BEFORE THE ENVIRONMENTAL PROTECTION AUTHORITY

AT WELLINGTON

IN THE MATTER	of the Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act 2012
AND	
IN THE MATTER	of a decision-making committee appointed to reconsider a marine consent application by Trans Tasman Resources Limited to undertake iron ore extraction and processing operations offshore in the South Taranaki Bight

EXPERT REBUTTAL EVIDENCE OF DR DAVID THOMPSON ON BEHALF OF TRANS TASMAN RESOURCES LIMITED

23 JANUARY 2023

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INTRODUCTION

1. My name is David Richard Thompson.

2. I prepared expert evidence dated 19 May 2023 (**First Statement**) with respect to these proceedings on behalf of Trans-Tasman Resources Limited (**TTR**).

3. My qualifications and experience as a seabird ecologist are set out in paragraphs 1-2 of my First Statement.

4. I repeat the confirmation given at paragraph 6 of my First Statement that I have read the Code of Conduct for Expert Witnesses and agree to comply with it.

5. The purpose of this Rebuttal Evidence is to respond to matters raised in submitter evidence relevant to my area of expertise.

6. In particular, I respond to matters raised in the evidence of Dr John Cockrem and Natasha Sitarz.

EVIDENCE OF DR JOHN COCKREM

7. Table 1 (Appendix D) of Dr Cockrem's evidence presents a revised and updated list of seabirds considered likely to occur in the South Taranaki Bight (STB), which Dr Cockrem refers to at several places (for example, paragraphs 17-20 and 88-89). The species included in Table 1 comprise an amalgamation of those noted by Dr Scofield in his evidence from 2014[1] and some recent sightings available, for the most part, at the eBird database (https://ebird.org/newzealand/home). The total of 76 taxa in Dr Cockrem's Table 1 is considerably greater than the total of 45 taxa presented in my evidence.

8. In compiling the list of species presented in my evidence I noted (paragraph 14) that the list was not intended to be definitive and, further, that additional taxa (to those presented in my table) could occur in the region (that is the

STB) from time to time. In compiling my list, I was aware of other taxa that had been recorded from the region but opted to include those that were at least 'likely to occur' in the STB. Clearly, there is an element of subjectively in arriving at those taxa 'likely to occur' in the STB. Factors considered centred on regularity of sightings within the eBird database, tracking information where available and proximity of breeding sites to the STB. My aim in compiling the list was to include those taxa that would be expected to occur on at least a regular basis, rather than on very rare occasions.

9. I would respectfully suggest that some species included in Dr Cockrem's Table 1, should be more accurately classified as 'unlikely to occur' in the STB. Such species would include emperor penguin and hoiho yellow-eyed penguin.

10. I agree with Dr Cockrem's comment (paragraph 21) that the total number of seabird species using the STB is not known.

11. I do not support Dr Cockrem's description of the STB as a "hotspot" (paragraph 32) as it implies "coldspots" elsewhere, which at a regional scale is unlikely. Seabird diversity is so high at a national scale that any region is likely to host a diverse assemblage of seabirds. In terms of diversity, it could be argued that all regional subdivisions of New Zealand waters are hotspots.

12. Likewise, the IUCN and Forest & Bird approaches in identifying "key biodiversity areas" (KBAs) and "important bird and biodiversity areas" (IBAs) (which Dr Cockrem refers to at paragraphs 36-37), does not signify that the STB (or the smaller area within it that will be affected by the project) is more important for seabirds than elsewhere in New Zealand waters. The message from the IBA and KBA approach is that New Zealand is important for seabirds and supports a diverse seabird assemblage. This will be true of most, if not all, regions.

13. Dr Cockrem notes at several paragraphs in his evidence that the proposed sand extraction activities will result in the suspension of sediment in the water column resulting in an increase in turbidity that will adversely affect foraging in seabirds (for example, paragraphs 72, 74-78, 95).

14. I agree with Dr Cockrem (paragraph 74) that those species that dive below the surface in pursuit of prey could potentially be impacted by elevated turbidity levels in the water column.

