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 Helen Maree McConnell on behalf of McCallum Brothers Limited in Response to Invited Comments

(Marine Mammal Ecology)

Dated 12 August 2026

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Introduction

1. My full name is Helen Maree McConnell.

2. I am a Principal Consultant at SLR Consulting NZ Limited. I have held this position since January 2020. Prior to this I was an Associate Consultant for the same company (since August 2015). In this role my responsibilities include the provision of high quality technical marine science advice to a range of clients (typically industry and government) spanning the topics of aquaculture, coastal development, marine discharges, oil and gas, and mining.

3. I am a marine ecologist and hold a Master of Science degree (with distinction) in Marine Science from the University of Otago which I completed in 2002; and a Bachelor of Science degree, majoring in Zoology also from the University of Otago (1998).

4. I have twenty-two years of experience in research, policy development, and environmental consultancy. I have been involved in a wide range of marine and coastal projects both in the private and public sectors, though my area of speciality is in marine mammal ecology and conservation. I have prepared and presented expert ecological evidence at nine previous hearings as follows:

    a. Port of Tauranga, Stella Passage Development, Fast-track Approvals Application. Since 2021 I have been engaged as a marine mammal expert on behalf of the applicant for this project which includes wharf extensions, reclamation and dredging. Originally this project was considered as a direct referral application to the Environment Court, for which I participated in expert witness caucusing and prepared written evidence which was heard before the court in 2023. After partial approval through the original process, Port of Tauranga lodged a substantive application through the Fast-track Approvals Act in January 2026. This application, including my evidence and the Marine Mammal Management Plan that I

developed is currently being considered by the appointed panel, with a decision due in September.

b. Christchurch City Council Coastal Permit Applications. For this project I was engaged as a marine mammal expert by Environment Canterbury to review and evaluate the applicant's assessment of potential effects on marine mammals (including their Marine Mammal Management Plan and relevant conditions of consent) from the proposed Akaroa Wharf Redevelopment. The associated bundle of applications encompassed pile driving and dredging at several locations in French and Children's Bay, Akaroa to rebuild the historic wharf structure and develop surrounding coastal infrastructure. I presented expert evidence and participated in the hearing during March 2026 to assist with the decision-making process.

c. Northport Ltd Coastal Permit Application. For this project I was engaged by Northland Regional Council as a marine mammal expert to assist with the application that was lodged by Northport Ltd to construct, operate, and maintain an expansion of the existing port facility. The aim of the expansion being to facilitate an increase in freight storage and handling capacity. The activities proposed in this application included wharf extensions, coastal reclamation and dredging. This application, including my expert evidence, was heard in October 2023

d. Beach Energy Ltd Marine Consent Application. For this project I was engaged by the applicant to draft the assessment of effects on marine mammals (which formed part of the wider Marine Consent Application documentation that SLR Consulting was engaged to prepare) for a development drilling programme at the Kupe natural gas field in the South Taranaki Bight. In addition to assisting with preparing the application, I also gave evidence at the Environment Protection Authority (EPA) hearing in December 2022. This application was granted in March 2023.

e. New Zealand King Salmon Coastal Permit Application. For this project I was engaged as a marine mammal expert by Marlborough District Council to critically review the applicant's information pertaining to the potential effects of the proposed Blue Endeavour Marine Farm in the outer Marlborough Sounds on marine mammals. This application represents the first open ocean fish farm in New Zealand. I presented expert evidence and participated in the hearing in 2021 to assist with the decision-making process, and with finalising consent conditions.

f. Ohinau Aquaculture Limited Coastal Permit Application. For this project I was engaged as the marine mammal expert on behalf of the applicant to assess the potential effects on marine mammals from the establishment of a mussel spat collecting farm in Mercury Bay, Coromandel Peninsula. In association with this application, I prepared statements of evidence and appeared before the Waikato Regional Council hearing (2019) and an appeal hearing before the Environment Court (2020). This application was granted in 2023.

g. Ponui Aquaculture Limited Coastal Permit Application. This project involved a coastal permit application for a new mussel farm in the Firth of Thames. I was engaged by the applicant as an expert to assess the potential effects of the proposed farm structures and operations on marine mammals, preparing evidence and appearing before the Auckland Council hearing in 2020.

h. Shell Todd Oil Services Marine Consent Application (before the Environmental Protection Authority in 2015) to continue natural gas extraction and associated activities at Maui Platform A and Maui Platform B in the Maui natural gas field. During this hearing I presented expert evidence on the potential effects on marine mammals and, the potential effects of a condensate spill on marine wildlife

i. OMV New Zealand Ltd Maari Field Development Marine Consent Application (before the Environmental Protection Authority in

2014) to continue drilling in the Maari Field in the South Taranaki Bight. During this hearing I presented expert evidence on the potential effects on marine mammals and the potential effects of an oil spill on marine wildlife.

5. I have authored or co-authored 13 peer reviewed publications relating to marine mammal ecology and oiled wildlife response.

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

7. I prepared the following material lodged in support of MBL's application:

    a. Report titled Te Ākau Bream Bay Sand Extraction: Marine Mammal Environmental Impact Assessment dated 13 January 2026 included as Attachment 14 to the MBL Assessment of Environmental Effects (referred herein at my **Impact Assessment Report**).

    b. Te Ākau Bream Bay Sand Extraction: Marine Mammal Management Plan dated 17 December 2025 included as Attachment 28 to the MBL Assessment of Environmental Effects (referred herein as the **MMMP**).

Scope of Evidence

8. My evidence revisits the findings of my Impact Assessment Report, drawing on new acoustic monitoring data to augment my original findings relating to occurrence of marine mammals in and around the proposed sand extraction area (the **Project Area**).

9. My evidence also responds to comments relating to marine mammal topics that were received from invited parties on the Project.

Code of Conduct

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

a. I have read and am 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 Impact Assessment Report and the MMMP referred to above and authored by me:

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

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

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

Occurrence of Marine Mammals in Te Ākau Bream Bay

11. For the purpose of my Impact Assessment Report, marine mammal occurrence and habitat use in and around the Project Area was determined using multiple data sources including Department of Conservation (**DOC**) sighting and stranding data, published and unpublished literature, and acoustic monitoring data. In order to understand the regional context, the DOC sighting data was reviewed for the coastal marine area from the Bay of Islands/Pēwhairangi in the north to the Hauraki Gulf/Tikapa Moana in the south; however, sightings within Te Ākau Bream Bay[1] were considered in greater detail to gain a more comprehensive understanding of how frequently species occur here. The Brough et al. (2024) report added invaluable information about fine-scale habitat use inside and immediately offshore Te Ākau Bream Bay (the key findings of this report have now been published as Brough et al., 2025), as did site-specific acoustic monitoring which was undertaken from a location within the Project Area in 2024 (see Pine, 2025 for full methodology and results).

[1] For the purpose of this evidence Te Ākau Bream Bay is defined as being from Te Whare (Bream Head) to Paepae-o-Tū (Bream Tail), and out to the Taranga-Marotere Islands (Hen & Chicken Islands).

12. As per the findings of Section 3.2 of my Impact Assessment Report, there is evidence that waters of the wider region (Bay of Islands to Hauraki Gulf) are used by at least 34 marine mammal species (refer Appendix A of my Impact Assessment Report for a full species list), and given their mobile nature, many of these species are visitors to Te Ākau Bream Bay. Frequency of occurrence in the embayment varies widely with species, and the available data suggests that only seven species – bottlenose dolphins, common dolphins, Bryde's whales, false killer whales, pilot whales, killer whales, and New Zealand fur seals – have a frequent or semi-frequent presence in Te Ākau Bream Bay and the immediate surrounds. Other species such as humpback whales, southern right whales, minke whales and sei whales are seasonal or infrequent visitors, and several other cetacean species have been reported as rare visitors to the embayment.

13. Following the finalisation of my Impact Assessment Report additional acoustic monitoring data for Te Ākau Bream Bay has become available. This monitoring was undertaken as part of the Acoustic Monitoring Programme (**AMP**) which is discussed in detail in the statement of evidence of Dr Pine (Pine, 2026). The AMP requires a minimum of six months of baseline acoustic recordings to be undertaken before any sand extraction can commence to quantify the underwater soundscape of Te Ākau Bream Bay. Cetacean detections are a valuable derivative of this monitoring. Hydrophones were deployed off Waipū Cove in the southern portion of the embayment on 7 July 2025 and near continuous data collection[2] was maintained until 22 June 2026. Monitoring beyond this period continues, but to date, data is only available until 22 June 2026.

14. The AMP results represent the most comprehensive temporal account of marine mammal presence in Te Ākau Bream Bay to date, and for the most part they reiterate the findings of my Impact Assessment Report. A critical finding of the AMP was that high numbers of detections of marine mammals (particularly delphinids) were made in the southern part of Te Ākau Bream Bay, and that foraging behaviours were commonly detected (refer to

[2] The only data gap during this period occurred between 24 January and 18 February 2026 which resulted from damage to the hydrophone.

paragraph 33 of my evidence where this foraging analysis is discussed in more detail). This finding provides empirical evidence that dolphins utilise the whole of Te Ākau Bream Bay and that critical behaviours (such as foraging) are not restricted to the Project Area.

15. Detailed findings of the AMP are provided by Pine (2026) in his Attachment 3. Key findings of relevance to my assessment are listed below:

    a. Across the monitoring period, 440 dolphin detection events were recorded, with event duration ranging from 1 – 347 minutes. Detections were made during daylight hours and at night, and occurred across all seasons, peaking in spring;

    b. On 26 occasions, orca were detected with a maximum event duration of approx. two hours. While detections for this species were made during daylight hours and at night, the number of detections was highest in winter and spring;

    c. As expected, Bryde's whales were the most frequently detected baleen whale with detections occurring on 73 occasions, peaking in spring (with a mean duration of 15.4 minutes). As described in Pine (2025) the detection range is large for baleen whales on account of the low frequency nature of their calls; and

    d. Four other species of baleen whales were detected during the monitoring period: humpback whales (15 detection events), sei whales (seven detection events), and pygmy blue and southern right whales (one detection event each).

16. **Table 1** summarises the key findings in terms of frequency of occurrence and habitat use for the species which are likely to occur in Te Ākau Bream Bay. New results from the AMP have been integrated into **Table 1**.

