Ref: 2889433

Department of Conservation
Te Papa Atawhai

Date: 12 October 2016

To: Martin Kessick, Acting DDG Operations

From: Astrid Nunns, National Support & Advice Manager, PPL

Subject: Marine Consent Application by Trans-Tasman Resources Ltd

Purpose of report

1. The purpose of this report is to set out options and a recommendation in relation to the new marine consent application by Trans-Tasman Resources Ltd (TTRL) to mine iron ore sand from the seabed in the South Taranaki Bight.

Executive Summary

2. The Department submitted opposing in part a previous TTRL application in 2013 (2013 application). The Department sought further information on the effects of sedimentation and more certain and robust conditions to address a range of matters including effects on seabirds, marine mammals and the benthic environment. The Department presented expert evidence on those matters at the hearing.

3. The Decision Making Committee (DMC) declined the 2013 application. The DMC considered that the information provided on the potential effects on the environment was inadequate and that the proposed adaptive management conditions were insufficiently robust or certain for the application to be approved.

4. TRRL undertook more research on the effects of sedimentation which shows that the potential effects of the proposed mining operation are significantly less than the effects predicted in the 2013 application.

5. Since late last year TTRL has engaged with the Department and provided its draft scientific reports for review by the Department's experts. Following the review of TTRL's reports and further information requested by the Department and provided by TTRL, the Department's experts recommended substantial amendments to the conditions proposed by TTRL.

6. Prior to lodgement of the application with the EPA, TTRL accepted all of the Department's requests for amendments to the conditions and included those conditions in its application. Subsequent to notification, and after considering reports by experts appointed by the Environmental Protection Authority (EPA), the Department proposed additional technical amendments to the conditions which were also accepted by TTRL.

7. The Department does not consider that any further conservation gains could be achieved by lodging a submission, in light of its technical assessment of the application and TTRL's acceptance of all amendments to conditions sought by the Department.

8. This paper recommends that the Department does not lodge a submission on the application.

Overview – current 2016 application

9. TTRL has applied for marine consents and marine discharge consents under the Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act 2012 (EEZ Act) for a 35-year consent to mine and process iron sand within the South Taranaki Bight. The 65.76 square kilometre application area extends from 22 kilometres to 36 kilometres offshore of Patea. The proposal involves excavating up to 11 metres below the existing seabed and extracting 50 million tonnes of seabed material per year for processing on a floating mining vessel with 45 million tonnes of de-ored material returned per year to the excavated area. The processed iron sand will be transferred from the mining vessel to a floating storage and offloading vessel and from there periodically loaded onto an export carrier.

10. The applications have been publicly notified by the Environmental Protection Authority (EPA) with submissions closing on 14 October 2016.

The previous 2013/14 TTRL application

11. The initial TTRL marine consent application to mine iron sand in the same area of the South Taranaki Bight at the same rate and using broadly similar methods as now proposed was notified in November 2013. The Department engaged an independent sediment plume expert, and an independent expert on noise effects on marine mammals, as well as internal marine science (marine mammals and benthos), seabird, planning and legal expertise to review that application. The advice was that the application lacked certainty and further information was required in a number of areas. Additionally, the proposed conditions were considered to be insufficiently robust to meet the requirements of the EEZ Act.

12. The Director-General lodged a submission opposing the application in part. The submission sought further information in respect of technical aspects of the sediment plume modelling, noise and other effects on marine mammals, the adverse effects of sedimentation (smothering and turbidity) on sensitive near shore rocky reef benthic habitat and cumulative effects on marine mammals and seabirds. The submission also sought specific conditions to address potential effects on marine mammals, the benthic environment, seabirds and sediment plumes.

13. The application was heard by a Decision Making Committee appointed by the EPA. The Department called evidence from expert witnesses in relation to sediment plume modelling, marine mammals, noise effects on marine mammals, seabirds, benthic habitat and conditions. Those experts participated in expert conferencing prior to and during the 25-day hearing. The Department also made extensive legal submissions.

