BEFORE THE FAST-TRACK EXPERT PANEL

IN THE MATTER	of an application for approvals under section 42 of the Fast-track Approvals Act 2024 ("FTAA")
AND	
IN THE MATTER	of the application for approvals by Trans-Tasman Resources Limited for the Taranaki VTM Project, a project listed in Schedule 2 of the FTAA

JOINT STATEMENT OF EXPERT WITNESSES:

MARINE MAMMALS

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20 November 2025

INTRODUCTION

1. Expert conferencing on the topic of marine mammals took place online via Microsoft Teams on 20 November 2025.

2. The conference was attended by the following experts:

   (a) Dr Simon Childerhouse ("SC") (Applicant);

   (b) Dr Deanna Clement ("DC") (Royal Forest and Bird Protection Society);

   (c) Anna Madarasz-Smith ("AMS") (Taranaki and Horizons Regional Councils). AMS notes that while she is an expert in marine ecology and has presented expert evidence at numerous hearings and Board of Inquiry, she does not consider herself a subject-matter expert in marine mammals specifically. Her expertise is impacts on coastal ecosystems, particularly water quality and benthic disturbance, and is able to speak to broader ecosystem interactions that may be relevant to this topic; and

   (d) Dr Leigh Torres ("LT") (KASM and Greenpeace). LT participated until approximately 2:30pm in relation to questions 2(a), 2(b), 3(a), 3(b), 5(b), and 6(a). The experts agreed to provide LT an opportunity to review the responses to the remaining questions and to briefly note her position (agree, disagree or abstain). Where this occurred, this is shown in red text.

3. Steve Mutch (ChanceryGreen) acted as facilitator.

4. Caitlin Todd (ChanceryGreen) assisted the experts to draft the Joint Witness Statement ("JWS").

CODE OF CONDUCT

5. The experts confirm that they have read the Code of Conduct for Expert Witnesses contained in the Environment Court Practice Note 2023 and agree to comply with it. The experts confirm that the issues addressed in this JWS are within their area of expertise, unless stated otherwise.

SCOPE OF STATEMENT

6. In Expert Panel Minute 19 (5 November 2025), the Panel directed experts in marine mammals to conference regarding identified questions, recording matters that are agree or disagree and any unresolved matters or uncertainties.

7. The scope of this statement is limited to responding to the questions posed by the Panel in Appendix E of Minute 19.

8. Appendix E of Panel Minute 19 formed the basis of an agenda for conferencing.

9. In this JWS, we report the outcome of our discussions in relation to each item (below), including by reference to points of agreement, disagreement, and unresolved matters or uncertainties. Where we are not agreed in relation to any issue, we have set out the nature and basis of that disagreement.

10. All experts note that the very short notice for the caucusing meant that not all parties were able to attend or attend for the full time. It was also challenging to cover in a single conferencing session the questions posed by the Panel given many of them were broadly framed.

QUESTIONS FROM THE PANEL

1. Baseline Information and Marine Mammal Use

a. *Is baseline information the occurrence, distribution, and seasonal or year-round use of the South Taranaki Bight and the project area sufficient for all relevant species, including Māui and Hector's dolphins, blue whales, other large whales, and pinnipeds?*

11. AMS, DC and SC consider that the baseline information provides sufficient evidence of the species that are likely to utilise the area of the South Taranaki Bight (STB). AMS, DC and SC agree with the proposed approach to assume that any species of marine mammal observed in the STB *could be* present near the proposal area. LT agrees with this paragraph.

2. Exposure Pathways and Risk Factors

a. *What are the key pathways by which mining activities (including vessel operations, underwater noise, sediment plume, and habitat alteration) could negatively affect marine mammals?*

12. All the experts agree that the key potential impacts include entanglement, vessel strike, direct and indirect toxic effects, trophic and ecological effects, and underwater noise. These impacts can lead to loss of foraging opportunities due to displacement, habitat alteration, potential increased physiological stress, and poor prey quality and quantity.

13. All the experts agree that the key pathways include vessel and operational noise, sediment plumes, vessel behaviour, pollution and habitat destruction. All of which could impact the health, reproductive capacity, and population abundance of marine mammals.

