

**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 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

**RESPONSE OF DONALD ALLAN ROBERTSON TO QUESTIONS IN APPENDIX
3 IN M43 – MINUTE OF THE DECISION MAKING COMMITTEE ON 9 MAY 2017
ON COMMERCIAL FISHERIES MATTERS AS REQUESTED BY THE EPA FOR
THE DMC**

Dated: 15 May 2017

TTRL DMC Minute 43: Appendix 3 - Questions for Dr Robertson

Question from Dr Barbara

Q5. Does DR agree that TTRL should have gone into more detail as to which species of fish in a fishery were assessed and the potential impacts in regard to each species' biology?

Q5 Response:

This question is unclear. However, it was clear in TTRL evidence as to which group of fish species in each fishery (by method) were being assessed, so given this clarity there does not seem to be a need for more detail. The part of the question which asks if there should be more detail about “potential impacts in regard to each species' biology” suggests that perhaps there should have been more biological focus on impacts. In Reports 18 and 25, the primary focus is on impacts on fisheries, and less directly on the fish – and not at a species level. The main biological focus in Report 18 is on generalised behaviour of fish species responding by avoiding suspended sediments at certain measured levels based on published research. The highest modelled level is in the area where the suspended sediment concentration (SSC) exceeds the 2 mg/l threshold for fish avoidance 50% of the time, while in Report 25 avoidance is addressed more qualitatively. However it seems that Q5 is asking about whether there should have been more assessment of more aspects of more species biology, when the stated focus of each report is impact on fisheries (i.e. the impact on the commercial activity of the fishing industry), not on individual species biology. To enable a more specific answer (to Q5) and address the aspect of more species biology detail, the question should also specify what aspects of fish biology are intended and how these are relevant to the TTRL proposal.

Questions from Dr Jeremy Helson

Q1. You will have noted reference in the Fathom Report to consultation in 2013 by MPI on additional fishing restrictions in Taranaki to protect Maui dolphins.

a) Do you agree that such management interventions should be part of any analysis of fisheries?

Q1 a) Response:

No – there does not seem to be a case for including dolphin area restrictions in an analysis of fisheries that might partly overlap with the TTRL mining area. MPI restrictions on trawling and set netting in shallow coastal strips are made to avoid incidental fishing mortality on north-western North Island sub-populations of Hector's Dolphin (this sub-population is commonly called Maui's dolphin). There is a slight probability that such interventions might result in displaced fishers then moving closer to the TTRL mining site and its sediment plume. But – in my understanding, all evidence so far tabled suggests minimal/negligible impact on fisheries due to the suspended sediments. It is therefore not clear that inclusion of such fisheries

management interventions would be a useful part of any analysis of TTRL impacts on STB fisheries. I agree with the opinion expressed in the Fathom Report (pages 25-26) that state: "While not directly relevant to the consideration of spatial displacement from the sand mining proposal, the prospect of further regulated closures under the Fisheries Act in the west coast North Island trawl fishery may influence fishers' reactions to the mining proposal. Any catch displaced from the mining site is unlikely to place additional sustainability or utilisation pressures on fish stocks because the amount of displaced catch is minimal". I would add that the displacement from the proposed TTRL mining site does not mean that the displaced fish species are no longer available to be targeted by commercial fishers.

b) Do you accept that the changes government introduced after the Fathom Report was completed may have influenced fisher behaviour and could have changed the conclusions of the Fathom Report?

Q1 b) Response:

While there may be – or may have been – a fisher behaviour change as suggested by Dr Helson, see my comment above in response to Q1a), quoting the Fathom Report on this aspect. Any commercial fish species displaced by suspended sediments from TTRL activity would continue to be available to fishers displaced by MPI dolphin protection measures. The species mix in the STB may be different from that in the areas formerly targeted in the MPI dolphin protection areas, however, the impact on displaced fishers would not be a consequence of the activities proposed by TTRL. So, no, I don't accept that the commercial fishing response to the MPI dolphin management measures "*could have changed the conclusions of the Fathom Report*".

c) Do you agree that changes of this nature should be factored in to any analysis of impacts on fisheries?

Q1 c) Response:

Analysis of those aspects of fisheries which are not directly impacted by TTRL's proposed activities would be expected to fall outside the scope of this consent process. Fishers seeking to relocate a small amount of effort due to displacement by MPI regulations might have their choice of new fishing locations affected by perceptions of impacts from the TTRL proposal. But since all available assessments indicate minimal if any impact of suspended sediments on fisheries, then these perceptions would be short lived, and of minimal consequence.