14. No other central government agency lodged a submission or participated in the hearing process.

15. The decision to refuse consent was released in June 2014. The decision notes:

> *In summary, on the evidence presented we are not satisfied that the life-supporting capacity of the environment would be safeguarded, nor that the adverse effects of the proposal could be avoided remedied or mitigated, nor do we consider that the proposed conditions (including the adaptive management approach) are sufficiently certain or robust for this application to be approved, given the uncertainty and inadequacy of information presented to us about the potential adverse effects.*
>
> *Overall we think this application is premature. More time to have better understood the proposed operation and the receiving environment and engage more constructively with existing interests and other parties may have overcome many of the concerns we have set out in this decision.*[1]

The Department's review of the current application

16. Since late 2015 TTRL has engaged with the Department on the current application. TTRL provided the Department with copies of its proposed draft conditions, Baseline Environmental Monitoring Plan (BEMP) and Environmental Monitoring and Management Plan (EMMP) together with various technical reports for the Department's experts to review. The technical reports were provided subject to a confidentiality agreement.

17. The Department engaged Dr Peter Longdill, an independent plume modelling expert to provide advice on the sediment modelling. Dr Longdill had previously advised the Department on the 2013 application and presented expert evidence to that hearing. Advice on potential adverse effects on marine mammals, seabirds and the benthic environment was provided by internal DOC staff.

18. Based on the technical advice, the Department provided comments to TTRL and suggested amendments to the draft conditions to address potential adverse effects. A number of meetings were held between the Department and representatives from TTRL.

19. TTRL accepted all of the revised conditions and amendments to the BEMP and EMMP requested by the Department.

Significant changes between the 2013 and 2016 applications

20. The technical assessment supporting the 2016 TTRL application demonstrates that potential adverse effects of the proposed iron sand mining are less than understood in the 2013 application. This is primarily because of additional analysis of the behaviour of sediment concluded there would be reduced sedimentation than in 2013 and the enhanced role of the operational sediment plume model. Additionally, the adaptive

[1] Trans-Tasman Resources Ltd Marine Consent Decision, June 2014, Executive Summary paragraphs 14 and 15.

management approach reflected in the conditions is significantly more robust. These matters are outlined below.

Reduced sedimentation

21. Following the decision on the 2013 application TTRL commissioned an independent laboratory to model and research the behaviour of suspended sediment for its proposed operations in the marine environment. The conclusion was that the fine sediment would flocculate (combine into larger particles) and overall settle faster with less re-suspension than previously thought. That conclusion and a revision to the operation to generally discharge all de-ored sediment into the excavated trench below the natural seabed level has reduced the potential adverse effects of sedimentation.

22. Dr Longdill reviewed the analysis undertaken for TTRL to predict the likely behaviour of the suspended sediment and agreed with the conclusions in the Impact Assessment that the effects of suspended sediment concentration from the project near the project area will be moderate and insignificant closer to the coast. As noted above, the conclusion is different from that reached with the 2013 application owing to additional analysis of the way that project derived sediment will behave in the marine environment.

Enhanced role of the Operational Sediment Plume Model

23. Unlike the 2013 application, a sophisticated sediment plume model is now proposed to inform operational mine management decision making. The proposed model will incorporate advance mine sediment details, be constantly validated with actual monitoring data and be constantly updated with the latest weather, tide and current forecasts. Over time it is anticipated to become a reliable predictive tool that can schedule mining activities at different locations within the large mining block to ensure suspended sedimentation concentrations remain within the limits at the sensitive sites specified in the conditions. The sensitive sites include five regionally important subtidal rocky reefs.

More certain conditions

24. Unlike the conditions proposed for the 2013 application, the 2016 set of conditions incorporate an adaptive management framework of measurable response and compliance limits for suspended sediment concentrations at defined locations including the subtidal rocky reefs. The response limit is set at 80% of modelled naturally occurring sedimentation and the compliance limit at 95%. Exceedances of the response limit will trigger additional monitoring and reporting and operations will cease for the period of time the compliance limit is breached. The Department requested, and TTRL agreed, to detailed changes to those conditions to improve workability and enforceability and ensure better environmental outcomes. The changes to the conditions also ensured that while providing for the numerical values to change in response to the independently peer reviewed results of the approved background monitoring programme, the percentage limits represented by those numerical values could not be changed except by way of a formal change in conditions process under the EEZ Act.

25. Additionally, as requested by the Department and agreed by TTRL there are various other improvements to the conditions in respect of avoiding and mitigating adverse effects on seabirds and marine mammals; calibration, review and validation of the operational sediment plume model; the process of preparing and independently reviewing the various management plans; and increased opportunity for the EPA to approve various documents and process steps and to review the conditions.

