing plume effects and managing uncertainty for the proposed activity. In our opinion, while numerical modelling could provide additional insight, it is most appropriately considered as a supplementary tool rather than a critical gap in the assessment.

27. Regarding the reference to calm conditions at the time of the Pākiri survey, in Question 21(c) of Minute 4 the Expert Panel asked "*Were the metocean conditions on the day of the survey: worst-case, best case, or something in between? Why?*".

[4] At paragraph 37 – 39.

28. In my (Dr Wilson) evidence response to Question 21(c), I describe[5] these conditions as being between best-case and worst-case, but closer to conditions that would result in limited plume dispersion due to reduced wave-driven mixing. Calm conditions therefore tend to maintain higher concentrations of suspended sediment in the near-field, rather than dispersing them more rapidly. On that basis, the survey provides a reasonably conservative indication of near-field plume persistence and peak turbidity in the vicinity of the vessel, while recognising that more energetic conditions may disperse material over a wider area at lower concentrations.

29. In addition, in Question 21(f) of Minute 4 the Expert Panel asked "*Was any scale analysis ('back-of-the-envelope' calculations) conducted using particle settling speed to test the plausibility of the data?*"

30. In my (Dr Wilson) evidence response to Question 21(f), I undertook[6] a simplified settling velocity analysis which provides an independent check on the plausibility of the observed plume behaviour. This analysis indicates that sand-sized particles are expected to settle over timescales of tens of minutes to a few hours, which is consistent with the rapid attenuation of turbidity and suspended sediment concentrations observed in the Pākiri plume survey. While this calculation is a simplification and does not account for all mixing and dispersion processes, it provides further support for the interpretation of the empirical data. I (Dr Wilson) concluded that the real world Pākiri measurements remain the more direct and reliable evidence of plume behaviour from the *William Fraser*.

André and Robin LaBonté (LaBonté Coastal Consultants Limited)

31. Paragraphs 4.27 and 4.28 of their submission raise concerns that turbidity measurements from the Pākiri plume survey are inaccurate, inconsistent with the visible plume, and were not taken within the plume. It is further suggested that turbidity should be "orders of magnitude greater" than

[5] Wilson Evidence dated 14 May 2026 in response to Minute 4 (RFI 1) at paragraph 21.
[6] At paragraph 29 – 35.

recorded. The submitters refer to Figure 5[7] in the Water Quality Assessment (Attachment 9) and state that it "purports to show the turbidity plume from the operating William Fraser to be only 2 NTU or less above the ambient value…".[8] Figures 4 and 5 (there is no Figure 5.1) are two pictures taken of the plume behind the *William Fraser* operating. These pictures do not purport to identify any specific NTU level.

32. We have considered these matters and, in our opinion, the turbidity data relied upon in both the Water Quality Assessment (Attachment 9) and the Jacobs (2020) sediment plume assessment were collected using established and widely accepted field and laboratory methods, including calibrated sonde instrumentation, conductivity, temperature and depth (CTD) profiling, and discrete water sampling. These methods are described in Section 5.1 of the Water Quality Assessment (for the ambient water quality assessment in Te Ākau Bream Bay) and Sections 4 and 5 of the Jacobs (2020) report on water quality for the Pākiri Sand Extraction Project.

33. The reports show these measurements were subject to appropriate quality assurance procedures, including calibration checks and verification against laboratory analyses. All raw data is provided in the appendices of the Water Quality Assessment (Attachment 9). Figures 4.3, 4.5, 4.6 and 5.2 of the Jacobs (2020) report include photographs showing the instruments used for sample collection and the survey vessel. Taken together, these aspects provide confidence that the turbidity measurements are robust and fit for the purpose of the water quality assessment of environmental effects.

34. In relation to whether the survey vessel remained within the plume, this issue is addressed in my (Dr Wilson) and Shayne Elstob's evidence statements (dated 14 May 2026) in response to Questions 21(d) and (e) of Minute 4. The Expert Panel asked (d) *"What assurances are there that the (moored) survey vessel remained on the centreline (or even within) the plume as it dispersed? If it did not, would this explain the observed rapid decrease in suspended sediment / turbidity?"* and (e) *"Were there any*

[7] Their comment refers to "Figure 5.1". No decimal figure numbers are used in the report to identify figures. Based on their comment, Figure 5 is understood to be the correct reference.
[8] La Bonte at 4.28.

observations of the lateral spread of the plume, at the surface and at depth?"