*Q2. Do you agree that the Fathom methodology provides a more specific analysis of the nature of actual **fisheries** in the STB? If so, do you think it would be useful to:*

Q2. Response:

More specific than what? If this means "more specific" than provided by Report 18 – then see responses below.

a) Update that analysis using data up to 30 September 2016 to establish a fisheries baseline, and

Q2 a) Response:

No, the 9 year period of data already covered by Report 18 including the two year period of available data up to 30 September 2015, forms an adequate baseline which is unlikely to be substantially different from the Fathom Report.

b) Compare that fisheries baseline with the updated plume modelling to estimate the effects on fisheries, and

Q2 b) Response:

It's not clear how the Fathom Report fisheries data coverage updated (in terms of recent data) by one year additional to that in Report 18 – up to 30 September 2016 – would provide a better conclusion on the effects of suspended sediments on fisheries particularly when evidence to date supports a conclusion that the impact of suspended sediments on fish and fisheries will be negligible.

c) Assess the subsequent economic ramifications of those effects?

Q2 c) Response:

If biological impacts on fisheries are negligible, then so will the economic impacts be. If economic analyses were feasible, and I doubt that they would be, (given the difficulty of separating signal from noise in any notional mining-induced biological impact versus normal biological variability), then why would the fisheries baseline from Report 18 not be adequate. (See para 57 in my report dated 21 February 2017).

Q4. Do you agree that the aforementioned analyses should be conducted, and the effect of additional spatial closures to protect Maui dolphins considered, before you can reliably state, as you did in paragraph 26, that the conclusions in the Fathom Report are as relevant as if the remaining two years of catch-effort data had been included?

Q4. Response:

No, particularly given the speculative nature of any fishing industry response to new (and distant) MPI dolphin regulation.

Q5. You state at paragraph 33 that you accept the way the data were presented in Report 18 as they reflect the situation that the FMA7/8 boundary has no biological reality. Further you consider this analysis provides a more complete picture and does not detract from the conclusions in Report 18. How do you reconcile this statement with the following statement you agreed to in the Joint Expert Witness Statement on Fisheries Effects that acknowledged that analysis in Report 18 was inappropriate?

“All agreed for the species where there is a legal division between stocks in QMA 7 and QMA 8 that the catch and effort data in [sic] cannot be combined for the purposes of evaluating effects in QMA8 as was done in NIWA Report #18.”

Q5. Response:

I stand by my paragraph 33 in my 21 February report. I will expand on this in my response to Q8 below.

Q8. On pages 26 and 27 of Report 17, maps of the predicted probability of catching jack mackerel in the STB are provided. Comparing these maps to Figure 3.4 in Report 18, it is apparent that the predicted probability of catching jack mackerel in an area of large, consistent and documented catch is only 30-60%.

a) Do you agree that the modelling in Report 17 does a poor job of estimating the probability of catch in the key area of the STB fishery?

Q8.a) Response: No - I do not agree that the modelling in Report 17 does a poor job of estimating the probability of catch in the key area of the STB fishery. It is not clear why Dr Helson might have this perception about Report 17's estimation of probability of jack mackerel catch in the STB. The distribution maps for the two species of Jack Mackerel on pages 26 and 27 are based on robust analyses on a dataset of fish captures from 21,000 research trawl samples taken between 1979 and 1997, most based on random sample positions. These were analysed for species locality correlations using 14 environmental and trawl attributes. A subset of 666 samples covers the STB area and was used for the species probability of catch maps in Report 17. These are plotted on 1 km² grid cells. The two species of jack mackerel maps on pages 26 and 27 of Report 17 are credible and informative. The maps that Dr Helson compares these with (Figure 3.4 in Report 18) are derived from 9 years of industry reported catch-effort data for the STB midwater trawl fishery. All 9 years of data are accumulated in the two maps in Fig. 3.4. The pixels represent total number of tows (left map) and total catch (right map) for all species for the whole 9 year period in each grid cell. The grid cells in Fig. 3.4 are ~124 km². There is no evidence for or merit in suggesting that one of these maps or the analytical methods behind them is better than the other. They are clearly showing quite different things – Report 17 maps show the probability of capture of a fish species in 1 km² grid cells, the other (Fig. 3.4 in Report 18) shows very coarsely the total catch of all midwater trawl reported tow numbers and total catches of all species for a 9 year period in ~124 km² grid cells. Further, both maps in Fig. 3.4 confirm that the midwater trawl fishery lies well outside the area of proposed TTRL, even allowing for the coarse pixel size.