26. In relation to marine mammals the Department engaged an internationally respected marine mammal noise expert, Professor Wursig for the 2013 application. He and the noise and marine mammal experts at the previous hearing arrived at an agreed condition (apart from one expert) with respect to noise limits. The DMC for the previous hearing "found Professor Wursig's responses to questions to be most helpful".[2] That condition has been adopted by TTRL for this application. There is also a comprehensive set of conditions to avoid and mitigate effects other than noise on marine mammals including a requirement to develop a detailed marine mammal management plan in consultation with the Department. That set of conditions was largely developed by the experts at the last hearing but the Department's internal expert has made further refinements that TTRL has accepted.

27. The benthic related conditions have also been further developed from those arrived at by experts at the last hearing with more research being undertaken by TTRL as necessary. The Department's internal benthic expert proposed amendments to the benthic conditions proposed by TTRL which TTRL has accepted.[3]

28. The changes the Department sought to the draft 2016 set of TTRL conditions were consistent with the Director-General's submission and evidence presented to the 2013 hearing.

EPA commissioned reviews of the application

29. Prior to notification of the application the EPA commissioned four independent reviews of the application and has published those reviews on its website. Three of those reports are particularly relevant to the Department's interests – Sediment mobilisation and transport; Benthic Ecology; and Effects on plankton, fish and marine mammals. The fourth report relates to economic benefits.

30. The Department's expert advisors have reviewed the three independent reports of direct relevance to the Department and advise[4] that they agree with the overall conclusions and the environmental information presented with the application is "more than adequate."[5]

<u>Sedimentation modelling review</u>

31. The EPA independent reviewers of the sedimentation model conclude that the TTRL analysis of sedimentation properties (a key input to the sediment plume model) "*was*

[2] Trans-Tasman Resources Ltd Marine Consent Decision, EPA, June 2014 paragraph 330
[3] Email from Kristina Hillock to R Witte 30 September 2016
[4] Dr Longdill email 21 September 2016
[5] Lodgement review of Effects on Plankton, Fish and Marine Mammals, Trans-Tasman Resources Ltd Marine Consent Application, DHI, September 2016, Executive Summary, page 3

undertaken with a great level of detail and provided an accurate definition of the sediment settling rate and sources terms."[6]

32. The authors of that report note that "*the accuracy and reliability of the predicted sediment concentrations and optical effect are highly dependent on the predicted discharge provided by TTRL.*"[7] Dr Longdill advises that the conditions already proposed by the Department and accepted by TTRL will address this issue.

Review of effects on plankton, fish, marine mammals and seabirds

33. The reviewers assessed the risks of turbidity, noise, oil spills and biosecurity from ballast water on primary production, zooplankton, fish and marine mammals as "moderate" overall, but noted that many of these uncertainties will be addressed through the adaptive management conditions which require ongoing monitoring and operational responses to mitigate effects throughout the life of the project.[8]

34. There were no further reviews undertaken on potential impacts on seabirds. During the first application the seabird experts reached agreement on appropriate conditions. TTRL agreed to include those in this second, current application. TTRL also accepted further amendments to the conditions that the Department requested, namely to include monitoring of seabirds in the Environmental Monitoring and Management Plan (EMMP) and actions to be taken if there were effects of listed species of concern.

35. With respect to marine mammals the reviewers agreed with the Impact Assessment conclusions that the effects would be "negligible to minor."[9] The conditions require management plans to be prepared in consultation with the Department to set out the methods to be used to minimise effects such as bird strike on seabirds, and noise, ship strike and other potential effects on dolphins and whales. Various contingency plans are also required to be prepared to deal with emergencies such as oil spills.

36. The reviewers consider there is more than adequate information in the Impact Assessment to assess the effects on plankton, fish and marine mammals.[10]

37. The EPA reviewers recommend the development of a "hydro-dynamically driven primary production model" to assess and manage the effects on primary production in the food web. Dr Longdill for the Department has considered that suggestion and advises that compounding uncertainties which would be present in such a model output would render the model output of little or no value to the AEE or hearing process.[11]

[6] Trans-Tasman Resources Ltd Marine Consent Application Review of sediment mobilisation and transport GHD 06/09/2016, Executive Summary paragraph 7 i.
[7] Ibid paragraph 27
[8] Lodgement Review of Effects on Plankton, Fish and Marine Mammals, Trans-Tasman Resources Ltd Marine Consent Application, DHI, September 2016, page 2
[9] Ibid Section 4.3.4, page 13
[10] Ibid pages 2 and 3 and section 7.1.3 page 24
[11] Dr Longdill email to R Witte 26 September 2016

Benthic ecology review

38. The benthic ecology review concludes:

> *If the proposed mitigation measures are rigorously applied, then we consider there is a very low risk of residual impacts from the Project on benthic ecology.*[12]