14. In relation to sediment plumes, all experts agree that increased turbidity and suspended-sediment concentrations can modify prey quality, distribution, abundance, and behaviour through changes in light availability, habitat structure, and water quality. These changes can reduce the foraging efficiency of marine mammals that depend on prey species sensitive to turbidity or benthic disturbance.

    b. *Which species, populations, or life stages are most vulnerable to these pathways and under what operational or environmental conditions?*

15. All the experts agree that all marine mammals that occurred within the Proposed Project Area (PPA) and wider area could be vulnerable to potential impacts, but the level of impact will vary significantly between species and populations. The species which will be the most vulnerable will be those that are regularly found within the PPA and for which the PPA represents an important habitat (e.g., feeding, breeding). Species that have a higher threat status may be more vulnerable if they are present.

16. All experts agree that the most vulnerable species that need to be considered are blue whale (due to year-round presence in South Taranaki Bight) and Māui/Hectors dolphins (due to low abundance). In managing adverse effects on these two species, the experts agree that this will likely provide protection for other species.

17. All experts agree that vulnerable life stages include calving, migration, breeding and foraging.

3. Magnitude, Extent, and Duration of Predicted Effects

    a. *What are the predicted magnitude, intensity, spatial footprint, and duration of risk from each pathway (e.g., zones and frequencies of underwater noise exposure, behavioural disruption, risk of ship strike, potential displacement from important habitat)?*

18. All the experts agree that, overall, the potential incidence of vessel strike and entanglement is low. However, the experts note that a death of a single individual

from a threatened species could have catastrophic consequences, including population-level effects (significance of incident).

19. All the experts agree that underwater noise represents a potentially high risk to marine mammals.

20. All the experts agree that habitat destruction and the sediment plume represents a risk to marine mammals that use the PPA and wider area.

21. The experts disagree on the *likely magnitude* of risk posed by habitat destruction and the sediment plume:

    (a) SC notes that the extensive plume modelling and risk assessment undertaken by the Applicant concludes that there will be little or no impact on marine mammals or their prey other than in the immediate area around the operation.

    (b) LT considers sediment plume to be a high risk.

    (c) DC considers habitat destruction to be a high risk but there is still insufficient evidence. LT agrees with this.

    (d) AMS considers there is insufficient evidence to inform her views on the level of risk in relation to sediment plume. DC agrees with this.

22. AMS, DC and LT have concerns around the ability to determine the magnitude, footprint, and duration of noise effects given the findings of the reviews by Joliffe et al., (2025) and Pine (2025). AMS, DC and LT also consider ambient soundscape noise (chronic noise pollution / ambient creep) has not been assessed at all as an effect.

23. SC disagrees with paragraph 22 above and considers that the setting of the maximum allowable level of underwater noise (as defined in Conditions) with associated acoustic monitoring and modelling allows for the assessment of the scale and magnitude of potential underwater noise impacts.

24. All experts agree that there are no current New Zealand standards for ambient underwater noise levels.

25. DC considers that ambient levels of noise will not change temporary threshold shift (TTS) or permanent threshold shift (PTS) effects since these limits are based

on source levels – this is a separate noise measure. DC considers more data on ambient noise is needed. LT agrees with this paragraph.

26. SC refers to paragraph 38 of his Statement of Evidence (13 October 2025) which addresses ambient noise issues and also notes that Mr Humpheson has addressed this in his evidence dated 13 October 2025 paragraphs 45-51. SC considers the issue of ambient noise has been adequately addressed by Mr Humpheson.

27. DC notes this is the first case where we are introducing a completely new sound sources to a NZ habitat that will run constantly for 20 years. Previous oil drilling, etc. does not count as we didn't have the knowledge, understanding or technology that we have today to test and manage this effect. LT agrees.

28. DC considers that the Proposal's location on the shelf matters due to how noise from transiting ships in the deeper parts of the STB will be reflected by the shelf walls. This equates to a much quieter region than measurement locations used by Humpheson (2025). LT agrees.

