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

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EXPERT REBUTTAL EVIDENCE OF DR. LAWRENCE CAHOON ON BEHALF OF TRANS TASMAN RESOURCES LIMITED

6 FEBRUARY 2017

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INTRODUCTION

1. My name is Lawrence B. Cahoon.

2. I prepared Expert Evidence dated 15 December, 2016 (First Statement) with respect to these proceedings on behalf of Trans-Tasman Resources Limited (TTRL).

3. My qualifications and experience as a biological oceanographer are set out in paragraphs 1-4 plus the Appended CV of my First Statement.

4. I repeat the confirmation given at paragraph 5 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. It addresses the following matter:

   (a) The assertion that a coupled phytoplankton and microphytobenthos (MPB) primary production model needs to be produced.

6. In preparing this evidence I have reviewed the following reports and statements of evidence:

   (a) DHI report to EPA;

   (b) EPA Key Issues Report;

   (c) Shaw Mead submitter evidence for KASM.

COUPLED PRIMARY PRODUCTION MODEL

7. The EPA Key Issues report commented (p. 20, item #71):

> *"DHI is of the view that a model of primary production that includes phytoplankton and MPB production should be used. DHI considers that coupling such a primary production model with the optical model, which in turn is based on the hydrodynamic/sediment model, would enable TTRL to address the impacts on primary production within the STB and at environmentally sensitive areas (ESAs) in greater detail. The DMC will need to decide if the information provided by TTRL is the best*

available information in respect of the potential effects of the sediment discharges on primary production."

8. Shaw Mead (for KASM), Para 40:

> *"Other suggestions included in the EPA Key Issues Report were recently dismissed by* ***Cahoon (2016)*** *because they were considered unfeasible."*

9. I assume Shaw Mead refers to the call for a **coupled PP model** for both phytoplankton and microphytobenthos (EPA Key Issues Report).

10. I addressed this issue in para 28-30 in my first Statement of Evidence. Given Dr Mead's assertion, I wish to reaffirm my view that such a model is not necessary and, in any event, it is not feasible to develop one.

11. My primary point is that a coupled model of phytoplankton and MPB production is not necessary in order to have confidence about the scale and extent of environmental effects associated with the TTRL project.

12. Notwithstanding this, a large portion of my professional research career has been devoted to measuring MPB production in continental shelf ecosystems (like the STB). Consequently, I have had a great deal of cutting edge interest in working to develop technical approaches that would allow such models to be developed. However, it is simply not possible at this time.

CONCLUSIONS

13. It is my considered, expert opinion that a "coupled phytoplankton + MPB production model" is technically infeasible at this time.

14. It is also my considered, expert opinion that the estimates we have made are as good as can be made, and I am

confident that we have a very clear understanding about the effects of the proposal on primary production.

Lawrence B Cahoon

06 February 2017

References

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