35. In paragraphs 22 to 27 of his evidence (dated 14 May 2026), Mr Elstob, who skippered the survey vessel, confirms it was positioned immediately behind the *William Fraser* and anchored to remain on station within the trailing plume under calm conditions with minimal drift, while the *William Fraser* continued its operations. He observed the plume spreading around the vessel during sampling, indicating it remained within, and effectively centred in, the plume. On that basis, in my opinion, there is no evidence that the observed reduction in turbidity reflects sampling outside the plume.

36. The robustness of the plume survey data is supported by the use of complementary sampling approaches and the consistency of results across independent transects. As described in Section 5 of Jacobs (2020), two sampling methods were used to obtain water quality measurements from within the plume immediately behind the *William Fraser* during normal sand extraction operations. The sampling process was repeated twice (Transects 1 and 2) giving two data sets of water quality measurements taken within the plume over distance and time.

37. Section 5 of the Jacobs (2020) report describes the sample collection methods and Figure 5.4 shows the sampling intervals for the transects within the sediment plume behind the *William Fraser*. During each transect, three physical water samples were collected using a Van Dorn sampler at regular intervals (approximately every 3 minutes and 15 seconds), with one sample at each depth for surface (<1 m), mid (15 m) and bottom water (35 m). These samples were analysed for TSS concentrations at an appropriately accredited laboratory (Hill Labs). At the same time a CTD instrument was deployed to collect continuous data on turbidity, temperature, dissolved oxygen, salinity, pH, photosynthetic active radiation, conductivity and fluorescence through the water column. A Seabird SBE19plus CTD instrument with integrated WQM fluorometer (chl-*a* and turbidity) was used.

38. The consistency between the results of the two sampling methods both in terms of the magnitude of change observed near the discharge point and the rapid attenuation with distance, provides corroboration of the data. This is shown in Figures 5.5 to 5.8 in Jacobs (2020). In particular, the alignment between low turbidity values and correspondingly low TSS concentrations beyond the immediate discharge zone indicates that the plume behaviour has been reliably captured, and that the observed trends are not an artefact of any single measurement method.

39. In addition, the two transects undertaken during the survey show a relatively consistent pattern of response. This is shown in Figures 5.5 to 5.8 in Jacobs (2020). While some minor variation is evident, as would be expected in a dynamic marine environment, both transects exhibit similar magnitudes of turbidity elevation near the vessel and comparable rates of attenuation, with conditions returning to near-ambient levels over a relatively short distance (250–2,000 m).

40. In interpreting the data, it is important to recognise that the visual appearance of a plume does not necessarily correspond to turbidity magnitude. The figure referred to by the submitters (Figure 5.1 in the Water Quality Assessment, Attachment 9, assumed to be Figure 5) is a photographic image taken from a vessel behind the *William Fraser*. While such images are useful for illustrating the presence and general extent of a surface plume, this photograph does not provide a quantitative measure of turbidity or suspended sediment concentrations and could be influenced by lighting, viewing angle, and the presence of coarse (larger) particles that settle rapidly and contribute only briefly to measured turbidity.

41. In our opinion, the Pākiri plume survey results are internally consistent, supported by multiple data collection methods and across multiple sampling transects, and provide real world evidence from the same vessel and sand extraction method proposed for the Te Ākau Bream Bay sand extraction project. The combined consistency between sampling methods and across transects and the evidence of Mr Elstob describing the survey conditions provides a good level of confidence in the dataset. In that context, while there may be differing views on the magnitude of turbidity

visible within the plume photographs, the key finding of the survey is that the increase in turbidity is relatively short-lived in both space and time, attenuating rapidly to near-ambient conditions over approximately 2 km or less.

Response to Water Quality Themes

42. We have considered the submissions that raise general concerns about sediment plumes, turbidity, and the potential release of nutrients or contaminants from seabed disturbance. These comments covered general themes relevant to water quality but did not comment directly on the Water Quality Assessment (Attachment 9) or other water quality evidence submitted by MBL for the Application. These comments are from the submitters listed in paragraph 9 above. I address three themes below.

Sediment Plume Persistence

43. Some submitters[9] expressed concern that the proposed activity will generate extensive sediment plumes, resulting in persistent reductions in water clarity.