29. DC considers the Proposal will change the soundscape in this area for at least 20 years and becomes chronic noise pollution if it is more than 1-2 dB more than ambient. LT agrees.

30. LT refers to her previous evidence presented regarding acoustic modelling by Humpherson.

    b. *Are the predictions regarding the likelihood of population-level effects on threatened or rare species (e.g., blue whales, Māui and Hector's dolphins) robust?*

31. All the experts agree that any additional impact on Māui dolphins will be unsustainable and therefore should be avoided.

32. SC noted that the Applicant's Impact Assessment found no significant impact from the proposed operation on any marine mammals when considered with the appropriate mitigation and therefore there is no expectation of any population level impacts.

33. DC, AMS, and LT consider the predictions are not robust, particularly given:

(a) LT notes the lack of assessment of cumulative impacts, including additive and multiplicative effects from single stressors e.g. noise, sediment plume, habitat destruction, vessel strike. DC and AMS agree with this.

(b) LT also notes the lack of clarity on what data informed the population-level effects were actually evaluated.

(c) DC notes several aspects of underwater noise have not been considered (i.e. the errors in propagation modelling and ambient creep as discussed above).

34. SC notes that the Applicants assessment of cumulative impact follows the same general approach as is used in most other resource consent applications. SC considers that the type of extensive and highly detailed cumulative assessment as being recommended by the other experts has not ever been carried out in New Zealand before and that the data to undertake such an assessment does not exist and would be very expensive and difficult to obtain and would take many years.

4. Mechanisms of Impact and Thresholds

a. What evidence or models are used to identify likely biological responses (e.g., displacement, hearing loss, chronic stress, reduced foraging success, population effects) to the predicted exposures?

35. DC, AMS, and SC agree that the Applicant has provided models to assess the TTS and PTS impacts of underwater noise on marine mammals including hearing loss. However, they note that other than the species data, the predicted exposures were all done through modeling exercises with very little baseline data. LT agrees with this paragraph.

36. DC, AMS and SC (and LT) were unable to agree about the robustness of the Applicant's approach on underwater noise. The experts refer to discussions at paragraphs 32-34.

37. DC considers that the two peer reviews of underwater noise modelling suggest further work is needed before these models are fit for use in assessing noise effects. In addition, the models need to consider a range of scenarios including a worst-case scenario that involves all aspects of the proposed activities (e.g. IMV + crawler + support vessels). AMS agrees with this.

38. In relation to paragraph 37 above, SC refers to his statement at paragraph 60 below.

b. *What thresholds (e.g., behavioural disturbance thresholds, received noise levels, distance from source) underpin the assessment of significance for these effects?*

39. DC, AMS and SC note that there are no standard national thresholds for underwater noise for marine mammals, so they agree that the use of the USA NOAA guidelines is appropriate for TTS and PTS and behavioural thresholds. LT agrees.

40. SC clarified that recent evidence of Mr Humpheson (13 October 2025) has applied the most recent USA NOAA guideline levels.

41. DC is unsure in terms of the application of the most updated behavioural thresholds and defers to the reviews by Jolliffe et al., (2025) and Pine (2025).

42. Based on the peer reviews undertaken by Jolliffe et al., (2025) and Pine (2025), DC and AMS have concerns with the current noise source assessment and sound propagation loss modelling undertaken to inform the assessment of effects. LT agrees. However, DC and AMS (and LT) note this is outside their expertise.

43. DC considers both the Humpheson and Childerhouse (2025) responses indicate that they might be misinterpreting these thresholds, and DC defers to the Pine (2025) peer review on this (see paragraphs 72-82 of that review). DC considers that marine mammals will experience TTS / PTS if they swim within or through the threshold range, even if they only remain for a few minutes. LT agrees with this paragraph.

44. SC refers to his statement at paragraph 60 below.

45. DC considers that, while using a 'ring-fence' conservative threshold (130dB) is very pragmatic, it will not serve its protective purposes if it is not based on worst-case scenario or monitored in a way that will quantify the amount and frequency of violations. DC considers this is particularly important if there is no violation exceedance to trigger an operational consequence.