Table 1: Marine Mammal species likely to occur in and around Te Ākau Bream Bay

Species and threat classification (NZTCS[a], IUCN[b], NZCPS[c])	Likelihood and frequency of occurrence	Seasonal trends
Common dolphins a. Not threatened b. Least concern c. No policy 11 status	Likely frequent presence in and around Te Ākau Bream Bay. DOC sightings data suggest that sightings within Te Ākau Bream Bay usually occur beyond 30 m depth contour, and this is supported by Brough et al. (2024) who noted a preference for deeper open waters.	Year round – but possible increased inshore presence in winter and spring. Overall, the highest rates of occurrence occur in offshore waters in summer and autumn (Brough et al., 2024).
Bottlenose dolphin a. Nationally vulnerable[3] b. Least concern c. Policy 11(a) species	Likely frequent (consistent) presence in and around Te Ākau Bream Bay. Systematic surveys report a band of relatively high-use habitat for coastal bottlenose dolphins during summer and autumn that runs from Whangārei Heads to Bream Tail (Brough et al., 2024). The Project Area flanks the central part of this high-use band. Acoustic detections of this species at the Project Area and wider Te Ākau Bream Bay are very common, occurring on a near-daily basis in all seasons (Pine, 2025; 2026). See paragraph 20 of my evidence for calculated occurrence rates.	Year round – While DOC sightings data suggest that most sightings in Te Ākau Bream Bay occur in spring, high rates of occurrence are also noted through summer and autumn (Brough et al., 2024). More recently, acoustic monitoring results (Pine, 2025; 2026) confirm a frequent presence of this species throughout the year (including winter months).
Killer whales/orca a. Nationally critical b. Data deficient c. Policy 11(a) species	Likely sporadic presence in Te Ākau Bream Bay. Given their highly transient nature, this species is not consistently present but does commonly move through the embayment. This transience most likely accounts for the lower occurrence of this species noted by Brough et al. (2024).	Year round – but more common in Te Ākau Bream Bay in winter and spring (following DOC sightings data, and Pine, 2026).
Bryde's whales a. Nationally critical b. Least concern c. Policy 11(a) species	Likely frequent presence in regional coastal and offshore waters. The DOC sighting data shows sightings within Te Ākau Bream Bay occur in the outer	Year round – while DOC sightings data and Brough et al. (2024) suggest whales are more common in Te Ākau Bream Bay in

[3] The threat status of this species recently changed from 'Nationally Endangered' to 'Nationally Vulnerable' to reflect that the population of offshore/oceanic bottlenose dolphins is greater than 1,000; however, it is noted that the inshore population remains dependent on conservation management measures (Lundquist et al., 2025).

	bay near the 50 m depth contour. Findings from Brough et al. (2024) support this preference for deeper water but also identify a hotspot to the northeast of the Project Area (off Whangārei Heads) (Brough et al., 2024).	spring, summer and autumn, recent AMP data identifies a peak in spring, with presence also confirmed throughout the year including winter months (Pine, 2025; 2026).
Long-finned pilot whales a. Not threatened b. Least concern c. No policy 11 status	Likely presence in regional waters, but mostly offshore (i.e. beyond Te Ākau Bream Bay). While acoustic detections in the vicinity of the Project Area have been made (Pine, 2025), presence is mostly further offshore.	Year round – but most sightings in summer and autumn (following DOC sightings data and Brough et al., 2024).
False killer whales a. Uncommon b. Near threatened c. Policy 11(a) species	Likely seasonal presence in and around Te Ākau Bream Bay, but mostly in offshore waters following Zaeschmar et al. (2014) who noted that while rare sightings in shallow nearshore waters do occur, the low encounter rate here suggests that distribution is centred further offshore.	Summer/Autumn – following Brough et al. (2024) and Zaeschmar et al. (2014).
New Zealand fur seals a. Not threatened b. Least concern c. No policy 11 status	Likely in regional coastal and offshore waters; however, while small numbers of individuals are known to be present, given the lower numbers of seals in Northland compared to more southern regions of New Zealand, the density of this species is expected to be low.	Year round – but most common in winter months (following DOC sightings data).
a). Lundquist, D., Boren, L., Childerhouse, S., Constantine, R., van Helden, A., Hitchmough, R., Michel, P., Rayment, W., Baker, C.S. 2025. Conservation status of marine mammals in Aotearoa New Zealand, 2024. New Zealand Threat Classification Series 48. Department of Conservation, Wellington. b). IUCN 2026. The IUCN Red List of Threatened Species. Version 2025-2. https://www.iucnredlist.org c). DOC, 2025. New Zealand Coastal Policy Statement 2010: as amended in 2025. Published by New Zealand Department of Conservation, December 2025. 30 pp.		

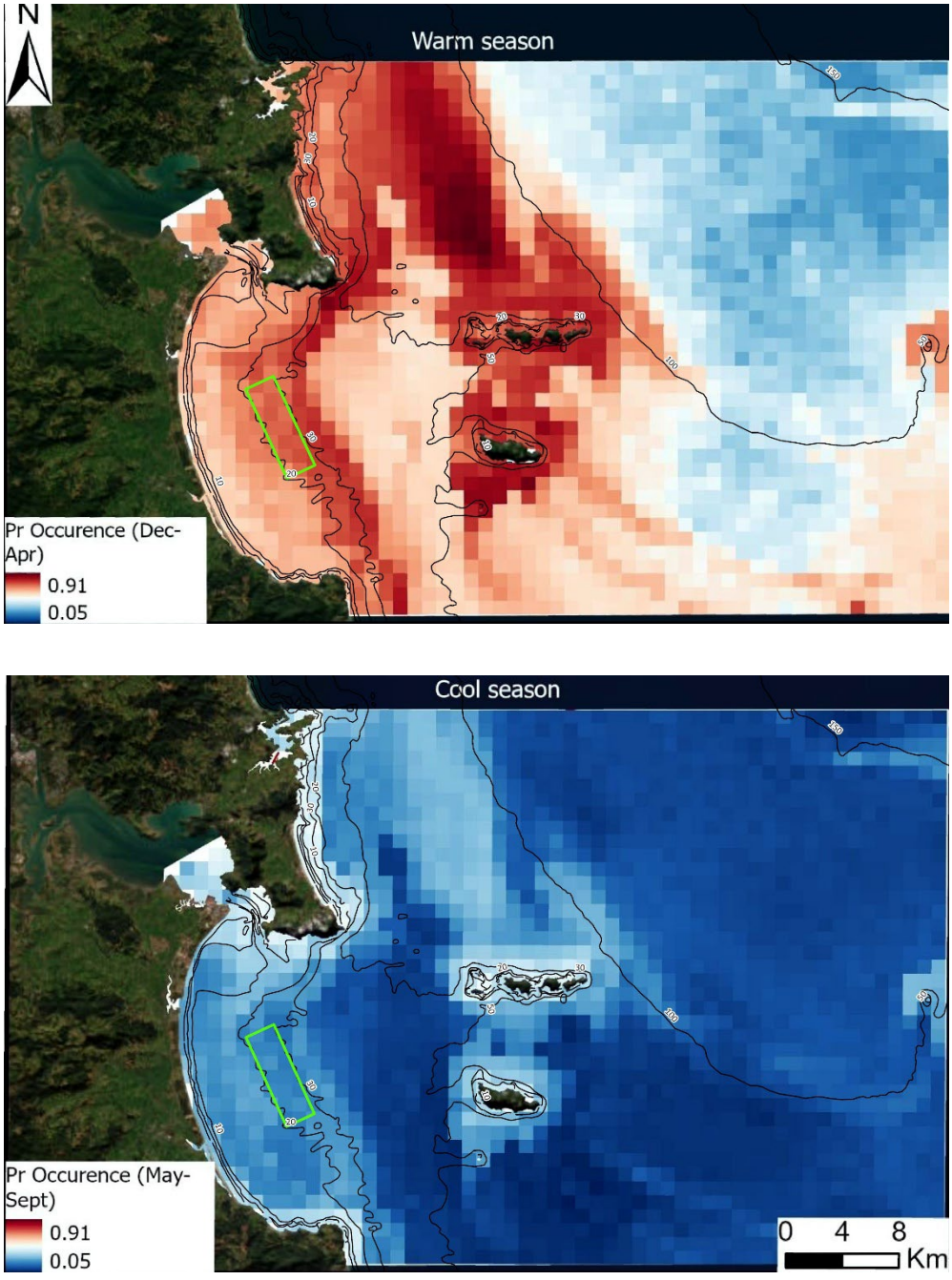
17. While Te Ākau Bream Bay supports foraging, breeding and resting behaviours for several species, virtually all species that have been identified as having a likely presence here have large home ranges. Because of this I am confident that the Project Area would only represent a very small part of the overall distribution of most marine mammals.

18. The only potential exception to this is for bottlenose dolphins which, despite having large home ranges within a broader species distribution[4], have a high degree of residency to Te Ākau Bream Bay and surrounds as indicated by both acoustic monitoring data (Pine, 2025; 2026) and boat-based survey data (Brough et al., 2024; 2025). On this basis, Te Ākau Bream Bay and surrounds is considered to be important habitat for bottlenose dolphins. In addition, Brough et al. (2024; 2025) provide evidence that bottlenose dolphins do not use their home ranges evenly (refer **Figure 1**), and that individual dolphins exhibit localised preferences for certain areas that are characterised by high-rates of occurrence (i.e. 'hotspots').

19. As indicated by **Figure 1**, several hotspots have been identified in Te Ākau Bream Bay and surrounds, providing evidence that the embayment itself and the adjacent area around the Taranga-Marotere Islands (Hen and Chicken Islands) and Parry Channel represents 'core habitat'. In particular, **Figure 1** shows a band of high-use bottlenose dolphin habitat extending across the entire length of central Te Ākau Bream Bay from December to April; the Project Area is located on the inshore margin of this hotspot which occurs around the 30 m depth contour. For this reason, I consider that the Project Area overlaps 'core habitat' for this species whilst noting that there are multiple large hotspots in and around Te Ākau Bream Bay. On this basis, the Project Area occupies a fraction of the available core habitat for bottlenose dolphins in and around Te Ākau Bream Bay.

