

19 January 2017

ID:1704

Hamish Wilson
Aquaculture Unit
Ministry for Primary Industries
Private Bag 14
Nelson
NEW ZEALAND

Dear Hamish

Review of benthic assessment reports for new finfish sites (for AWEG meeting 12th July 2016)

MPI requested that Cawthron Institute provide a desktop review of two ecological benthic assessment reports provided by NIWA regarding proposed salmon farm sites in the Marlborough Sounds (Brown et al. 2016a,b). As the reviewer, I was asked to determine whether the information would be sufficient for a resource consent application, and if there were any information gaps. My assessment was provided as bullet-pointed comments and suggestions at an AWEG meeting I attended in July 2016. This letter provides a written record of those comments and the conclusions of my review.

The overall finding of the review was that the methods used and the information contained in the two NIWA reports (Brown et al. 2016a,b) provide all of the components necessary to support a resource consent application. The reports were well written and scientifically sound. I have read the final versions of the assessment reports and I believe that my review comments and suggestions provided at the AWEG meeting have been satisfactorily addressed.

Questions/comments regarding Report Part 1.

- As the DEPOMOD results were not available at that time of sampling, please explain in the document that the extent of the sampling area at each site was determined by expert judgement, but that the extent was later vindicated by the DEPOMOD results. *Addressed in final document*
- Please explain in the document that placement of sample stations within the sampling area for most sampling types was random/haphazard within a structured grid covering the sample area. *Addressed*
- Please explain in the document that dive locations were determined by the presence of bedrock reefs. *Addressed*
- Please add the definition of notable ecological features to the report. *Addressed*
- Acknowledge when referring to the benthic best practice guidelines that this assumes farms main depositional footprints are sited over soft sediment habitats. *Addressed*
- Suggest mitigation recommendations (from an ecological viewpoint) for example, regarding tweaks (e.g. location and orientations) in farm placements. *Addressed*

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Questions/comments regarding Report Part 2.

- Clarify the monitoring recommendation as this is suggested at some sites within the document then in the discussion/conclusions for all sites. *Addressed in final document*
- State the source (e.g. Keeley et al. 2013) of the following values (3% food wastage, 10% water content and 85% digestibility, faecal pellet size distribution and fall velocity distribution, waste feed pellet size distribution and fall velocity) and try and more clearly link to studies that can verify these values and their relevance to (a) King (Chinook) Salmon (b) feed types used within the New Zealand salmon farming industry (enlarging upon what is in section 2.3). *Addressed*
- Include a section on the calibration/verification of the 'as applied' DEPOMOD model using existing data from an existing Salmon Farm in order to demonstrate the models effectiveness (or otherwise). This section could make use of previous research (e.g. Keeley et al. 2013) in the case that the applied parameters and source model are the same between that research and this report. *Addressed*
- Better discuss the limitations of DEPOMOD in high flow sites (due to issues like eddy features and current forcing). *Addressed*
- Include recognition of the potential for low level far-field benthic enrichment over time. *Addressed*
- Please add bathymetry and finer gradations for deposition into site level DEPOMOD figures, e.g. Figure 3-17. *Addressed*
- Please tabulate DEPOMOD assumptions and design parameters clearly at start of the report. This should include percentages of different sizes of faecal pellets and feed. *Addressed*
- Please discuss the likelihood of cumulative effects and any subsequent potential mitigation recommendations at Blowhole Point given the close proximity of the two proposed sites. *Addressed*

Please get in touch if you require further clarification.

Yours sincerely

Scientist



Dr David Taylor,
Coastal Aquaculture,
Cawthron Institute

Reviewed by



Grant Hopkins
Cawthron Institute

References

- Brown S, Anderson TJ, Watts A, Carter M, Olsen L, Bradley A 2016a. Ecological benthic assessments for proposed salmon farm sites. Part 1: Benthic Ecological Characterisations. NIWA client report NEL2016-003, prepared for Ministry for Primary Industries. 142p.
- Brown S, Ren J, Mackay K, Grant B, O'Callaghan 2016b. Ecological benthic assessments for proposed salmon farm sites. Part 2: Assessment of potential effects. NIWA client report NEL2016-006, prepared for Ministry for Primary Industries. 65p.
- Keeley NB, Cromey CJ, Goodwin EO, Gibbs MT, Macleod CM 2013. Predictive depositional modelling (DEPOMOD) of the interactive effect of current flow and resuspension on ecological impacts beneath salmon farms. *Aquaculture Environment Interactions* 3: 275-291.