46. SC notes that Condition 11 is the first of its kind in New Zealand for constraining underwater noise from an activity to a level so as to avoid significant impacts on marine mammals. SC considers it is the most precautionary threshold ever applied in New Zealand and based on the associated modelling work, and it will provide a high degree of protection for marine mammals. SC notes that no other thresholds have been suggested by any party for Condition 11.

47. DC notes that the assessment of underwater noise following best practice standards would use some baseline data and predictive modelling along with USA NOAA guidelines to review appropriate thresholds for the various species involved. DC refers to the reviews by Jolliffe et al., (2025) and Pine (2025) (in particular, the Jolliffe, et al. review sets out the framework for this assessment).

48. SC refers again to his statement at paragraph 60 below.

5. Compounding, Cumulative, and Chronic Effects

a. In what ways might project impacts on marine mammals be compounded by other regional pressures (recreational/commercial vessel traffic, previous or future (within the next 20-30 years) resource use, changing environmental conditions, climate change)?

49. DC, SC and AMS agree that any new activity has the potential to have an effect on a species or population. Several individual impacts which are insignificant on their own, may add up to a significant cumulative impact. LT agrees with this paragraph.

50. DC, SC and AMS agree that it is important to carefully consider cumulative impacts of any activity, especially for species at high risk of extinction. LT agrees.

51. DC, SC and AMS agree that the effects of the proposed mining operation should be evaluated in terms of how they add to cumulative impacts already affecting marine mammals in the area (including noise and ship strikes from existing shipping, fishing and other existing impacts). LT agrees.

52. DC, SC and AMS note that any anthrophony (human made noise) from future developments e.g. offshore wind farms or mining has the potential to amplify cumulative impacts. Additionally, climate change has the potential to be additive or multiplicative, which can amplify cumulative impacts. LT agrees with this paragraph.

b. Are cumulative and chronic effects, such as long-term loss of key habitats or persistent elevation in background noise, sufficiently addressed in the application?

53. The experts agree that the present application has not provided a detailed assessment of potential cumulative effects.

54. All experts agree that attempts to provide robust scientific advice and/or regulate cumulative impacts, are currently difficult but not impossible.

55. All experts agree that, while disentangling the impacts of individual stressors from cumulative impacts can be difficult, little effort appears to have been made in the application to describe this.

56. All experts agree this would suggest caution in approach to novel activities, a robust evidence base with which to assess potential effects, and clear and measurable monitoring requirements that can provide early detection of effects that may occur outside of the predicted range, along with mitigation measures that can modify operations to enable protection for vulnerable species.

57. DC states that, as noted above, cumulative ambient noise (chronic noise pollution; ambient creep) is a relatively new area of research and has not been considered in the latest effects assessment nor protected for in the conditions.

57A. SC refers again to his statement at paragraph 34 above.

6. Key uncertainties and information gaps

a. What are the major uncertainties or data gaps influencing confidence in predictions about effects on marine mammals?

58. All experts acknowledge the intrinsic habitat and location of the Proposal mean there will always be some uncertainty / data gaps.

58A. SC refers again to his statement at paragraph 34 above.

59. AMS and LT consider that there is uncertainty with regards to:

(a) The noise source and propagation models. DC agrees with this statement.

(b) How the conditions may or may not achieve protection for marine mammals. DC agrees with this statement.

(c) The impact of the sediment plume on altering prey quality, abundance, and distribution patterns. This will be informed in part by the expert caucusing on water column primary production.

AMS, DC and LT consider these contribute to an inability to adequately describe the scale, magnitude and effects of the proposed activity on marine mammals.

60. In relation to paragraph 59 above, SC acknowledges potential uncertainty with the estimation of noise source and propagation modelling. However, SC notes that acoustic modelling by Mr Humpheson represents best practice for the assessment of underwater noise and uses the best available data. SC also considers that proposed Condition 11 sets a maximum underwater noise for the project, so the effects of that level of noise can and have been assessed appropriately.