[4] In the northern North Island this species occurs along at least 500 km of coastline from Doubtless Bay to Tauranga (Constantine, 2003) and probably beyond into parts of the eastern Bay of Plenty (Zaeschmar et al., 2020) and the west coast of the North Island (Tezanos-Pinto et al., 2013).

Figure 1: Coastal bottlenose dolphin probability of occurrence during warm (Dec – Apr) and cool (May – Sep) seasons, relative to Project Area (yellow polygon). Adapted from Brough et al. (2024).



20. Amalgamation of the AMP data (Pine, 2026) with acoustic data collected in May and June 2004 (Pine, 2025), provides a full 12 months of hydrophone data for Te Ākau Bream Bay. Despite the deployment periods being non-

contiguous and the locations varying[5], detection rates for delphinids from the composite data confirm that dolphins (presumably bottlenose, following Pine, 2025) are indeed present year-round. The AMP data indicates that for the deployment period to date, occurrence peaked in spring when dolphins were present on 71.4% of recording days. Summer rates were slightly lower with dolphins detected on 60% of recording days; and rates of detection were similar during autumn and winter, with dolphins detected on 46.7% and 48.7% of recording days respectively.

Potential Impacts on Marine Mammals

21. Actual and potential impact pathways on marine mammals from the proposed sand extraction activities were identified as underwater noise, habitat modification, ship strike, exposure to contaminants, marine debris, entanglement, artificial lighting and cumulative impacts. Each of these potential impacts was thoroughly described and assessed in my Impact Assessment Report. My assessment methodology considered both magnitude and likelihood, and also the relative ecological value of each potential marine mammal receptor (adapted from EIANZ, 2018).

Response to Comments

22. The following parties provided comments of relevance to marine mammals that I have responded to in this statement of evidence:

    a. DOC; specifically, the Statement of Advice provided by Mr Jochen Zaeschmar for DOC at Appendix D of the DOC submission.

    b. Patuharakeke Te Iwi Trust Board & Ngātiwai Trust Board (**PHT & NTB**); specifically, the Statement of Expert Evidence provided by Dr Tom Brough for PHT & NTB at Appendix 7 of the PHT & NTB submission.

    c. Bream Bay Guardians (**BBG**).

[5] The AMP data was collected off Waipū Cove from 7 July 2025 to 26 April 2026, and the 2024 data was collected from the Project Area between 7 May and 26 June 2024.

d. Northland Conservation Board (Te Rūnanga Papa Atawhai o Te Tai Tokerau) (**NCB**).

e. Whangarei Heads Citizens Association (**WHCA**).

f. Minister for Tourism and Hospitality (Louise Upston) (**MTH**).

g. New Zealand Conservation Authority (**NZCA**).

h. Langs Cove Residents Association Inc. (**LCRA**).

i. Waipu Boat & Fishing Club Inc. (**WBFC**).

23. Many of the substantive comments raised similar concerns, for this reason I have addressed these comments by theme. **Table 2** summarises these themes and the parties of relevance. Other comments that don't naturally fit into one of the major themes are addressed in **Table 4** which is provided later in my evidence (refer paragraph 86 of my evidence).

Table 2: Parties with substantive comments related to marine mammals

	Major themes	Parties of relevance
1	High marine mammal biodiversity in Te Ākau Bream Bay	DOC, PTH & NTB, BBG, WHCA, NZCA, MTH, LCRA
2	Presence of important marine mammal habitat	DOC, PTH & NTB, BBG, WHCA, LCRA
3	Underwater noise impacts on bottlenose dolphins	DOC, PTH & NTB, BBG, WHCA, NZCA, LCRA
4	Habitat modification impacts on bottlenose dolphins	DOC, PTH & NTB, BBG
5	Cumulative effects	DOC, PTH & NTB, NZCA, WBFC
6	Mitigations and monitoring	DOC, PTH & NTB, BBG, WHCA, NZCA, NCB, MTH
8	NZCPS requirements	PTH & NTB

Theme 1: High Marine Mammal Biodiversity in Te Ākau Bream Bay

24. A common theme across all comments was the high biodiversity of marine mammals utilising Te Ākau Bream Bay and surrounds. My Impact Assessment Report comprehensively described the marine mammal biodiversity in the bay and the wider region, and no parties have identified

omissions in this respect. For this reason, I provide no further comment on this topic but defer to Section 3.2 of my Impact Assessment Report, **Table 1** of this statement of evidence, and associated paragraphs 11 to 20 of my evidence.

Theme 2: Presence of Important Marine Mammal Habitat

25. Several commenters raise the general concern that the Project Area overlaps with important marine mammal habitat, while other commenters raised this concern in terms of individual species. I provide responses in accordance with the species subheadings below; collectively these address the generic comments that were also received.

Bottlenose dolphins

26. My Impact Assessment Report clearly states that Te Ākau Bream Bay is considered as important core habitat for semi-resident bottlenose dolphins that exhibit high levels of site fidelity to the bay. In addition, my report acknowledges that the embayment is known to provide foraging habitat for this species (based on the findings of Brough et al., 2024; 2025).

27. An abundance estimate for coastal bottlenose dolphins in Te Ākau Bream Bay was recently calculated to be 288 (95% CI = 242 – 384), confirming this to be the largest coastal population in New Zealand (Brough et al., 2024; 2025). This infers national significance of this site for bottlenose dolphins. Further, high re-sight rates for individual dolphins suggest a high degree of residency (of 149 distinct individuals, 109 (73%) were encountered on more than one occasion, and 40% were encountered in more than one year) (Brough et al., 2024; 2025). In addition, the 2024 acoustic monitoring data reported long detection events for dolphins in the vicinity of the Project Area (see Section 3.2.1 of the Impact Assessment Report). On this basis, it is clearly established that the Project Area occurs in important marine mammal habitat, including core habitat for bottlenose dolphins, and this was a key consideration in my assessment.

28. Comments received by Dr Brough, on behalf of PHT & NTB, voice concern that my Impact Assessment Report understates the extent of bottlenose

dolphin use of Te Ākau Bream Bay (refer paragraphs 2.2 and 3.2 of Dr Brough's evidence). Similarly, Mr Zaeschmar (for DOC) is of the opinion that my findings over-emphasised the connectivity of the local population with other locations such as Te Pēwhairangi/Bay of Islands, Aotea/Great Barrier Island, and Tipaka Moana/Hauraki Gulf (refer paragraphs 34 and 42 of Mr Zaeschmar's advice). However, based on the information available to me at the time that my Impact Assessment Report was written, this connectivity was precisely what the data pointed to. Indeed, Brough et al. (2024) stated that 'It is highly likely individuals from the study area migrate between adjacent areas along the north-east coast including the Te Pēwhairangi/Bay of Islands, Aotea/Great Barrier Island and the Hauraki Gulf'. This, in conjunction with 1) the previously reported seasonal variation in presence (as indicated in **Figure 1**) which suggested that dolphins were using alternative habitat through the cooler months, and 2) the findings of Mourão (2006) that dolphins seldom remained in an area for more than a few days at a time, supported my Impact Assessment Report conclusions that the embayment forms part of a wider important area that supports fundamental ecological requirements for this population.

29. Further, and for the purpose of my Impact Assessment Report I defined 'Te Ākau Bream Bay' as encompassing the area from Te Whare (Bream Head) to Paepae-o-Tū (Bream Tail), and out to the Taranga-Marotere Islands. However, Brough et al. (2024; 2025) used the name Te Ākau Bream Bay to describe a larger area including waters offshore of the Taranga-Marotere Islands, and waters immediately to the northeast of Whangārei Heads. This slight variance in terminology use perhaps contributes to the differences of opinion between parties.

30. Brough et al. (2024; 2025), mapped hotspots of occurrence for bottlenose dolphins throughout their wider survey area (refer **Figure 1**). These maps clearly indicate that during the warm season, areas of high-use bottlenose dolphin habitat extend well beyond the distinct embayment (that I defined as Te Ākau Bream Bay), providing additional support for my conclusion that the embayment forms part of a wider important area.

31. To date the only acoustic data for the specific Project Area itself (refer Pine, 2025) was collected during the winter months (7 May 2024 to 26 June 2024). During this deployment period, dolphin detections were frequently made (on 37 of the 51 deployment days).

32. Subsequent to my Impact Assessment Report being finalised, the AMP results have added valuable additional data over a longer timescale and a wider spatial scale. These results represent a significant increase in the current understanding of dolphin use of Te Ākau Bream Bay; confirming a consistent presence of dolphins in the embayment throughout the year. These results indicate that seasonal variation in dolphin presence is possibly lower than reported by Brough et al. (2024; 2025) and expressed in my Impact Assessment Report. The new AMP data has therefore allowed me to revisit my conclusion around bottlenose dolphin use of the area. Based on the new data, I now conclude that dolphins have a more consistent presence in Te Ākau Bream Bay than previously thought; occurring on a near-daily basis across all months of the year. This suggests that the local bottlenose dolphin population may not be using distant parts of their home-ranges as frequently as implied by my Impact Assessment Report. In this regard, my opinion has changed based on the availability of the AMP data.

33. Both Dr Brough and Mr Zaeschmar also queried whether further analysis could be done on the acoustic data that has been collected by MBL to date to quantify the use of the Project Area as foraging habitat for bottlenose dolphins; particularly given the long detection events that have been reported (Pine, 2025). This analysis has now been undertaken for both the AMP data (see paragraph 13 of my evidence) and the 2024 acoustic data. The findings, which are presented in detail by Pine (2026), confirm that foraging behaviours are relatively common at both the Project Area and at the Waipū Cove deployment location (19% and 28% of extraction events respectively), reinforcing the fact that dolphins forage widely throughout Te Ākau Bream Bay. These findings did not identify any disproportionate representation of foraging behaviours in the Project Area; hence, on the basis of this data it appears that the Project Area does not demonstrate any superior qualities in terms of foraging habitat compared with the Waipū

Cove deployment location, rather dolphins are using the whole embayment as foraging habitat throughout the year.