It is also important to note that for the four main species in Fig. 3.4 (2 species of jack mackerel, barracouta and blue mackerel) in total by far the largest fishery in the STB, there is no QMA 7/8 boundary – which would – if it existed for these fishstocks – bisect the STB midwater trawl fishery. It was removed and these species have been managed since the outset of the Quota Management System as if that boundary does not exist – it had no biological reality. It still remains in place for a number of less abundant species but for which it has equal biological irrelevance.

b) If so, do you consider that other conclusions based on Report 17 should be re-evaluated?

Q8 b) Response:

No – I can see no basis for the suggestion that other conclusions based on Report 17 should be re-evaluated. In my opinion they are valid.

c) Do you agree that the conclusion of the Joint Expert Witness Statement on the Effects on Fish should re-consider its conclusions?

Q8 c) Response:

The only part of the conclusions of the Joint Expert Witness Statement on the effects on Fish that might be reconsidered is the item quoted by Dr Helson as a part of Question 8: That is - "**All agreed** for the species where there is a legal division between stocks in QMA 7 and QMA 8 that the catch and effort data in [sic] cannot be combined for the purposes of evaluating effects in QMA8 as was done in NIWA Report #18." But even re-evaluating this is probably academic. Analysis of the largest fishery in the STB, the midwater trawl fishery, is already exempt from this decision, having only one FMA (7) and no 7/8 boundary for each of the 4 main species. For these species the FMAs are large and extend along both west coasts of the North and South Island and through to Cook Strait with no 7/8 boundary.

Questions from Douglas Saunders-Loder

Q1. At paragraph 88, you state that you "can appreciate some nervousness about the proposed mining activity". What is it that leads you to appreciate our nervousness? Do you have you [sic] some misgivings of your own?

Q1. Response:

No, my comment relates to the possibility that at first glance a marine mining project of this scale might invoke statements as extreme as "*threaten the stock whilst in New Zealand waters*" as Mr Saunders-Loder made (paragraph 22 in his evidence). This statement is over-the-top and might have been generated by nervousness in response to a misguided initial perception of the apparent scale the TTRL proposal and its possible impacts before becoming more familiar with assessments of them. By understanding the scale of the TTRL proposal (0.1% of the area of FMA 8) it would then be evident that there is no way the proposal could "*threaten the stock whilst in New Zealand waters*". NZ's marine territory is approximately 20 times the land area of NZ. Highly migratory species like skipjack and albacore, being referred to by Mr Saunders-Loder, occupy many hundreds of thousands of square kilometres and move rapidly through their huge oceanic range which includes part of NZ's waters. How would a very small spatial segment of the highly migratory fish populations in NZ waters passing briefly in the vicinity of an area as small as the

TTRL mining area, (including the area of higher density of suspended sediments that might invoke an avoidance response) threaten the entire stock?

Q2. At paragraph 89, you suggest that whilst there may be an impact on HMS stocks caused by the proposed mining, it would be challenging to distinguish what that impact might be. Whilst challenging, do you not think that understanding any impacts from the mining site on the associated environment, including the impact on certain fisheries is important?

Q2. Response:

In my report (21 February 2017) I stated in my paragraph 89:

Further if “migratory stocks of Skipjack and Albacore Tuna vary hugely in terms of volume and location” then this means that any index of abundance is likely to be highly variable over space and time. If there was some impact on these stocks caused by the proposed mining by TTR it would be challenging to distinguish what that impact might be with such highly variable species”.

Sure – it’s important to understand the impacts on fisheries - if any, caused by the proposed mining. By stating that it would be “challenging” I refer to both the enormous logistic requirements and the experimental design necessary to assess whether there was a measurable impact on skipjack and albacore tuna populations biomass caused – or likely to be caused by the TTRL proposal, and whether such an impact would be statistically measurable. First there would need to be sufficient observations over a large area and many seasons (say 10 years) in order to understand variability in distribution and abundance of skipjack and albacore tuna in the STB but both away from the mining site, as well as in the vicinity of the proposed mining site, before any mining commenced. Then these observations would have to continue – say for another 10 years while mining was being carried out.

It is very likely that both the distribution and the population biomass estimates for both species for each year would be quite variable. In this case, with an expected small to negligible influence on fish distribution and abundance notionally attributable to the suspended sediments from mining over the second period of 10 years observations, it would be very difficult if not impossible to achieve a statistically significant conclusive result. Presumably while this experiment was being carried out the fisheries for both skipjack and albacore tuna species would need to continue to operate in the same area as the population survey. This removal each year by the fisheries of tens of thousands of individual fish from the same fish populations being surveyed would impact both species populations creating an impossible situation of not being able to distinguish whether any differences in skipjack and albacore population sizes (biomass) observed over the 20 year period were due to the mining, or to the fishery, or to normal spatial and temporal variability. In my opinion funding and conducting a study like this would be an extremely expensive and difficult exercise in futility.