61. LT considers, in relation to distribution of species, the lack of standardised surveys across the region led to poorly informed models that were trained with minimal data. This is a source of uncertainty.

    b. *How do these uncertainties affect the strength and reliability of the effects assessment?*

62. AMS, DC and SC agree that, in general, uncertainties in available data affect the strength and reliability of subsequent effects assessments. How material this is to the outcome will depend on the consequence arising from that uncertainty. LT agrees with this paragraph.

63. AMS and DC consider the effects addressed in paragraph 59 above would contribute to an inability to adequately describe the scale, magnitude and effects of the proposed activity on marine mammals. LT agrees.

64. SC considers that where the best available information includes gaps or uncertainty, it is still possible to proceed in making sensible judgements while accounting for uncertainty and implementing a precautionary approach if required. With respect to underwater noise, SC considers the setting of Condition 11 means that any uncertainty with source noise or propagation modelling becomes irrelevant.

65. DC notes that Condition 11 is only in relation to TTS, PTS and behavioural noise thresholds and the ambient soundscape has not been accounted for or protected. LT agrees.

66. SC refers to his statement at paragraph 26 above.

7. Consequences for Decision-Making and Conditions

a. Where information gaps, disagreement or uncertainty exist, what are the consequences for the application, effects assessment, and decision-making?

67. The experts disagree on to what level the existing uncertainties and data gaps would affect the strength and reliability of the effects assessment and decision making.

68. AMS considers that at present there is insufficient evidence to assess the potential impacts of the proposed activity on marine mammal populations, particularly with regard to determining whether adverse effects can be 'avoided' on indigenous taxa that are listed as threatened or at risk in the NZ threat classification system as per Policy 11a of the NZCPS. DC agrees with this. LT also agrees.

69. DC considers that a consequence will be the addition of a chronic and continuous noise source within the STB will elevate the ambient soundscape for at least the next 20 years. LT agrees.

70. SC notes that some experts appear to believe that if you do not understand everything completely and fully, then you cannot assess potential effects due to uncertainty. SC considers that this expectation of perfect knowledge of all aspects of the consent is simply not realistic nor practical. SC considers that, where the best available information may include gaps or uncertainty, it is still possible to proceed in making sensible judgements while accounting for uncertainty and including a precautionary approach if required. Furthermore, while SC accepts that there is some uncertainty with some aspects of the available data, SC believes that there is sufficient data upon which to make robust and accurate assessments with respect to marine mammals. SC believes that where there is uncertainty in the available data, it could be and was addressed through a comprehensive risk assessment and appropriately precautionary set of proposed consent conditions related to marine mammals ensuring that, if the consent did proceed, there would be no material harm on marine mammals.

71. AMS notes that uncertainty is inherent in many applications for activities. However, the acceptable level of uncertainty may depend on the consequence, e.g. impacts on threatened species, and therefore AMS considers that lower levels of uncertainty are required where there are higher consequences from activities. DC and SC agree with this. LT also agrees.

8. Adequacy of Mitigation and Monitoring

a. Are the proposed conditions on proposed mitigation and monitoring measures suitable and sufficient to avoid, remedy, or mitigate adverse effects on marine mammals?

72. For context, SC, DC and AMS (and LT) note that the Application includes detailed pre-commencement monitoring (Conditions 47-51), Environmental monitoring (Conditions 54-56), post extraction benthic monitoring (Conditions 57-58) and specific recommendations for marine mammal monitoring and mitigation (Conditions 10-18).

73. Further, SC notes that the pre-commencement monitoring programme includes marine mammal monitoring for 3 years prior to the operation commencing. The Environmental Management and Monitoring Plan also includes marine mammal components.

74. SC, DC and AMS agree that proposed Conditions 11 and 12 set a maximum allowable level of underwater noise from the operation. LT agrees.

75. AMS disagrees that the proposed conditions are suitable and sufficient to avoid, remedy or mitigate any potential adverse effects because AMS is not confident that, based on the reviews of Jolliffe et al., (2025) and Pine (2025), that noise conditions will be able to be met, that there is sufficient methods to alter operations should they not be met, that they are measurable (e.g. Condition 10(a)), and that they may not adequately provide for the range of effects identified in Question 2 above. DC agrees with this. LT also agrees.