44. The Water Quality Assessment (Attachment 9) draws on empirical plume observations from the Pākiri sand extraction operations, which used the same vessel (*William Fraser*) and extraction methodology as proposed for this Project. As discussed in Section 6 of the assessment, those observations show that turbidity and suspended sediment concentrations are elevated only in the immediate vicinity of the discharge from the *William Fraser*, reducing to within the range expected for a coastal marine environment within approximately 250 m, and returning to indistinguishable from ambient conditions within approximately 2 km. As mentioned above, this equates to a temporal scale of approximately 30 minutes, based on the operational speed of the vessel.

45. The reliability of these observations is addressed in my (Dr Wilson) evidence in response to Minute 4 (dated 14 May 2026), including Questions 21(c)

[9] E.g., Ruakākā Reserve Board, at page 9; Whangarei Heads Citizens Association, at Section 4.2, New Zealand Conservation Authority, at page 5, and Lang Cove Residents Association, at page 15.

(refer paragraph 28 above) and 21(f) (refer paragraph 30 above). I (Dr Wilson) explain that the plume survey was carried out under conditions that are reasonably conservative, with calmer conditions tending to retain higher concentrations in the near-field rather than promote wider dispersion. I (Dr Wilson) also undertook a simplified settling velocity ('back-of-the-envelope') analysis demonstrating that representative fine to very fine sand particle sizes settle over timescales of tens of minutes to a few hours, which was consistent with the rapid attenuation observed in the field data.

46. In the context of the Northland Regional Council's (**NRC**) Proposed Regional Plan for Northland (**PRP**) the key policy for water quality is listed in Appendix H under 'Policy H.3.3 Coastal water quality standards'. The water quality standards are prescribed for a range of attributes relevant to the proposed sand extraction activity in Te Ākau Bream Bay, namely turbidity and pH, as discussed in Section 2 of the Water Quality Assessment (Attachment 9). The 'Compliance Metric' in Table 25 of Policy H.3.3 in the PRP provides for annual median values, minimum and maximum values, and maximum allowable change in water quality. For 'Open Coastal Waters' applicable to Te Ākau Bream Bay, the threshold is 'no discernible change' (except for metals and microbiological parameters) to the annual median attribute state 'allowing for reasonable mixing'.

47. Baseline monitoring described in Section 5.1.3 of the Water Quality Assessment (Attachment 9) shows that Te Ākau Bream Bay is a dynamic open coastal environment, where TSS and turbidity is naturally low (medians measured at 1.5 g/m^3 and ≤0.095 NTU respectively across the various sampling depths and methods) but variable and influenced by metocean conditions. Using the closest NRC State of the Environment (SoE) data, the 5-year median TSS and turbidity were reported as 21.5 mg/L and 3.35 NTU respectively at Waipū Cove (~6 km southwest of Application Area boundary), as 5.2 mg/L and 1.14 NTU respectively in Whangārei Harbour at Mair Bank (~7.5 km north of the Application Area boundary), and as 9.9 mg/L and 1.185 NTU respectively in the open coast at Mangawhai Heads (~12 km south of the Application Area boundary) (refer Section 5.2.1 of the

Water Quality Assessment, Attachment 9). For waters in Te Ākau Bream Bay, the existing ambient turbidity and TSS were well below the median values reported for SoE sites (noting the dataset for the 8-week baseline monitoring programme was much smaller than the SoE dataset). On this basis and allowing for reasonable mixing, the Water Quality Assessment (Attachment 9) concluded that plume effects do not result in a discernible change to the ambient coastal water quality environment.

48. Taken together, the empirical plume data and supporting analysis provided in my (Dr Wilson) evidence demonstrate that sediment plume effects will be temporary, highly localised, and rapidly attenuated, and are not expected to result in persistent reductions in water clarity. As noted in Section 6.3.1 of the Water Quality Assessment (Attachment 9), based on an extraction time of 3.5 hours, turbidity is expected to be elevated in the Application Area for approximately four hours total and the residual effects after this time (if any) will not be discernible from the natural background variation. Accordingly, it is my opinion that the proposed activity is consistent with the requirements of Policy H.3.3 for open coastal waters and the sediment plume generated by discharge of sediment-laden water from the *William Fraser* during sand extraction activities will be indiscernible from ambient conditions after approximately 30 minutes from the activity ceasing.