34. Mr Zaeschmar describes how marine mammals do not use their home ranges equally (refer paragraph 33 of Mr Zaeschmar's advice), raising concerns that my Impact Assessment Report did not adequately consider this in the context of how disturbance might disproportionally affect high-use areas despite the overall distribution of bottlenose dolphins being considerably larger than Te Ākau Bream Bay. This issue was also raised by Dr Brough at paragraph 3.2 of this evidence. While information about hotspots of dolphin distribution was presented in my Impact Assessment Report, I now acknowledge that the AMP results and the additional analysis of the acoustic data in terms of foraging activity have subsequently provided additional evidence that the Project Area is frequently used by dolphins for foraging. The Project Area is however one of many high-use areas in Te Ākau Bream Bay and surrounds (**Figure 1**), and the AMP data now confirms that dolphin foraging events are widespread. This finding concurs with the species ecology: that bottlenose dolphins forage opportunistically on a wide variety of prey species. On this basis, anticipated disturbance from project activities is unlikely to disproportionally affect high-use areas of bottlenose dolphin habitat.

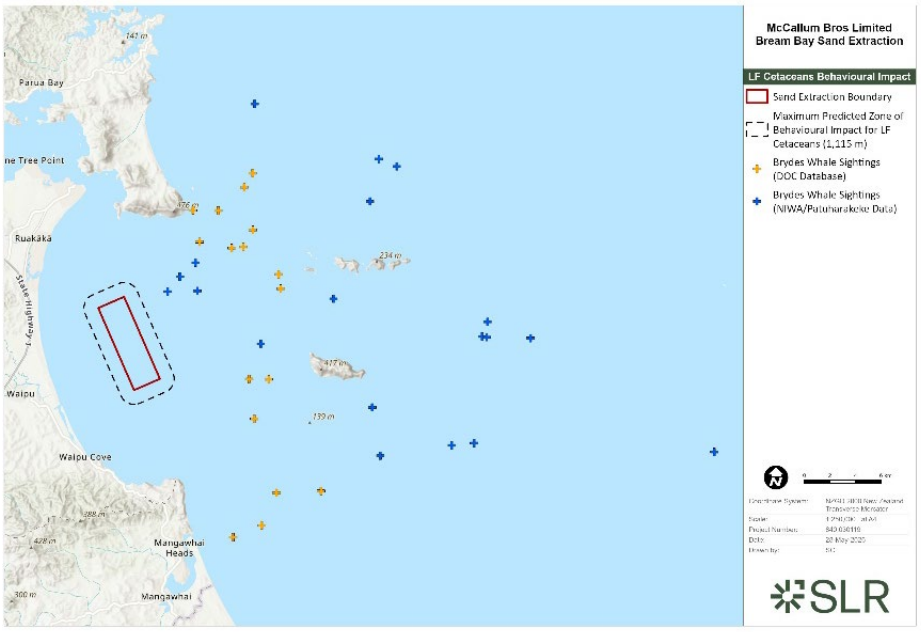
Bryde's whales

35. Several commenters raise concerns that nationally critical Bryde's whales frequently occur in the Project Area, and Mr Zaeschmar alludes to data he has that suggest site fidelity of some individuals to Te Ākau Bream Bay. As per my conclusions in Table 1, I have completed my assessment on the basis that this species has a likely presence in regional coastal and offshore waters; noting that the available data indicates that most occurrences of Bryde's whales in Te Ākau Bream Bay occur in waters further offshore of the Project Area.

36. **Figure 2** plots the available sightings location data for Bryde's whales from the DOC sightings database and Brough et al. (2024); showing the Project Area and the maximum predicted zone of behavioural effects from

underwater noise. This figure clearly supports my conclusion that while occasional presence in the Project Area should be expected from time to time, in the most part this species prefers habitat in deeper further offshore waters. My assessment findings remain unchanged for this species for all potential effects.

Figure 2: Sightings locations of Bryde's whales



<u>False killer whales</u>

37. Comments of Mr Zaeschmar, the LCRA, and the WHCA assert that my Impact Assessment Report downplays the significance of the Project Area for false killer whales. Based on the available data, I consider this species is likely to occur seasonally in Te Ākau Bream Bay, but following Zaeschmar (2014), the population distribution off the northeast coast of New Zealand is concentrated offshore (based on sightings of this species that occur over the distributional range from the Three Kings Islands to the Bay of Plenty). While photo identification data indicates site fidelity of some individuals, high rates of movement over distances of up to 650 km has been reported (Zaeschmar, 2014). My assessment findings remain unchanged for this species for all potential effects, as no new evidence has been provided to the contrary. In particular, I disagree with the comment of Mr Zaeschmar

(at paragraph 35 of his advice) that "*The Area*[6] *is known as an important foraging area for false killer whales*", on the basis that no sightings of this species have been reported inside the Project Area, and relatively few sightings of this species occur inshore of Taranga-Marotere Islands/Hen and Chicken Islands (Brough et al., 2024).

38. The statement made by the WHCA that there is a 'small resident population with high site fidelity to the exact area proposed for sand mining (Tezanos-Pinto and Bohorquez, 2024[7])' is erroneous; these authors do not specifically refer to Te Ākau Bream Bay, but rather to a much wider area of New Zealand (including offshore Hauraki Gulf, Gisborne, Marlborough Sounds and the Chatham Island).

Theme 3: Underwater noise impacts on bottlenose dolphins

39. Both Dr Brough and Mr Zaeschmar consider that underwater noise effects on bottlenose dolphins have been underestimated and that my conclusion that effects will be of low overall significance due to the high rates of mobility of animals across large home-ranges does not adequately consider 1) the ecological importance of the area, 2) high rates of site fidelity/frequent use, and 3) uneven use of habitat across individual ranges. For these reasons they predict that the proposed sand extraction operations will result in repeat disturbance of individual dolphins in core habitat.

40. Mr Zaeschmar summarises this in paragraph 56 of his advice by stating: *"I agree with the assessment that acoustic disturbance may potentially lead to the displacement of some individual bottlenose dolphins. Consequently, I disagree with the assessment that effects on marine mammals, in particular the local bottlenose dolphin population will be minor".*

41. Given the high rates of residency of bottlenose dolphins in Te Ākau Bream Bay, there is agreement that this species is most likely to be affected by the potential impacts of the project, and that ongoing underwater noise is the impact that warrants the most careful consideration. I provide a thorough

[6] Defined by Mr Zaeschmar as the proposed sand extraction area (refer paragraph 10 of his advice).

[7] Note the correct citation for this paper is Tezanos-Pinto et al. (2025), see reference list for details.

evaluation of underwater noise impacts in my Impact Assessment Report and reiterate key points in respect to bottlenose dolphins in the paragraphs below.

42. Several operational considerations provide important context to the potential level of exposure of underwater noise on dolphins as listed below. In particular, the latter two points are fundamental to understanding that underwater noise effects are temporary in nature.

    a. The operational noise profile of the *William Fraser* falls at the quieter end of the source level range that is generally reported for Trailing Suction Hopper Dredgers (**TSHD**s). The reasons for this are largely the result of careful vessel design to reduce underwater noise (e.g. the use of an electric pump and acoustically lined engine and pump rooms).

    b. Sand extraction will not occur daily (3-5 trips per week), and on the days that it does occur, will be limited to a maximum of 3.5 hours (see Attachment 27 – Sand Extraction Operation Plan, Section 2.2-2.3).

    c. Sand extraction will be restricted to the afternoon/early evening to align with the time of day in which activity levels are typically highest for bottlenose dolphins. The aim here is to minimise disruption to critical resting periods.

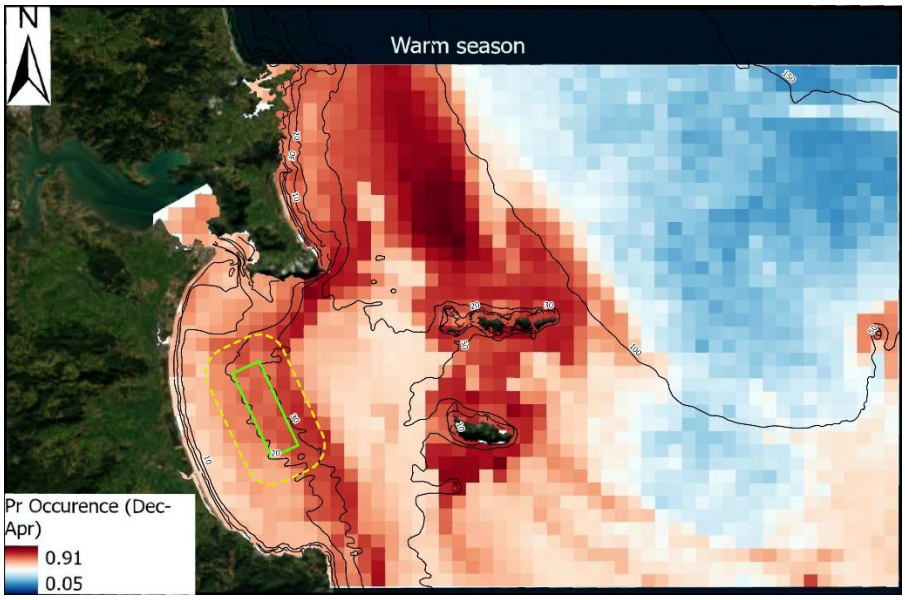
43. In addition, and in accordance with best practice, modelling was used to predict the instantaneous underwater noise effects on dolphins (Pine, 2025). The modelling results indicated that auditory injury is not expected during sand extraction, and TTS is not predicted beyond 0.5 m. Further, instantaneous impacts of noise on dolphins will be spatially restricted with all but low-level masking (<25% listening space reduction: **LSR**) being limited to within 2.5 km of active operations. Within this zone, behavioural effects will mostly be constrained to within 596 m (following Pine, 2025).

44. In terms of quantifying the absolute maximum extent of ecologically meaningful effects, the 25% LSR threshold (which in this case occurs at 2.5

km from the *William Fraser*) is useful as it represents a highly conservative metric that is therefore relevant to all cohorts (including calves). At this level of underwater noise exposure, behavioural responses will generally not occur (i.e. the 25% LSR zone extends well beyond the c. 600 m behavioural response zone predicted by Pine, 2025), and masking is also considered to be low level and unlikely to overwhelm masking release mechanisms (following Pine, 2025). Adoption of the 25% LSR threshold distance of 2.5 km as the absolute maximum extent of ecologically meaningful effects therefore acknowledges that in some circumstances highly sensitive individuals could exhibit behavioural responses beyond the distance at which most others will respond (Southall, 2024). This ensures a very conservative approach to the interpretation of underwater noise effects on bottlenose dolphins given their consistent presence in Te Ākau Bream Bay.