39. The authors of the benthic ecology review recommended a number of relatively minor technical amendments to the conditions intended to mitigate effects on benthic ecology. The Department's experts agree with most of the suggested amendments but do not agree with a suggested change to the response trigger mechanism for suspended sediment concentrations to take account of frequency and intensity of exceedances rather than just intensity. Dr Longdill considers that because the conditions require monitoring and reporting of statistical percentages from a time series, frequency and intensity are already included in the monitoring data sets.[13]

Confidentiality Agreement

40. Some of the technical sediment properties and economic information in TTRL's application is considered commercially sensitive and is only available if a confidentiality agreement is signed. Iwi and environmental groups have concerns about this and the matter may be considered by the Environment Court. The Department signed a confidentiality agreement with TTRL at the end of 2015. TTRL then shared those reports with the Department that related to the Department's interests.

Consultation

Taranaki/Whanganui Conservation Board

41. The Taranaki/Whananganui Conservation Board were advised of the Department's engagement with TTRL as described above.

Hauraki-Waikato-Taranaki Region

42. The Operations Manager in New Plymouth, Gareth Hopkins has been sent this report.

Other central government agencies

43. Redacted.

44. MfE have advised that while they are interested in the process they will not be submitting on the application.

[12] Trans-Tasman Resources Ltd Marine Consent Application Review of benthic ecology AECOM 1 September 2016 Executive Summary paragraph 10 d. page 5

[13] Email Dr Longdill to R Witte 21 September 2016

Tangata whenua and community concerns

45. In 2013 there were 4702 submissions made on the application; 4680 of those were in opposition; 11 were in support and 11 neutral.

46. Over recent months in Whanganui the application has been generating strong community, iwi and media (including social media) interest. The application has been featuring in the Whanganui Chronicle, and public meetings have been held.

47. Of note we understood that several Iwi groups are formulating their opposition to the proposal. It is likely there will be a submission from the Whanganui Taranaki Conservation Board. Kiwis Against Seabed Mining, recreational fishing groups and South Taranaki Underwater Club are the lead groups for the community concerns. Concerns from these groups around the impacts cover a wide range of issues.

48. The Department is likely to face criticism if it does not lodge a submission and participate in the hearing.

49. Our communication with tangata whenua and the Conservation Board is critical moving forward if the Department does not lodge a submission.

Options

Option 1: Lodge a submission in support of the conditions agreed between TTRL and the Department

50. This option could increase the likelihood that the conditions agreed between TTRL and the Department are imposed by the DMC if consent is granted. Participating in the hearing would entail costs to present submissions and evidence in support of the conditions. There would be no additional conservation gain to participate in the hearing.

Option 2: Do not lodge a submission

51. If the Department does not lodge a submission, then it will not be able to present its views to the DMC on the conditions. However, most of the conditions agreed between TTRL and the Department were included as part of the application. In relation to the additional amendments proposed by the Department subsequent to notification, TTRL have agreed to include those amendments in their evidence presented at the hearing, and to provide the Department a draft version before lodging their evidence.

52. If consent is granted, the risk of the conditions being amended to reduce the mitigation of potential adverse effects is considered small for the following reasons:

    a) In order to secure consent, TTRL will need to present expert evidence to support their application, which includes the conditions as agreed with the Department. TTRL's experts are suitably qualified and experienced to provide appropriate evidence.

b) While it is a different DMC hearing this application, one of the reasons the 2013 application was declined was that the conditions were not considered sufficiently robust or certain.

c) The DMC is being advised by EPA appointed expert advisors who have endorsed the proposed conditions as appropriate to mitigate the adverse effects and in some instances have recommended technical changes that would make the conditions more stringent.

Recommendation

53. It is recommended that the Department does not lodge a submission on the TTRL application for consents to mine iron ore sand in the South Taranaki Bight.

Note on Departmental Assessment of Application

54. The assessment of the application and advice on amendments to the conditions was undertaken by external consultants Peter Longdill (sediment plume modelling) and Rod Witte (conditions), and internal Departmental staff Kristina Hillock (benthic), Andrew Baxter (marine mammals), Graeme Taylor (seabirds), Sarah Hucker (planning), Eleanor Jamieson (legal) and Teall Crossen (legal).

I agree / ~~disagree~~ with the above recommendation.

(signature)

14/10/16.

(date)

Martin Kessick
Deputy Director-General, Operations (acting)