Release of Nutrients and Increased Algal Growth

49. Ruakākā Reserve Board[10] and Waipu Cove Reserve Board[11] raise concerns that disturbance of seabed sediments during sand extraction may release nutrients, potentially promoting increased algal growth and degrading water quality.

50. Sections 5.2.2 and 6.3 of the Water Quality Assessment (Attachment 9) include analysis of sediment characteristics and ambient water quality conditions in Te Ākau Bream Bay. Sediment quality data presented in Table 9 in Section 5.2.2 show that sediments within the extraction area are

[10] Ruakākā Reserve board, at page 13.
[11] Waipu Cove Reserve Board, at 5.18

sandy and contain very low organic carbon (<0.13–0.18%). These low organic carbon levels indicate limited capacity for nutrient storage, noting that nutrients such as nitrogen and phosphorus in marine sediments are typically associated with fine, organic-rich material, which is largely absent from the extraction area.

51. The baseline water quality monitoring presented in Section 5.2 of the Water Quality Assessment (Attachment 9) further demonstrates that ambient nutrient concentrations in the water column are low and typical of an open coastal system, with no indication of elevated or enriched conditions. The assessment concludes that there is no substantial reservoir of nutrients within the sediments that could be mobilised through disturbance, and therefore no credible mechanism for the activity to result in measurable increases in nutrient concentrations in the water column.

52. In my opinion, the combination of low nutrient content in sediments, low ambient nutrient concentrations, and a highly dynamic receiving environment means it is highly unlikely that the proposed activity will result in a measurable increase in algal growth.

Release of Seabed Sediment Contaminants

53. Ruakākā Reserve Board[12] and Waipū Boat & Fishing Club Inc.[13] raise concerns that sand extraction may result in the release of contaminants bound within seabed sediments, leading to degradation of water quality and ecological effects.

54. Sediment quality data are presented in Section 5.2.2 of the Water Quality Assessment (Attachment 9), with results summarised in Table 9. The sediment chemistry dataset shows that all measured contaminants (including metals and hydrocarbons) are present at very low concentrations, well below the relevant Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZG) guideline values and NRC PRP thresholds. The low organic carbon content is an important

[12] Ruakākā Reserve Board, at page 13.
[13] Waipū Boat & Fishing Club Inc., at page 4.

indicator, as contaminants such as heavy metals and hydrocarbons are typically associated with fine-grained, organic-rich sediments. The absence of these sediment characteristics indicates that there is limited capacity for contaminants to accumulate or be stored within the seabed sediments. This demonstrates that there is no evidence of contaminant enrichment or accumulation within the sediments that could be mobilised by the sand extraction process.

55. I also note that the Water Quality Assessment (Attachment 9) found no discernible sources of contaminants adjacent to the extraction area, and nearby SoE monitoring indicates that water column contaminant concentrations (e.g., copper and zinc) are well below relevant guideline thresholds. On this basis, in my opinion, the sediments in the Application Area do not represent a source of contaminated material and the activity is highly unlikely to result in measurable water quality effects related to sediment contaminants.

Cumulative Water Quality Effects

56. Several submitters[14] raise concerns regarding potential cumulative water quality effects, including in combination with other activities in Te Ākau Bream Bay such as port operations, dredging, and vessel movements. These concerns generally relate to the potential for overlapping sediment disturbance to result in ongoing or progressive reductions in water quality over time.

57. For the reasons set out above in my evidence in relation to plume behaviour and receiving environment characteristics, I do not consider that adverse cumulative effects will occur. As discussed in Section 6 of the Water Quality Assessment (Attachment 9), sediment disturbance associated with the proposed activity is expected to be short-lived, localised, and rapidly attenuated. In my opinion, water quality effects will not persist or

[14] Northland Regional Council, at page 8; Patuharakeke Te Iwi Trust Board & Ngātiwai Trust Board, Appendix 1 at 8.4; Department of Conservation Comments, at 2.48; Parliamentary Commissioner for the Environment, at page 2; Bream Bay Coastal Care Trust, at page 1; Langs Cove Residents Association Inc., at page 49; New Zealand Conservation Authority, at pages 5 and 8; and Whangārei Heads Citizens Association, at Section 6.

accumulate in the water column between successive extraction events or in relation to other seabed disturbance activities in proximity to the Application Area.

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Dr Peter Stanley Wilson & Emily Joy Jones

12 August 2026