45. The overall collective extent of this this zone is illustrated in **Figure 3**; whereby a 2.5 km buffer has been plotted around the Project Area (using the warm season as the example). However, at any given time during active extraction the 2.5 km radius will only apply to the precise location of the *William Fraser,* and this radius will move progressively along each extraction track as the vessel advances. In the context of Te Ākau Bream Bay as a whole, this transient radius of ecologically meaningful effects is only present during active extraction and only occupies a small part of the embayment at any one time. In keeping with my comments at paragraph 19 in my evidence, plentiful alternative core habitat exists beyond this zone.

Figure 3: Zone of ecologically meaningful effects for bottlenose dolphins relative to alternative core habitat during the warm season



46. Dr Brough's comment at his paragraph 4.3 is therefore incorrect. Here he states that *"I am also concerned that the assessment assumes marine mammals will only temporarily occupy the zones of behavioural disturbance or acoustic masking. This assumption does not reflect the available evidence indicating that bottlenose dolphins use Te Ākau repeatedly, and in some cases, display high site fidelity to the area."* I disagree with this statement for the following reasons:

    a. The data is clear that dolphins routinely use multiple parts of the bay;

    b. Individual dolphins could only experience ecologically meaningful behavioural effects and/or masking within a radius of 2.5 km of the active extraction vessel;

    c. The extraction vessel will be constantly moving whilst extracting; and

    d. Extraction periods will be discrete (i.e. not permanent).

    For these reasons the effects are correctly described as temporary in my Impact Assessment Report.

47. Displacement of dolphins from Te Ākau Bream Bay has been raised as a concern by several submitters (for example refer WHCA comments at

Section 4.4, and NZCA comments at Section 4). The modelling results confirm that dolphins are not expected to avoid Te Ākau Bream Bay in its entirety as behavioural responses (e.g. avoidance) will largely be restricted to within 600 m of the *William Fraser* during active extraction. It is also noteworthy that behavioural responses do not necessarily result in impacts to net fitness (New et al., 2013; New et al., 2020; McHuron et al., 2021; Keen et al., 2021).

48. While noise levels required to elicit long-term avoidance from cumulative soundscape impacts are unknown, modelling predicted that changes to the Te Ākau Bream Bay soundscape would be small or negligible for all but the Project Area (Pine, 2025); hence bay-wide displacement and long-term habitat use changes are unlikely. There are no established thresholds against which to assess the impacts of chronic or cumulative noise for marine mammals. However, when considering the instantaneous noise effects alongside the cumulative soundscape effects, the proposed operations are not particularly noisy, instead the baseline soundscape is comparatively quiet.

49. Despite the predicted change to the average monthly soundscape of the bay, the soundscape will retain its baseline 'quiet' state for the vast majority of time (approximately 93% of the time under the 150,000 m^3 extraction scenario, and 89% of the time under the 250,000 m^3 extraction scenario).

50. While international scientific literature suggests that chronic (i.e. long-term) noise may lead to changes in habitat use that could theoretically lead to reduced individual fitness, reduced reproductive success, reduced survival rates, and as a result lead to population level consequences (Kok et al., 2023), these consequences do not always manifest (e.g. New et al., 2013). Indeed, there are numerous examples of dolphins adapting to and remaining in habitats subject to elevated levels of underwater noise (e.g. Weaver, 2021; Bossley et al., 2022; Mills et al., 2023; Owens et al. 2024) particularly at levels of disturbance that far exceed those predicted from the proposed sand extraction. In reality, the response of individual dolphins will likely be dependent on energetic trade-offs between staying or leaving.

Where these trade-offs will be influenced by the relative importance of the affected habitat and the availability of alternative habitat.

51. On balance, and given the intermittent nature and the short duration of individual extraction events, my prediction is that for dolphins with high levels of site-fidelity to the bay, habituation is the most likely outcome, and these dolphins will continue to utilise habitat throughout Te Ākau Bream Bay, including the Project Area. However, and as stated in my Impact Assessment Report, the potential for displacement of some individuals cannot be entirely dismissed. Given the modelling results relating to the zone of instantaneous behavioural response, localised displacement (e.g., within 600 m of the *William Fraser* during active extraction) from the immediate vicinity is indeed expected on extraction days. I anticipate that on these days, displaced dolphins are likely to use alternative habitat within and immediately around Te Ākau Bream Bay. In particular, increased use of habitat in other hotspot areas seems likely on these days based on existing habitat preferences (refer **Figure 1** of this evidence) and soundscape change predictions that indicate cumulative sound exposure levels will be low or negligible beyond the Project Area (refer Figures 23 and 24 of my Impact Assessment Report). Given the availability of nearby alternative habitat, individual dolphins are not expected to entirely abandon Te Ākau Bream Bay or the immediate surrounds on either extraction days (as a result of instantaneous effects) or in the long-term (as a result of cumulative effects).

52. As described in paragraph 32 of my evidence, AMP monitoring results now clearly confirm year-round presence of dolphins on a near-daily basis in the embayment. Further, recent analysis of the acoustic data to identify foraging behaviour confirms frequent foraging in and around the Project Area and off Waipū Cove (refer paragraph 33 of my evidence). Collectively, this data suggests Te Ākau Bream Bay is of higher ecological significance to the local bottlenose dolphin population than was previously apparent from earlier data.

53. Overall, my Impact Assessment Report concluded that the magnitude of soundscape impacts on dolphins is considered to be low as:

a. The home range of semi-resident dolphins is thought to include adjacent areas along the north-east coast including the Bay of Islands, Great Barrier Island and the Hauraki Gulf (Brough et al., 2024);

b. While the existing soundscape of Te Ākau Bream Bay will change, substantial changes will be limited to the Project Area (Pine, 2025);

c. It is probable that dolphins will continue to utilise habitat throughout Te Ākau Bream Bay, although some localised displacement is possible during active extraction; and

d. Any reduction in habitat availability on account of noise effects would only be intermittent (i.e. 3.5 hours during discrete extraction events).

54. Despite the availability of new data indicating that bottlenose dolphins have a more consistent presence in Te Ākau Bream Bay, the considerations above still accurately reflect the available information. Therefore, my conclusion regarding the magnitude of cumulative underwater noise impacts on bottlenose dolphins remains unchanged (i.e. low). However, because the data now points to dolphins spending a disproportionate amount of time in Te Ākau Bream Bay compared with more distant parts of their home-ranges (e.g. Te Pēwhairangi/Bay of Islands, Aotea/Great Barrier Island, and Tipaka Moana/Hauraki Gulf), I agree with the opinions of Dr Brough and Mr Zaeschmar that there is greater potential for repeat disturbance of individual dolphins in core habitat (particularly over the 35-year term of the project). For this reason, I now consider that the likelihood of impact (which relates solely to the potential for more frequent localised displacement from the discrete Project Area) is better described as high (cf. my original finding of moderate). Notwithstanding this change, the overall level of impact remains as low in accordance with Table 4 of my Impact Assessment Report. It is important to recognise that multiple lines of evidence confirm that core habitat extends well beyond the Project Area; hence, alternative habitat of equivalent quality occurs nearby. Further, the 3 dB limit to

soundscape change (refer paragraph 82 of my evidence) will protect against long-term habitat use changes for this species.

Theme 4: Habitat modification impacts on bottlenose dolphins

55. It is the opinion of Mr Zaeschmar that habitat modification effects have been underestimated given the ecological importance of the area and the frequency of use by key species. Similarly, Dr Brough at paragraph 5.2 of his evidence states that *"Although marine mammals forage over broader spatial scales than the operational footprint itself, localised habitat degradation may still be ecologically important where the affected area overlaps with high-quality or repeatedly used foraging habitat."*

56. Dr Brough also commented that considerable uncertainty remains regarding the extent and ecological significance of impacts on benthic habitats, benthic invertebrate communities, and demersal fish assemblages. In terms of the uncertainties and challenges in quantifying impacts on benthic communities and associated fish assemblages from the proposed operations, I defer to the expertise of Mr Simon West and Mr Rick Boyd respectively. In particular, the statement of evidence of Mr West clarifies the spatial extent of seabed disturbance and the estimated rate of survivability.

57. In response to the concern that the ecological importance of the Project Area has been underestimated, the availability of new acoustic data and analysis has confirmed that bottlenose dolphins commonly forage in both the Project Area and the wider embayment (refer paragraph 33 of my evidence) and that they have a more consistent presence in Te Ākau Bream Bay than previous data suggested. As noted in paragraph 32 of my evidence, this new information has prompted me to revisit my understanding of the importance of the Project Area. Despite this, my findings in terms of habitat modification effects remain unchanged for the reasons outlined in the paragraphs below.

58. In his statement of evidence, Mr West provides estimates of the biomass of benthic biota that will be affected by the proposed sand extraction on an

annual basis for the different sand volume scenarios proposed. In particular, I note that the seabed footprint that would be subject to disturbance is estimated to be 3.38 km^2/year under the annual extraction limit of 150,000 m^3/year (22% of the overall Project Area). Under the increased extraction rate of 250,000 m^3/year the annual footprint of disturbance would increase to 5.63 km^2/year (or 37% of the Project Area). Under both extraction scenarios, these areas of disturbance are very small in terms of the large spatial scales over which marine mammals forage and the availability of alternative high-use habitat inside and immediately adjacent to Te Ākau Bream Bay (refer **Figure 1** which identifies other high-use areas, just outside of the bay, including around the Taranga-Marotere Islands/Hen and Chicken Islands).

59. In Table 12 of my Impact Assessment Report I provide a brief summary of the foraging ecology of each marine mammal species with a predicted presence in and around Te Ākau Bream Bay. Foraging ecology varies widely with species, but with the exception of Bryde's whales (that exclusively take pelagic prey), typically includes both demersal and pelagic prey (primarily fish and squid). In particular, demersal fish and pelagic planktivorous fish are important contributors to the diet of several marine mammals, including the semi-resident population of bottlenose dolphins in Te Ākau Bream Bay. Further, the results of the foraging analysis (Pine, 2026) confirm that dolphins forage opportunistically (i.e. acoustic foraging behaviour is sporadic) throughout the day and across the bay.

