6 September 2016

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Dear Hamish

The following is a review of the draft report 'Additional seabed information for a finfish farm effects assessment at Tio Point, Oyster Bay, Tory Channel' (Cawthron report no. 2882). The report provides a useful supplementary assessment of the proposed finfish farm site at Tio Point and generally addresses the information gaps identified in a review of previous ecological site assessment work (Anderson and Grange 2013, O'Callaghan et al. 2014) undertaken at the site as part of the resource consent application. Overall the report is well written and the additional information is clearly presented.

1. **Introduction**
   - The introduction succinctly states the background to, and purpose of the additional research including a description of the four information gaps requiring further work.

2. **Methods**
   - The methods are mostly concise and provide an appropriate level of detail to demonstrate the robustness of the methods used in the survey and analyses.

   - There is no method given for addressing the fourth itemised information gap to provide 'An understanding of infaunal community structure within the existing and proposed farm areas.' But it may be assumed that the authors consider this information gap is better dealt with in a full baseline benthic survey if one is commissioned in the future.

   - All the taxonomic identifications in this study are made by interpreting video footage, which has the benefit of avoiding more destructive sampling methods such as grab or benthic sled sampling. However there is some risk that without obtaining sample specimens that can be examined closely, the accuracy and precision of taxonomic identification maybe somewhat limited, particularly for cryptic organisms or those living beneath the sediment surface. That said, the level of detail of taxonomic identification in this report, with the focus apparently on characterising habitats is probably adequate for the stated purposes of this assessment.

   - Section 2.4 'Depositional modelling and predicted enrichment stage' outlines the theory and methods for the modelling of the depositional footprint and how that relates to the enrichment stage (ES) system used to gauge benthic effects. Although the ES system is the best available tool for relating predicted deposition to benthic effects in the Marlborough Sounds environment, it may be an overstatement that the ES score "…captures the full range of possible effects in a single measure…". For instance, there are a range of potential effects such as far-field effects and effects to community types other than soft sediment communities that are not easily assessed using the ES system.

- The statement describing Enrichment Stage ES5 as “the stage at which seabed productivity is greatly enhanced” is arguably inaccurate. While the productivity of infaunal organisms reaches a maximum at that stage of organic enrichment of the sediment, other measures of seabed productivity such as primary productivity (e.g. biomass of benthic unicellular algae or microphytobenthos) are likely to decrease. Perhaps a better description would be “the stage of peak infaunal abundance”.

- The summary table of the detailed input parameters and settings for DEPOMOD provided in Appendix 1 omits some parameters that may be useful for decision makers or other stakeholders to see. For example, assumed sinking rates for feed and faeces, the figures for feed wastage rates, moisture content, and digestibility are not specified.

3. Results

- In Section 3.1 Bathymetry map in the Results chapter the first sentence refers to “(Figure 4 and 3)” but Figure 3 in the report is unrelated to bathymetry results so the words “and 3” should be deleted (just a minor draft typo).

- The depth contours in Figure 5 are indistinct (minor formatting issue).

- In section 3.2, the side-scan sonar coverage throughout the site is comprehensive but the features identified in the images in Figures 6 to 8 are very difficult to see. Perhaps providing one or two enlarged sections of the sidescan images showing examples of some of the features would be helpful.

- The descriptions of the habitats and biota encountered at the site in section 3.3 are clear and concise. The habitat map (Figure 9) is graphically clear, and communicates the necessary information well, except that use of more contrasting colours in the different habitat types might enable easier interpretation.

- Figures 13 and 14 in section 3.4 clearly depict and describe the spatial extent and intensity of the depositional footprint and the accompanying text concisely interprets the expected enrichment stage for a given level of deposition. Figure 15 clearly illustrates the expected position of the modelled footprint in relation to the habitats identified in the survey (but greater contrast among the habitat map colours would be helpful).

4. Discussion

- The discussion (Section 4) provides a good interpretation of the results in terms of the additional survey and modelling work that was required to fill in the stated information gaps, and in the context of a feasibility assessment for a resource consent application.

- In the third paragraph of section 4.2 (Benthic habitats) it may be appropriate to provide further clarification or refer to evidence to support the statement that some of the features identified (reef, bladder kelp) are “at a sufficient distance” from the proposed marine farm.

5. Conclusions

- The Conclusions section (section 5) provides a concise summary of the main points that are relevant to the purpose of the report as stated in the introduction.

Overall, the report is comprehensive, concise, and achieves its stated purpose well. I have suggested a few changes or improvements for the authors to consider. Please don't hesitate to contact me if you have any further queries about the report or about this review.

Yours sincerely

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