

**BEFORE THE ENVIRONMENTAL PROTECTION AUTHORITY
AT WELLINGTON**

IN THE MATTER of the Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act 2012 (**EEZ Act**)

AND

IN THE MATTER of an application for marine consent under section 38 of the EEZ Act by Trans-Tasman Resources Limited to undertake iron ore and processing operations offshore in the South Taranaki Bight

BETWEEN **Trans-Tasman Resources Limited**
Applicant

AND **Environmental Protection Authority**
EPA

AND **Fisheries Inshore New Zealand Limited, New Zealand Federation of Commercial Fishermen Inc, Talley's Group Limited, Southern Inshore Fisheries Management Company Limited and Cloudy Bay Clams Limited**
Fisheries Submitters

**EVIDENCE IN REPLY OF HELEN ANDERSON TO THE EXPERT
EVIDENCE OF DR DONALD ROBERTSON**

Dated: 2nd March 2017

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INTRODUCTION

1. I prepared evidence, dated 23 January 2017, in relation to the application by Trans-Tasman Resources Limited (**TTR**).
2. Dr Donald Robertson, in response to a request by the Decision-Making Committee (**DMC**), reviewed the fisheries evidence of TTR and submitters and prepared a report dated 21 February 2017.
3. I have reviewed Dr Robertson's evidence. The purpose of this evidence is to reply to comments made by Don Robertson in his evidence.
4. As a preliminary note, my evidence as it relates to commercial fisheries, relies on the evidence of Dr Greg Barbara. Therefore the comments made by Dr Don Robertson in relation to my evidence on commercial fisheries, also tie back to the responses prepared by Dr Barbara with respect to Dr Robertson's comments.

POTENTIAL BIO-PHYSICAL EFFECTS ON EXISTING FISHING INTERESTS

5. Dr Robertson, at paragraph [78], states that there is no basis for my assertion that the noise impact predictions on marine fauna may not be appropriate. He states further that it is the kind of impact that is unlikely to be quantified unless there is an adaptive management approach taken.
6. Paragraph [62] of my evidence presents an overall statement as to the concerns of fishing interests with the TTR proposal.
7. Dr Barbara raises in evidence (at para [29]) whether the underwater noise modelling is appropriate, particularly given the lack of direct measurements of equivalent crawler equipment noise impact predictions on other marine fauna including fish species.
8. In my view, this raises questions regarding the appropriateness of the noise modelling undertaken by Hegley (2015) in which his technical report acknowledges that no specific information is available on the noise level from the suction dredge, and assumptions about ambient noise masking are also based on data from Lyttelton Harbour in 1995.

9. My assertion is based on the findings from Dr Barbara's review. Importantly, concerns regarding the appropriateness of the noise modelling and uncertainty about the noise that would be produced by the proposed mining operation has also been raised during the marine mammal expert conferencing.
10. An adaptive management approach requires environmental standards that the activity can be measured against, and depending on the results, the activity can be discontinued, or continued with or without amendment, on the basis of those effects.
11. With regard to noise impacts the question arises as to whether there is enough information available concerning the receiving environment to establish environmental standards in order to adopt an adaptive management approach.
12. In a similar vein, Dr Robertson states at paragraph [79] that the impacts on biota of different compositions of mud layers could be assessed by an adaptive management programme.
13. TTR are applying for marine discharge consents to discharge sediments as a result of seabed disturbance during drilling activities, crawler extraction operations, release of de-ored sediments and release of sediments during environmental monitoring.
14. At issue is whether the assumption that the mined sands contain less than 4% clay and silts is appropriate, based on two cores used to establish the distribution of the mud layer throughout the project area. The composition of the mud layers is a critical parameter for the sediment plume modelling, and subsequent assessment of the impacts on biota.
15. The discharge of sediments, for which a marine discharge consent is required, cannot rely on an adaptive management approach to deal with adverse effects of the proposed discharge (as per ss.87F(4) and 63(2)(b)) and if the adverse effects on the environment are determined to be more than minor, or there is inadequate information, then the marine discharge consent should be refused under s. 87F(1)(b).

16. The conclusion reached by Dr Greg Barbara (at para [77] of his evidence) on the spatial displacement of the PPA (and referred to by Dr Robertson at paragraph [81]) is based on Dr Barbara's assessment of the available information and the inadequacy of information presented by TTR. Therefore, the suggestion that the spatial displacement of the PPA is minor (as purported by Dr Robertson) is debatable, given TTR have not satisfactorily established that the spatial scale of these potential impacts is small.
17. An adaptive management approach may be able to address the uncertainty and inadequacy of information. However, TTR are not proposing an adaptive management approach.