60. Mr Boyd's Assessment of Fish and Fisheries Effects (Attachment 16 to the Substantive Application) reported a relatively low diversity demersal fish assemblage dominated by tāmure (snapper), kuparu (John dory), kumukumu (gurnard), mangō (sharks), pātiki (flounders) and whai (rays). Species of note in the pelagic fish assemblage included hautere (jack mackerel), tawatawa (blue mackerel), araara (trevally), kahawai, haku (kingfish), mōhimōhi (pilchard) and kōheru. Mr Boyd concluded that given the mobility of fish and the prediction that they will temporarily avoid immediate areas of disturbance, effects of extraction activities on fish will be low to negligible. Further, West & van Winkel (2025) concluded that fish

would not be adversely affected through loss of benthic prey associated with seabed disturbance. Given that bottlenose dolphins have a varied diet of fish and squid, and that benthic and pelagic prey is targeted, many of the fish species listed above should be considered as potential prey of dolphins. The findings of Mr Boyd, when considered in the context that dolphins forage opportunistically across the embayment, support my original conclusion that changes to habitat quality and prey availability are unlikely to be of ecological significance to marine mammals given the spatially restricted nature of seabed disturbance.

61. Mr Zaeschmar comments that impacts of the project on prey communities higher in the water column and their effects on predator/prey assemblages are not assessed. Food web considerations are specifically addressed in Appendix C of the Assessment of Benthic Ecology Effects (Attachment 12 of the Substantive Application) and as described in this appendix, while temporary elevations of turbidity from the proposed activities could theoretically affect primary production and have flow-on effects for planktivorous fish, effects on water quality have been assessed as negligible. Accordingly, turbidity effects on primary production are unlikely. For these reasons, effects of the project on pelagic planktivorous fish populations that contribute to the diet of some marine mammals, are also expected to be minimal.

Theme 5: Cumulative effects

62. Dr Brough comments that substantial uncertainty remains regarding the magnitude and ecological consequences of cumulative effects, and that incremental reductions in habitat quality could result in reduced resilience of marine mammal populations (particularly threatened bottlenose dolphins and Bryde's whales) (refer to paragraphs 2.3, 6.1 and 6.3 of Dr Brough's evidence).

63. In Section 4.9 of my Impact Assessment Report I concur with Dr Brough that cumulative effects are likely to have the most serious consequences for threatened species. It was for this exact reason that I described the existing stressors on these species in the greatest detail. Further, and because my

assessment findings predict that underwater noise is the impact with the highest potential for consequences for marine mammals, this is the area that has garnered the most attention in regard to cumulative effects. Fortunately, it is also an impact that can be readily influenced by operational considerations such as vessel specifications, and duration and timing of extraction events. These operational considerations (refer paragraph 42 of my evidence) have been proactively implemented by MBL to reduce underwater noise impacts (both instantaneous and cumulative) as far as practicable. Further, the implementation of a noise limit and the monitoring requirements of the AMP will ensure that reductions in habitat quality from underwater noise are no greater than those that have been assessed, and for which consequences can be managed to a level that is predicted to only cause localised displacement in the immediate vicinity of active extraction activities.

64. In terms of uncertainty, I acknowledge two main factors and my responses to these are provided respectively below:

    a. The lack of any established threshold against which cumulative underwater noise effects can be evaluated for marine mammals. In response, I defer to Dr Pine's assessment of underwater noise (Pine, 2025) where he describes cumulative increases to monthly average sound exposure levels of 1 – 3 dB as being of small or low magnitude.

    b. The 35-year proposed duration of the project, noting that it is difficult to foresee what additional stressors local marine mammal populations might experience during this timeframe. In response I can confirm that it was for this reason that my impact assessment process adopted a precautionary approach, and this approach continues through this statement of evidence, namely through the increased likelihood rating that I now consider applicable to the effects of underwater noise on bottlenose dolphins (refer paragraph 54 of my evidence) and my recommendation for a strict underwater noise limit for cumulative soundscape change (refer paragraph 82 of my evidence).

65. In my Impact Assessment Report, I describe how habituation is already somewhat evident for marine mammals in Te Ākau Bream Bay; as despite the existing level of port related activities at Northport (and their associated underwater noise) marine mammals still frequently utilise coastal habitat in the vicinity. In particular, overlap of dolphin hotspots with the main shipping route into Northport (refer Brough et al., 2024) suggests that at least some dolphins tolerate underwater noise from commercial vessels and have potentially habituated to co-exist in its presence.

66. In paragraph 36 of his advice, Mr Zaeschmar cautions that my interpretation of habituation is flawed, and that habituation to existing pressures is not evidence that new pressures (i.e. sand extraction) will be inconsequential. He notes that tolerance to stressors is highly context dependent, varying not only between species, but also individuals, age-classes and sexes. He also notes that some individuals will tolerate disturbance if the costs are outweighed by the benefits.

67. I agree that tolerance to disturbance will vary with species and life stages and be context dependent, and that individual responses will reflect trade-offs (see paragraph 50 of my evidence). I also note in my Impact Assessment Report that while habituation should not automatically be interpreted as a complete absence of detrimental consequences (following Bejder et al., 2009), habituation is commonly inferred to represent a level of resilience to disturbance (Rivard et al., 2016; Mills et al., 2023; Weaver, 2021). On this basis, and because some individuals will demonstrate tolerance of disturbance, that habituation is a probable outcome (should consent be granted), and that the existing evidence suggests some existing tolerance. This provides useful context in evaluating the possible effects of sand extraction notwithstanding, the small or low magnitude of cumulative increases to monthly average sound exposure levels of 1 – 3 dB. For those individuals with lower levels of tolerance to disturbance, large parts of the embayment will remain unaffected from project disturbance and will be available as alternative habitat to these individuals. As stated by Mr Zaeschmar, this sentiment is reflected by Southall et al. (2021) that

"stressors are more likely to be tolerated if undisturbed habitat is available in the vicinity".

68. Mr Zaeschmar and I agree that a precautionary approach is warranted on account of the declining population trend for bottlenose dolphins in nearby Bay of Islands[8]. In my Impact Assessment Report, I discuss how photo-identification studies have confirmed that some individual dolphins have been sighted in both Te Ākau Bream Bay and the Bay of Islands, using this as evidence that population connectivity occurs between these locations. In keeping with the data presented by Brough et al. (2025a) I also reported that *"while it is possible that bottlenose dolphins displaced from the Bay of Islands could be attracted to nearby alternative habitat such as Te Ākau Bream Bay, photo-identification data does not strongly support this possibility; with only a small proportion (37 individuals or 6%) of the total number of recognisable individual dolphins (540) being observed in both locations (Brough et al., 2025a)"* (refer to page 90 of my Impact Assessment Report).

69. At paragraph 60 of his advice, Mr Zaeschmar reframes this data to reflect that of the 149 identifiable dolphins in Te Ākau Bream Bay, 37 have been seen previously in the Bay of Islands (25%), suggesting a significantly larger proportion are connected to the Bay of Islands and that these individuals may have experienced previous displacement. I agree that this is a useful way of considering the connectivity between the two locations. However, without further interrogation of the raw photo-identification data (which I am not privy to), it is impossible to know if any identifiable dolphins that were once present in the Bay of Islands are now only seen in Te Ākau Bream Bay. Brough et al. (2025) investigated emigration rates for the Bay of Islands population, noting that while the probability of dolphins moving beyond the Bay of Islands remained constant at 14% across the entire study period (from 1997 to 2024), the probability of individual dolphins remaining outside of the Bay of Islands increased significantly from 2014 onwards.

[8] Note the WHCA also broached this subject in their comment that *"if dolphins are in Bream Bay because it is quieter, increasing industrial traffic will displace them".*

These findings align with Mr Zaeschmar's suggestion that some individuals from the Bay of Islands population have indeed relocated elsewhere.

70. It is noteworthy that the Bay of Islands is subject to uniquely high levels of vessel activity (including permitted marine mammal watching tours) and that high levels of interactions between vessels and marine mammals are known to disrupt normal behaviours critical for survival (such as resting and feeding) which in turn can cause stress, reduced reproductive success and increased susceptibility to illness. While vessel disturbance has not been directly linked to the ongoing decline of this local population, some evidence of dolphins changing their behaviour in the presence of vessels is emerging (Brough et al., 2025a), Brough et al. (2025a) also found that compliance with vessel speed restrictions in 'safe zones' that were established as part of the marine mammal sanctuary here is poor, and that these safe zones have a low level of overlap with areas of core dolphin habitat use.

71. There are however several key differences between vessel disruptions to dolphins in the Bay of Islands compared with those that would materialise from the proposed sand extraction activities in Te Ākau Bream Bay. In the first instance, vessels commonly target and approach the dolphins in the Bay of Islands where this will never be the case for the *William Fraser*. Second, the frequency of vessel interactions in the Bay of Islands is presumably much higher than in Te Ākau Bream Bay; with multiple vessels interacting with dolphins on a daily basis both commercially (i.e. dolphin tourism) and privately (recreational boats) either intentionally or unintentionally interacting with dolphins. In comparison the *William Fraser* is a single vessel, with no intention to interact with the dolphins and will not have a daily presence. Finally, and as far as I am aware there is no dedicated dolphin watching tours in Te Ākau Bream Bay, and while some private charter operators may opportunistically interact with dolphins on occasion, the interaction rates will be inherently lower on account of the lack of dedicated dolphin watching tours (although this may change in the future). While it is possible that some dolphins that are now considered semi-resident to Te Ākau Bream Bay may have relocated previously from Bay of

Islands, for the reasons given in paragraphs 39 to 54 of my evidence I consider that the intermittent presence of the *William Fraser* in the embayment will not cause significant individual or cumulative impacts on bottlenose dolphins.

72. Mr Zaeschmar is correct that there is no population trend data available for marine mammals in Te Ākau Bream Bay to know whether the local population might already be exposed to stressors that are resulting in displacement. While such data would of course be useful, the lack of trend data did not hinder my assessment process. The baseline data of Brough et al. (2024; 2025) and Pine (2026) does, however, mean that future surveys will be well placed to detect any population changes.

