

**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 hear a marine consent
application by Trans Tasman Resources
to undertake iron ore extraction and
processing operations offshore in the
South Taranaki Bight

**SUPPLEMENTARY STATEMENT OF EVIDENCE OF DANIEL GOVIER ON
BEHALF OF TRANS TASMAN RESOURCES LIMITED**

28 MARCH 2017



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INTRODUCTION

1. My name is Daniel Govier.
2. I prepared Expert Evidence dated 15 December 2016 (First Statement) and Rebuttal Evidence dated 10 February 2017 (Rebuttal Statement) with respect to these proceedings on behalf of Trans-Tasman Resources Limited (TTRL).
3. My qualifications and experience as a Marine Ecologist are set out in paragraphs 2-9 of my First Statement.
4. I repeat the confirmation given at paragraph 11 of my First Statement that I have read the Code of Conduct for Expert Witnesses and agree to comply with it.

BACKGROUND

5. On 17 March 2017 the DMC asked a question around the use of Acoustic Doppler Current Profilers (ADCP) and their ability to differentiate between naturally occurring plankton within the water column and suspended sediments. The DMC also queried whether the ADCP has the potential to over predict the background levels of suspended sediments within the South Taranaki Bight which the concentration limits within the consent conditions would be based on.

TURBIDITY

6. In offshore regions where there may be proportionally higher levels of turbidity being recorded, turbidity can be a result of the presence of plankton within the water column (rather than sediments which are generally much lower in concentration in the clearer, deeper offshore waters). This could infer that the turbidity readings from an ADCP is higher than what is actually present and over a baseline period there is the potential that this could lead to an overestimation of how turbid the 'background' conditions are within the South Taranaki Bight.
7. There are currently no suitable instruments that can provide results in real time that can differentiate between plankton and sediment in the water column. The only way that the differentiation can be achieved is through the collection of physical samples which can then determine the plankton and sediment components of the water sample. This is what is proposed by TTRL and would essentially provide an ongoing calibration process of the ADCPs for physical Suspended Sediment Concentrations (SSC) throughout the two year pre-commencement monitoring programme (and also once mining commences) to validate against the ADCP readings. These results will then be used to validate/calibrate the operational sediment plume model. The TTRL monitoring programme also proposes that physical water samples at

each of the ADCP locations and the water column monitoring locations will be collected every two weeks.

8. There were concerns from the DMC that if this was the only method of monitoring for compliance, there is the potential of a two week period where there could be higher levels of SSC present, and no way of monitoring this. That is not correct and to address this issue TTRL has already proposed the inclusion of ADCPs into the monitoring programme to provide 'real time' SSC levels throughout the monitoring period and to correlate these data with turbidity measurements.
9. Variations in planktonic distribution throughout most coastal environments occur over a large spatial scale and a temporal scale as well. The most effective and efficient way to better understand this in relation to the SSC levels is to place an ADCP in a location that is beyond any influence of the predicted operational sediment plume and use this as a control station to measure the background turbidity levels. The control site will provide a reading of both the sediment and plankton concentrations for the STB and then any reading above these concentrations at the monitoring sites could be determined as being attributable to sediment derived from the mining programme.
10. There is the potential that during the mining phase the near real-time turbidity readings from the ADCPs (and their equivalent SSC values based on the equations/model) could over predict the SSC levels depending on the plankton concentrations present at that time. However, the TTRL proposal has allowed for this and the turbidity readings will be calibrated/corrected by the use of the control station and the physical water samples every two weeks.
11. As a result the use of the ADCP alongside physical water samples collected every two weeks is considered to be the most robust method for calculating SSCs within the water column at the proposed compliance locations to provide readings in near real time and has been adopted for the TTRL project. I note that this same monitoring approach is currently being used by Port Otago for their compliance monitoring of their large scale dredging programme.



Daniel Govier

28 March 2017