15. However, it remains my view, based on the research described by Hadfield & MacDonald (2015),[2] MacDonald & Hadfield (2017)[3] and the evidence of Dr MacDonald[4] that suspended sediment concentrations (SSCs) are greatest within a few kilometres of the mining site, decline rapidly with distance from the mining site and even at 99th percentile values, modelled SSCs are within the range of background concentrations. On this basis, it is likely that seabirds will be excluded from a relatively small area due to mining-derived increased turbidity.

16. Additionally, it remains my view that while seabirds may be prevented from feeding within a few kilometres of the mining site due to increased turbidity in the water column, the area affected by elevated SSCs will be relatively small compared to the areas able to be exploited by seabirds, including fairy prion and little penguin, two taxa particularly noted by Dr Cockrem. It is clear that both taxa have been observed, either directly, or indirectly through tracking, feeding in the northern sector of the STB, and could potentially overlap with the proposed mining area and the relatively small additional area of elevated (above background) SSCs resulting from mining. However, tracking of fairy prions in Australia revealed that birds are capable of relatively long foraging trips, travelling hundreds to low thousands of kilometres during the breeding season and utilising extensive areas, the locations of which

showed considerable inter-annual variability (Fromant et al. 2022). And similarly, while little penguins cannot exploit areas as large, nor as far from the breeding colony, as flying seabirds, the impacted mining area will be small compared to the area(s) potentially available to penguins.

17. Further, while both little penguin and fairy prion feed in the north of the STB, potentially including the proposed mining area, I think there needs to be an element of caution in concluding that this region is 'important'.

18. In the case of fairy prion, concluding 'importance' of an area based on a relatively small number of observations that were not derived from structured at-sea surveys is problematic, not least because such observations preclude placement in a larger spatial context and do not enable temporal patterns to be determined.

19. For little penguin, and reiterating that this species forages in the northern sector of the STB, the core area determined in the tracking study of Poupart et al. (2017) for birds from Motuara Island was to the northwest of the proposed mining area (with mining-derived sediment modelled to move generally eastwards), and for other populations tracked in that study core areas were far removed from the northern STB. For example, penguins tracked from colonies in Wellington Harbour across three years showed that core areas were for the most part within the harbour, with some extensions to the south but close to the harbour entrance (Poupart et al. 2017). Dr Cockrem's own tracking data (Figure 4 of Dr Cockrem's evidence) shows a penguin breeding at Mana Island travelling north, but well to the south of the proposed mining area. Presumably the penguins breeding in Wellington Harbour and those at Mana Island were all capable of travelling further (based on the findings of Poupart et al. 2017), and as noted by Dr Cockrem at paragraph 48.

20. I agree with Dr Cockrem (paragraph 100) that there are no data on seabird foraging efficiencies and how these might relate to turbidity levels in the water column.

21. However, the median mining-derived SSC of 2 mg/L noted in my evidence (paragraph 33) and used as the basis to calculate an area that might be unsuitable for seabird foraging, is not entirely arbitrary. Firstly, this concentration was the lowest SSC found to be avoided by pelagic fish (see Dr MacDiarmid's evidence), and so in the absence of data for seabirds this value was used. Nevertheless, I appreciate that this SSC may not be applicable to seabirds. However, and perhaps more importantly, a SSC of 2 mg/L is an extremely conservative value – it would be fair to say a glass of water with a SSC of 2 mg/L would appear completely clear and would not appear 'cloudy', 'muddy' or 'turbid' to any extent. In using a median, mining-derived SSC of 2 mg/L as the basis for estimating an area with at least this SSC, it is likely that the resulting area is an over-estimate of what might be 'too turbid' for seabird foraging.

22. I note also that the evidence of Dr MacDiarmid[5] considered the displacement effects of elevated mining-derived SSC on fish species to be 'very small' in the context of the overall distribution of species, meaning that less than 1% of fish distribution will be affected, and that while there may be some localised short-term displacement of some fish species, this probably occurs during every natural disturbance (storm) event.