Theme 6: Mitigations and monitoring

73. The MMMP sets out the operational protocols to be followed by MBL to avoid or minimise the potential effects of sand extraction operations (including active extraction and transit) on marine mammals; including operational protocols to:

    a. minimise underwater noise,

    b. minimise the risk of ship strike,

    c. minimise marine debris,

    d. avoid entanglement,

    e. minimise artificial lighting, and

    f. support any stranding response.

    In addition to staff training and recording/reporting procedures that will also be implemented, the MMMP also sets out the requirement for marine mammal monitoring via the AMP.

74. In terms of the MMMP requirements, Mr Zaeschmar was the only invited party that made comments on specific MMMP content. **Table 3** summarises

the specific recommendations/comments he made, and how (or where) these are addressed.

Table 3: Recommended changes to proposed mitigation measures

	Recommendation	How Addressed
1	That the six-month without Project soundscape measurements are completed prior to the commencement of the Project to ensure the generation of baseline data against which changes can be measured.	This recommendation is addressed by the statement of evidence of Dr Matt Pine (Pine, 2026).
2	That sand extraction ceases before sunset to minimise the impacts of underwater noise during the hours of darkness.	Refer Section 4.2.4 of my Impact Assessment Report where I provide the justification for the selected operational windows which consider the activity budgets of bottlenose dolphins and Bryde's whales and also the dusk chorus phenomenon which introduces additional biophony into the marine environment during dusk. The comments by Mr Zaeschmar introduce no new evidence which would alter my opinion on this matter. Therefore I support the retention of the proposed operational windows of: • 12:00 pm to 6:00 pm during the months of April to September (inclusive); and • 12:00 pm to 8:00 pm during the months of October to March (inclusive).
3	False killer whales and pilot whales should be included in the list of species within the proposed 100 m exclusion zone.	The 100 m exclusion zone currently applies to 'large whales (killer whale or larger)'. This definition does not explicitly include false killer whales and pilot whales as while there is an overlap in size distributions, killer whales are typically larger. However, I agree that the 100 m exclusion zone should apply to these additional species; hence, I recommend that the wording be revised to 'whales (meaning any cetacean larger than a bottlenose dolphin)'.
4	Marine mammal observations by crew members are insufficient as 1) crew may not have the experience required to detect animals, 2) crew will be focused on the extraction operations, and 3) crew may not be motivated to report sightings.	Refer Attachment 5 of Substantive Application, Pre-lodgement Response to DOC Feedback (SLR response to 'DOC Comment 3', page 48 of Attachment 5). While this response relates to observations that are required to action the 100 m exclusion zone, the response is equally relevant to general monitoring of marine mammals from the *William Fraser*.

75. Dr Brough makes no specific comments on the proposed mitigation measures, but states that the proposed management measures and mitigations are insufficient to meet NZCPS requirements. I address this comment in paragraphs 84 and 85 of my evidence.

76. Comments from several other invited parties made relatively generic comments about the controls that will be implemented by MBL to manage the effects of the proposed operations on marine mammals. For example, the NCB submission (in paragraph 14.1) included the following statement *"…should consent be granted, robust mitigation, monitoring, and clear trigger thresholds are required."* These comments recognise that mitigations and monitoring are inter-related, and on account of this I discuss the proposed project monitoring that relates to marine mammals in the paragraphs below.

77. The AMP is the adaptive management tool by which MBL proposes to address cumulative underwater noise effects of the project. The main aim of this program is to evaluate whether soundscape changes (monthly Leq) that result from sand extraction activities exceed 3 dB at the monitoring location. The AMP requires six months of baseline acoustic data which would then be compared to the first six months of acoustic data following the commencement of sand extraction. If the monitoring results show that the 3 dB threshold is exceeded, then mitigation options would be specified during reporting. The AMP notes that these mitigations could include 1) reducing the noise of the vessel and extraction operations at the source or 2) reducing the time spent in the area.

78. The NZCA considers that the adaptive management options that are proposed by the AMP results, should they be needed, are insufficient to address the issue of chronic underwater noise; stating, on page 5 of their submission, that *"If the activities of sand mining are approved, there need to be very clear penalties – including withdrawing permit permission – if acoustic monitoring reveals that the sand extraction soundscape is damaging to marine mammals".* I agree that the consequences of any

exceedance should, in fact, be clarified. I discuss this further at paragraph 82 in my evidence below.

79. Mr Zaeschmar and Dr Brough both raise the issue of monitoring in detail, respectively stating:

    a. *"There does not appear to be any real commitment towards more comprehensive marine mammal monitoring, with somewhat diverging and conflicting statements found in the documents. A dedicated, independent marine mammal monitoring programme would present a significant opportunity to actively and adaptively manage an activity whose impacts are still not well understood. In its present wording, the consent condition will not lead to effective marine mammal monitoring or adaptive management of potential impacts on marine mammals."* Refer to paragraph 71 of Mr Zaeschmar's advice.

    b. *"The information required to manage impacts is not currently available. In particular, before the MMMP can be developed and implemented, I would consider it important to obtain validation of the soundscape change validation before the approval of the activity and to undertake an analysis of the distribution of foraging activity and nursing behaviour in bottlenose dolphins. At present, the MMMP appears to be framed primarily as a programme to document the extent and nature of impacts after operations commence, and it is my opinion that these considerations and robust ecological limits before impacts should be established well before a consent is granted."* Refer to paragraph 7.2 of Dr Brough's evidence.

80. In terms of the concern about the lack of a comprehensive marine mammal monitoring program; in the face of common challenges (namely the large number of potentially confounding variables) in discerning cause and effect in animal populations experiencing disturbance, acoustic monitoring of physical soundscape change represents the best available approach to evaluate and manage the effects of cumulative noise on marine mammals.

This approach is highly suitable as cumulative noise is the only component of the project with any conceivable potential to cause widespread displacement of marine mammals (i.e. all other underwater noise and habitat modification effects will be spatially restricted to within a few kilometres of the Project Area: see paragraphs 43 to 45, and 58 of my evidence). Confirmation of continued dolphin presence in the bay will be possible via the proposed vessel observations and the AMP results (which will also detect cetacean vocalisations).

81. In terms of Dr Brough's comment that information required to manage impacts is not currently available, I disagree for the following reasons: 1) sufficient data is available to be confident in the knowledge of which marine mammal species utilise Te Ākau Bream Bay, how often they are present, and what behaviours the bay supports; 2) scientific literature is available on which to base our understanding of potential effects of sand extraction; 3) the characteristics of the proposed operations are well understood; 4) the modelling methods for establishing instantaneous zones of effect from underwater noise are well proven, 5) the use of cumulative soundscape analysis represents the most advanced and comprehensive evaluation of soundscape effects of any other coastal or marine project in the consenting history of New Zealand; and 6) the requirements of the AMP will ensure that the proposed operations do not result in significant changes to the bay-wide soundscape. Further, Pine (2026) has now undertaken an analysis of foraging activity and to ensure effects on dolphin breeding behaviours appropriately considered the highly conservative 25% LSR threshold has been applied to predict the extent of underwater noise effects on calves and calf-rearing behaviours (refer paragraph 44 of my evidence).

82. Dr Brough, Mr Zaeschmar, the NZCA, and the NCB question the efficacy of the adaptive management approach proposed and the associated consent conditions; pointing explicitly to a lack of robust ecological limits. To provide greater confidence that soundscape effects can be managed to a level whereby displacement of marine mammals will not occur, I recommend a strict operational noise limit be included as a consent condition; requiring that the project does not exceed 3dB L_{eq} over any calendar month at the

Waipū Cove monitoring location. Noting that the methodology for monitoring compliance with this limit is already appropriately addressed by the AMP. Further, if consent is granted, I recommend that this cumulative noise limit should apply to both the first three years of extraction (the 150,000 m^3 extraction volume scenario) and the subsequent years when the extraction volume will increase (the 250,000 m^3 extraction volume scenario). The inclusion of such a condition would ensure that 1) consequences of an exceedance would clearly represent non-compliance, and 2) that protection against significant soundscape change is afforded to the whole of Te Ākau Bream Bay and that marine mammals (in particular semi-resident bottlenose dolphins) always have access to places of refuge away from areas of elevated noise.

83. MBL has also committed to considering financial support for additional marine mammal research on a case-by-case basis (refer Attachment 28, Section 12.0). They are also offering, on an augier basis, Conditions 43-45: Contribution to the Council Bream Bay Beach Profile Survey Programme, Cultural Contribution, and Community Contribution; where funds to those parties could be used for research purposes. While these additional contributions are commendable and would undoubtedly add to the current level of understanding of marine mammal species in Te Ākau Bream Bay, in my professional view, the noise limit requirement along with the associated AMP soundscape monitoring is sufficient to address the only potential cause which carries any residual risk of widespread displacement.

Theme 8: NZCPS requirements

84. Pre-lodgement comments from DOC were received regarding the interpretation of the NZCPS in relation to the significance of marine mammal habitat. These comments are presented and addressed in Attachment 5 of the Substantive Application, Pre-lodgement Response to DOC Feedback (SLR response to 'DOC Comment 17' and 'DOC Comment 18', pages 62 - 70 of Attachment 5).

85. At paragraph 3.4 of his evidence, Dr Brough comments that the proposed management measures and mitigations are insufficient to meet the NZCPS

requirements. Despite new information being available now, and regarding the NZCPS, I remain of the same opinion as stated in my Impact Assessment Report, that:

a. In terms of NZCPS Policy 11(a) which requires that effects on threatened marine mammal taxa (populations) are avoided, no population level effects are predicted from instantaneous underwater noise effects; there is virtually no risk of physiological impacts, and from a behavioural perspective, animals will either avoid the immediate area of the *William Fraser* during the short intermittent extraction events or tolerate the noise and remain despite the vessels' presence. While noise levels required to elicit long-term avoidance from cumulative soundscape impacts are unknown; predicted soundscape changes are small or negligible for most of Te Ākau Bream Bay (Pine, 2025), and the recommended adoption of a noise limit in conditions and the implementation of the revised AMP will ensure that bay-wide displacement and long-term habitat use changes are unlikely.

b. In terms of NZCPS Policy 11(b), which requires that significant effects on habitats that are important during 'vulnerable life stages' are avoided, the presence of juveniles and calves of bottlenose dolphins in Te Ākau Bream Bay has been reported and although the overall distribution of bottlenose dolphins is broad along the northeastern coast of New Zealand, individuals that use Te Ākau Bream Bay have a high degree of residency (Brough et al., 2024). Therefore, underwater noise impacts on breeding and calf rearing behaviours cannot be completely dismissed. However, given that large soundscape changes will only occur inside the Project Area and, on a daily basis, ecologically meaningful effects (i.e. behavioural responses and masking) will be spatially restricted to within a few kilometres of sand extraction operations and will be temporally limited to a maximum daily duration of 3.5-hours, ecologically significant impacts on breeding behaviours for this species are unlikely given the availability of plentiful alternative

core habitat in and around Te Ākau Bream Bay. Hence, in my opinion, significant effects on habitats that are important during 'vulnerable life stages' can be avoided.