POTENTIAL EFFECTS OF CHANGES TO THE SEABED ON EXISTING TRAWLING ACTIVITIES

18. Dr Robertson states, at paragraph [83], that the scale and duration of seabed irregularities created by the proposed mining may be overstated in the evidence of Mr Smith.
19. Fisheries submitters have highlighted that there may be a potential risk to operational trawling from pits and mounds resulting from the mining operation.
20. The predicted timeframes for pit infilling and mound deflation are presented in the evidence of TTR's expert Dr Iain MacDonald (at paras [56] to [61]), and Mr Smith's evidence reflects the predicted timeframes. Therefore, Mr Smith is not overstating the scale and duration, but rather reflecting on the evidence presented by TTR on this matter.
21. The evidence of Mr Derek Todd (at paras [25] and [26]), suggests that annual bathymetric survey information be made available to commercial fishing interests, in order to avoid mounds when trawling. Dr Robertson supports this approach.

POTENTIAL EFFECTS ON EXISTING SURF CLAM FISHERY

22. Dr Robertson does not comment on matters relating to the surf clam fisheries as these issues are covered in Dr MacDiarmid's Report 17.
23. In response, I note that Report 17 assesses the scale of marine ecological effects of seabed mining. Page 61 of the Report 17 makes an assessment of the mining operation on the surf clam where it is considered that there will be negligible effects on the surf clam, given the natural turbidity of the close inshore surf-zone.
24. The evidence of Anthony Piper raises concerns relating to potential effects on the existing surf clam fishery, and effects of extreme fines. The rebuttal evidence of Dr MacDiarmid (at paras [29] and [30]) considers that there is no evidence to suggest that these populations are at risk based on the sediment model showing no deposition in shallow areas inhabited by surf clams.
25. However, if the mud/silts % used in the sediment plume modelling is found to be too conservative and subsequent plume modelling predictions incorrect, then this could potentially alter this conclusion.

ADAPTIVE MANAGEMENT

26. Dr Robertson appears to have misunderstood the requirements for decision making under the EEZ Act and the adaptive management approach under s.64 of the Act.
27. The DMC must apply the EEZ Act's "*information principles*" when considering an application for a marine consent. The information principles of the EEZ Act (s.61(2)) require the DMC to favour "*caution and environmental protection*" where the information available is uncertain or inadequate.
28. If favouring caution and environmental protection means that an activity is likely to be refused consent, the DMC must first consider whether an adaptive management approach would allow the activity to be undertaken (s.61(3)). The DMC may provide for an adaptive management approach through the imposition of marine consent conditions, which when read

together amount to an adaptive management approach. An adaptive management approach requires that the activity is measured against environmental standards which relate to environmental effects, so that the activity can be “discontinued or continued with or without amendment, on the basis of those effects” (s.64(2)(b)).

29. An important consideration is the extent to which an adaptive management approach will sufficiently diminish the risk and uncertainty. Appropriate factors for assessing the degree to which adaptive management will diminish risk and uncertainty are (see *Crest Energy Kaipara Ltd v Northland Regional Council A32/09*):
 - (a) There will be good baseline information about the receiving environment;
 - (b) The proposed conditions provide for effective monitoring of adverse effects using appropriate indicators;
 - (c) Thresholds are set to trigger remedial action before the effects become overly damaging; and
 - (d) Effects that might arise can be remedied before they become irreversible.
30. Having good baseline information about the receiving environment is critical to adopting an adaptive management approach.
31. In my opinion, there is uncertainty as to potential impacts on existing fishing interests and there is insufficient baseline information about the receiving environment or existing fishing interests to enable potential changes resulting from the proposal to be monitored or addressed through environmental triggers (i.e. conditions of consent).
32. I do not consider an adaptive management approach should be taken in the face of the uncertain or unknown potential effects of the proposal.
33. Additionally, as discussed above in response to Dr Robertson’s comments in his paragraph [79], the discharge of sediments, for which a marine discharge consent is required, cannot rely on an adaptive management approach to deal with adverse effects of the proposed discharge.

34. I note that Dr Robertson filed an addendum to his evidence on 28 February 2017 specifically addressing his comments on adaptive management. In this addendum, Dr Robertson acknowledges that his use of the term “*adaptive management*” and “*adaptive management approach*” with respect to fisheries management were used in the context of fisheries science and management, e.g. using quantitative modelling and empirical management. Dr Robertson considers that an adaptive management approach appears eminently suitable to manage uncertainty associated with interaction between the proposed TTR project and the STB commercial fisheries. Dr Robertson also acknowledges that the DMC may not impose conditions that relate to discharges that together amount or contribute to an adaptive management approach.
35. This endorses my comment at paragraph [15] above with respect to conditions on a marine discharge consent.
36. I agree with Dr Robertson that taking an adaptive management approach is a suitable way to manage uncertainty associated with any interactions between the TTR proposal and STB fisheries. However, this approach is reliant on having good baseline information about the receiving environment. Put in simple terms, before an adaptive management approach can be adopted there must first be good baseline information about the receiving environment in order to enable potential changes resulting from the proposal to be monitored or addressed through environmental triggers.
37. At this time, I do not consider that there is sufficient baseline information about the receiving environment or existing fishing interests to enable appropriate environmental triggers to be developed. Therefore, I do not consider an adaptive management approach can be taken.

Dated 2nd March 2017



Helen Anderson