76. DC considers that Condition 11(f) does not provide sufficient monitoring to determine in what conditions and how often noise thresholds may be violated by the regular workings of the proposed activities. LT agrees.

77. SC believes that the Applicant has provided a comprehensive and appropriately precautionary set of proposed consent conditions related to marine mammals ensuring that, if the consent did proceed, there would be no material harm on marine mammals. With respect to underwater noise, it is his belief that Condition 11 and 12 sets a maximum operational noise level and, if they are exceeded, then operations will have to cease. SC also notes that no alternative conditions have been proposed by any expert and only a few minor suggested modifications have been proposed.

b. *If experts disagree, what alternative or supplementary measures would improve effects management, and to what extent would these reduce uncertainty or risk of significant adverse effects?*

78. AMS and DC note that, where provided below, these are, in principle, to assist the Panel. However, these supplementary measures are not considered to negate the uncertainty in determining the assessment of effects or the impacts as described in this statement.

79. AMS considers noise and propagation modelling issues identified need to be resolved. LT agrees.

80. DC considers that the currently proposed time periods aren't long enough to capture the soundscape (need cumulative impact - habitat change) as well as all aspects of mining activity in all the various weather and marine conditions. DC defers to the reviews by Jolliffe et al., (2025) and Pine (2025) for the methodology. LT agrees with this paragraph.

81. DC states that this means production would be underway and we would have no idea as the noise levels being generated for up to 6 months. That is not acceptable and there is no reason why they need to wait to do monitoring at 90% or more production. LT agrees with this paragraph.

82. DC, SC and AMS consider that the Applicant should undertake continuous noise measurements for a period of no less than the first 12 months of production, and that the monitoring should commence as soon as the operation starts and cover all normal operating activities. LT agrees.

83. DC considers that annual attending measurements should be undertaken to review the generated spectrum and determine if any degradation in equipment has occurred.

84. DC considers that the following should be added to Condition 11(a) "... and 2km (or the exact distance of the 120dB contour)". This is to validate that portion of the propagation model. LT agrees with this paragraph.

85. DC considers that Conditions 11 and 12 should be re-considered once the propagate model has been adjusted following peer review comments (Jasco 2025; Pine 2025) and assumes the worst-case operational scenario (rather than best case) in which underwater noise will be generated by the proposed activities. LT agrees.

86. DC proposes an additional condition is necessary (and notes there is precedence for this in Tauranga and Bream Bay), as follows:

> *19. Cumulative soundscape noise levels cannot change due to anthrophonic (long term and habitat is not degraded so needs to include support vessels)*
>
> *a. Requires a baseline of at least 12 months*
>
> *b. Monitored initially at same 3 frequency bands as EU Descriptive 11 (which is related to shipping) and in regard to any additional frequency band(s) produced by the mining activity (once validated)*
>
> *c. Repeated for first 5 years of production once mining commences*

87. SC refers to paragraph 77 above.

88. LT proposes that repeated zooplankton tows within 10 km of the PPA be conducted regularly to collect krill and assess impacts of sediment loading on individuals. This sampling would provide real time information on the impacts of the sediment plume on the prey base (krill) for many marine animals in the South Taranaki Bight region, including blue whales. Thresholds of sediment loading can be established to inform operational aspects of the mining activities. The sampling frequency could occur every 3 months in the first 3 years of operation and if no impacts are detected, then sample can occur less regularly after.

9. Advice for interdisciplinary assessment and decision-making

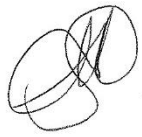
a. *What advice or caveats should be communicated to other experts or decision-makers to ensure that marine mammal effects and uncertainties are accounted for appropriately in interdisciplinary effects assessments or decision-making?*

89. The experts had insufficient time to address this question.

SIGNATURES OF EXPERTS

Dr Simon Childerhouse

Dr Deanna Clement



Anna Madarasz-Smith

Dr Leigh Torres