Other Comments

86. **Table 4** addresses other comments that do not naturally fit into any of the themed responses above. My response for each comment is provided.

Table 4: Minor or specific comments related to marine mammals

Comment	Response	Parties of relevance
Humpback whales and southern right whales should be categorised as species 'likely' to be present in the project area.	In my Impact Assessment report the likelihood of each marine mammal species being present in and around Te Ākau Bream Bay was determined as likely, possible or unlikely. I concluded that humpback and southern right whales had a 'possible' likelihood of occurrence; where 'possible' was defined as - species that occur on a less frequent basis in and around the embayment; hence may or may not be exposed to the potential impacts of the proposed sand extraction activities. While I acknowledge that over the 35-year term these species will probably overlap in space and time with extraction operations, I consider that my determination of 'possible' remains appropriate; noting that, management and mitigation measures are designed to protect these species from adverse effects of the proposed operations regardless of this determination.	Mr Zaeschmar for DOC (para 19 & 82).
The limited temporal scope of the acoustic data collection may under -represent the presence of some species.	Based on the findings in Section 3.2 of my Impact Assessment Report, and for the purpose of reaching my conclusions regarding the overall level of impact, I have assumed presence of all those species that I consider 'likely' or 'possible' in the project area. Further, the additional monitoring results of the AMP have now been incorporated and my findings on frequency of occurrence have been updated in accordance with Table 1 in this statement of evidence.	Mr Zaeschmar for DOC (para 31).
The project area constitutes some of the least disturbed	This comment is addressed by Pine (2026).	Mr Zaeschmar for DOC (para 32).

habitats in Te Ākau Bream Bay.		
Statement that *"It is incorrect that no marine mammal species occurring in the area practices benthic foraging."*	This statement misrepresents my Impact Assessment Report. Refer Table 12 of my report which clearly states that seven species that have been reported from the region (including killer whales) engage in some benthic foraging (i.e. diet includes benthic and pelagic prey).	Mr Zaeschmar for DOC (para 45).
Behavioural thresholds are not sufficiently sensitive for dolphin groups containing calves.	This comment has previously been addressed in response to pre-lodgement feedback from PHTB as follows: *"In terms of assessing impacts on calves, Styles Group are unaware of any studies that directly provide hearing data on neonates for free-ranging dolphins. However, dolphins (like most mammals) definitely demonstrate age-related hearing loss (Houser & Finneran, 2006)."* *"While the age-related data certainly suggests that calves will have heightened sensitivity to underwater noise, there are no published thresholds that could specifically be modelled to differentiate behavioural response zones for this (or any other) demographic. The hearing thresholds used by Pine (2025) are averages over all demographic groups (sexes/ages), noting that the onset distance reported for 0 - 25% probability of behavioural response might better predict the effects zone for neonates."* Refer also to paragraph 44 of my evidence which utilises the 25% LSR threshold as an even more conservative measure for predicting the absolute maximum zone of ecologically meaningful effects for all dolphin cohorts.	Dr Brough for PHT & NTB (para 4.2)
The 'net gain' overall level of impact ascribed for marine debris effects on marine mammals is inappropriate.	This comment reflects an earlier draft and was addressed prior to lodgement. The overall level of impact ascribed for marine debris effects on marine mammals is now described as 'negligible'.	Mr Zaeschmar for DOC (para 51 - 52).
Underwater noise modelling from the Pākiri sand extraction application is of relevance to Bream Bay but requires independent review.	Site specific underwater noise modelling has been completed for Te Ākau Bream Bay incorporating proposed project specific extraction scenarios. Previous noise modelling results for Pākiri are immaterial to this application.	LCRA (Section 6.3)
The application does not adequately assess the risk of vessel strike on marine mammals.	Refer Section 4.4 of my Impact Assessment Report which addresses ship-strike risk; noting that vessel speed is the most influential factor and the *William Fraser* is mechanically constrained to slower speeds (max. transit speed is 9.5 knots) than those	NCB (para 14)

	typically associated with ship strikes (>12 knots). On this basis alone, project-related ship strike risk is lower than for other commercial and recreational vessels that generally travel much faster (e.g. commercial ships commonly operate at speeds of 15 – 20 knots, and recreational vessels commonly travel between 15 and 25 knots). Successful extraction activities require a very slow speed of approximately 2-3 knots. Compliance with the Marine Mammal Protection Regulations 1992 and the Hauraki Gulf Transit Protocol (which will be implemented not only in the Hauraki Gulf but in all waters subject to transit and extraction activities) sufficiently manages this risk without the need for further analysis of marine mammal movement patterns, migration pathways, or cumulative effects with existing shipping.	
Insufficient consideration of Patuharakeke relationship with Te Ākau Bream Bay and marine mammals.	Appendix F of my Impact Assessment Report recognises the cultural affiliation that tangata whenua have with marine mammal species. The Substantive Application also contains Cultural Impact Assessments from Patuharakeke Te Iwi Trust Board, Te Parawhau ki Tai, and Ngātiwai Trust Board. Further, pre-lodgement consultation with iwi has been undertaken and their feedback and comments were addressed or responded to during this process.	NZCA (Section 5)
This comment states that sand mining is identified by Brough et al. (2025) as a key threat to marine mammals in Te Ākau Bream Bay.	The Brough et al. (2025) paper discusses the existing information level for marine mammals in Whangārei Harbour and Te Ākau Bream Bay, implying that in the absence of systematically collected data there are challenges around appropriate management strategies. The paper goes on to state that the area (Whangārei Harbour and Te Ākau Bream Bay) is under pressure from coastal development and resource use, including *"planned extensions of the local commercial port and corresponding increases in shipping traffic and mining of sand from the sea floor".* Stating that these pressures may impact marine mammal populations. The surveys undertaken for the Brough et al. (2025) paper represents the first systematic marine mammal survey of the area, and the authors conclude that a robust baseline of the ecology of marine megafauna in Te Ākau Bream Bay has now been established and this will be beneficial for the management of marine megafauna and their habitats. The AMP data has subsequently contributed even further to	LCRA (Section 6.3)

	our understanding of marine mammal use of the embayment and surrounds. Hence, despite the threats faced by local populations of marine mammals (of which sand extraction is one of several), there is adequate information available to underpin a robust assessment process, which my Impact Assessment Report has achieved.	
Prior assessments that characterised the project area as disturbed habitat which is sub-optimal for marine mammals are inaccurate.	While I am uncertain which prior assessments are being referred to here, I agree with the comment that such statements contradict the available data. The importance of Te Ākau Bream Bay as marine mammal habitat is discussed in paragraphs 25 – 38 of my evidence.	LCRA (Section 6.3)
Key mitigation frameworks from the MMMP are either untested or remain unavailable.	The full MMMP was provided as Attachment 28 of the Substantive Application. Further, the AMP is contained in Section 7.0 of the Environmental Monitoring Management Plan (**EMMP**) for the project which was provided as Attachment 29 of the Substantive Application. Hence, all management procedures relating to marine mammals were available to interested parties. The protocols outlined in the MMMP are listed in paragraph 73 of my evidence and reflect best national and international practise. These protocols have also been extensively field-tested during previous sand extraction operations at Pākiri under a temporary offshore consent. I recognise in paragraph 81 of my evidence that the cumulative soundscape modelling that was undertaken to inform the assessment of underwater noise on marine mammals represents the most comprehensive evaluation of soundscape effects in New Zealand to date. The AMP will be used to validate the model findings in order to ensure that the proposed operations do not result in significant changes to the bay-wide soundscape. While to my knowledge, validation of modelling relating to cumulative soundscape change has not been used in New Zealand before, model validation for instantaneous noise effects is common place during pile driving projects and seismic surveys; hence the general methodology is well tested and proven as an effective compliance tool.	WHCA (Section 4.4)

Conclusion

87. The contents of this statement of evidence address the points of disagreement raised by interested parties, noting that the most substantive comments were received from Mr Zaeschmar and Dr Brough for DOC and PHT & NTB respectively. Any outstanding areas of disagreement could presumably be settled through expert conferencing if considered necessary.

88. Based on new acoustic data, my understanding has changed in relation to the frequency of use of Te Ākau Bream Bay by semi-resident bottlenose dolphins, and the consequences of these changes are discussed in this statement of evidence. In essence however; and with the implementation of the additional recommendations that I make in this statement of evidence, I am still of the opinion that the potential effects of the project on marine mammals can be managed to an acceptable level whereby they meet the requirements of Policy 11 of the NZCPS.

89. Due to the 35-year term sought for this consent, my assessment took a precautionary approach which was underpinned by a large volume of data (acoustic monitoring and survey results from Brough et al. 2024: 2025) and a very comprehensive underwater acoustic modelling study. Further, the AMP will require acoustic monitoring to protect against widespread habitat use changes and associated baseline soundscape monitoring is well underway. As such my findings are not 'flawed' as implied by Dr Brough (at paragraph 4.4 of his submission), rather they consider the available data, provide solid mitigation and management actions; and are undertaken within a robust assessment framework.

90. While the data suggests that the fine scale distribution of marine mammals within the embayment will possibly change on those days when extraction events occur, the adoption of a strict recommended noise limit will manage bay-wide soundscape changes to ensure that the risk of displacement from

the wider embayment and surrounds is minimised and in my opinion is unlikely.

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Helen McConnell

12 August 2026

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