23. I note also, based on the evidence of Dr Cahoon,[6] that while there will be significant and detectable effects on light levels and thus primary production in the sediment plume in the immediate vicinity of the mining site (<2 km), these effects would decrease exponentially, and that on the scale of the sediment model domain, impacts of mining on primary

production would be statistically indistinguishable from natural variability. Dr Cahoon further noted that primary producers (including phytoplankton, microphytobenthos and macroalgae) would be resilient to short-term fluctuations in light availability typical of those in the STB, because of background storm and high river runoff events, and that primary production by phytoplankton in the STB is likely nutrient-limited, not light limited.

24. Dr Cockrem, at paragraph 99, discusses foraging in seabirds. I appreciate that seabird prey is not distributed uniformly in space, nor that prey is distributed randomly in space. However, seabird prey is dynamic and prey abundance and availability will vary in both space and time (noting that this variation is scale-dependent).

EVIDENCE OF NATASHA SITARZ

25. I respond also to the conclusions of Natasha Sitarz (at her paragraph 116), that TTR's proposal:

    (a) would be inconsistent with Policy 11(a) of the New Zealand Coastal Policy Statement (NZCPS) due to adverse effects on kororā little penguin; and

    (b) may be inconsistent with Policy 11(a) and (b) due to other adverse effects on seabirds'.

26. Related to this, Ms Sitarz states (at her paragraph 137) that my evidence (among others) makes no assessment of significance in terms of the Regional Policy Statement (RPS) or the NZCPS; and based on Dr Cockrem's evidence she concludes (at her paragraph 142) that the proposal will be inconsistent with CNC Policy 4 of the RPS.

27. While my 2017 evidence and my First Statement did not refer explicitly to the NZCPS, nor to relevant policies contained in the RPS, it remains my view that kororā little penguin, and

indeed other seabird taxa, will not be adversely affected by the proposal for the reasons set out in my evidence. I therefore disagree with Ms Sitarz that the proposal is inconsistent with any relevant part of Policy 11 of the NZCPS, or CNC Policy 4 of the RPS.

CONCLUSIONS

28. In my opinion, and for the reasons set out here and in my statements of evidence of 2017 and 2023, the proposed mining will not result in adverse effects on seabirds.

Dr David Thompson

23 January 2024

Refs

1 https://www.epa.govt.nz/assets/FileAPI/proposal/EEZ000004/Evidence/e54c4979eb/EEZ000004-Director-General-of-Conservation-Paul-Scofield-Evidence.pdf

2 Hadfield, M. & Macdonald, H. (2015). Sediment Plume Modelling. NIWA Client Report No: WLG2015-22, prepared for Trans Tasman Resources Ltd, 117 p.

3 Macdonald, H. & Hadfield, M. (2017). South Taranaki Bight Sediment Plume Modelling - Worst Case Scenario. NIWA Client Report No: 2017049WN, prepared for Trans Tasman Resources Ltd, 51 p.

4 Expert evidence of Dr Helen Macdonald on behalf of Trans-Tasman Resources Limited, 19 May 2023.

5 Expert evidence of Dr Alison MacDiarmid on behalf of Trans-Tasman Resources Limited, 19 May 2023.

6 Expert evidence of Dr Lawrence Cahoon on behalf of Trans-Tasman Resources Limited, 9 December 2016.

Fromant, A., Eizenberg, Y.H., Poupart, T., Bustamante, P., Arnould, J.P.Y. (2022). Year-round at-sea movements of fairy prions from southeastern Australia. Royal Society Open Science 9: 220124.

Poupart, T.A., Waugh, S.M., Bost, C., Bost, C.-A., Dennis, T., Lane, R., Rogers, K., Sugishita, J., Taylor, G.A., Wilson, K.-J., Zhang, J., Arnould, J.P.Y. (2017). Variability in the foraging range of Eudyptula minor across breeding sites in central New Zealand. New Zealand Journal of Zoology 44: 225-244.