Peer Review Panel Review Comments on the Draft Annual Reports for *Salmon Farms; Waitata, Ngamahau, and Kopaua* (Cawthron Reports no. 2999, 3001, 3000, 3009 – April 2017)

prepared for King Salmon Ltd and Marlborough District Council

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1. Introduction

As part of the final conditions of consent for the development of new salmon farms in the Marlborough Sounds New Zealand King Salmon was required to establish a Peer Review Panel for the purposes of reviewing and providing recommendations to the Council and consent holder in respect of the adequacy and appropriateness of various reports including the Baseline Plan, the Baseline Report, Marine Environmental Management and Adaptive Management Plan (MEM-AMP), and Annual Reports for farms consented by the Board of Inquiry.

Note that the 'Richmond' Farm has been renamed to 'Kopaua'.

The only Annual Report received to date was for Ngamahau in 2016 (Cawthron Institute Report No. 2808) as the others were not operational.
Note that the results from reef surveys are all contained in Report 3009.

The consent conditions for the subject farms requires the following of the Peer Review Panel with respect to the Annual Reports:

> "*The Peer Review Panel shall report to the consent holder and/or the Council…. on the following matters…..its annual review of the **Annual Report**, its assessment as to whether it adequately responds to the results of the monitoring undertaken in terms of the previous MEM-AMP and achieves the requirements of the Condition 67 (Condition 68 for Ngamahau) and any recommendations regarding changes to the conclusions, recommendations and other any other matters specified in the Annual Report. This shall specifically include a review of, and any recommendations for changes to, the WQS required by Condition 44b and the hierarchy of responses to breaches of the WQS."*

2. Review of Annual Reports

General comments

- As for previous reports we find the reports well written, logical, and adequate (subject to the comments noted below) for the monitoring and management of the farms as required of the MEM-AMP. The monitoring described within the reports are in accordance with what could be considered best practices for benthic environments (Best Management Practice guidelines MPI, 2015) and meet the conditions and compliance levels for all parameters for each farm.
- We are concerned at the ongoing issue with measurements of turbidity and DO in particular but also salinity with two instrument used. Surely these can be properly calibrated so that we get accurate and reliable data?

Proposed changes to water quality monitoring programs (similar across Waitata, Ngamahau, Kopaua farms)

- The PRP note that the condition 66c (Waitata condition numbering) allows for "*…The precise location of the long-term monitoring stations and the range of specific nutrient parameters monitoring may, however, be adjusted over time in response to monitoring results…"* It is notable that this flexibility does not extend to the "*targeted water column monitoring*" as required by condition 66e.

- The various recommendations, which refer in some instances to fine-scale monitoring, and in others to full-suite monitoring, make it somewhat difficult to understand the implication of the monitoring across:
    - The "*long-term water column monitoring*" and "*targeted water column monitoring*" surveys as required by conditions 66c/66e, and using the terminology from those conditions (noting also that the conditions extend flexibility to adjust those two programs differently over time).
    - The Annual Monitoring Summary Reports, however, refers to monitoring being either:
        - 'routine monitoring' (as mentioned in the Annual Report);
        - 'full-suite monitoring' (as mentioned in the Annual Report);
        - 'fine-scale monitoring' (as mentioned in the Annual Report);

- Considering the differences in terminology (see above bullet point), as changes to monitoring are proposed, it would be very useful for a tabulated summary of all those proposed changes to water column monitoring to see how those relate to the conditions 66c/66e. (e.g. an updated 'proposed' version of the Table 4 from the relevant AMP – report no. 2679, but also highlighting differences between stations as some recommendations relate to that). Without that, the PRP cannot adequately assess the full extent of the proposed changes to the monitoring program.

- The PRP also note with regard to the water column sampling parameters, that at present the monitoring is unable to confirm that the water quality objectives of the consent have been fully met due to the timescales of data availability. This is confirmed at page 12 of the Waitata annual report (and similarly for the Kopaua report), and means it is premature to suggest substantial reduction of sampling efforts without very sound technical justification.

- We consider it would be worthwhile for the consent holder, PRP and Cawthron to sit around the table and revisit the water quality monitoring programme. It may be this requires at least another monitoring cycle.

Waitata Reach Salmon Farm: Annual monitoring summary 2016-2017 DRAFT

Specific comments

Executive summary (and text)

- "moderate" and "minor" levels of enrichment are noted in this report, but we are not sure how these terms are defined. It would help to have a definition made explicit as "moderate" and changes to these classifications would be something that would have to be watched as we get more information on trends.
- We agree that PS-Ctl-5 should continue in the short-term and be reassessed in future
- We would question dropping chlorophyll a from the fine scale water column monitoring at this early point because of wider concerns from marine farming in the Marlborough Sounds and the farms could be contributing. Subject to the provision

and review of the requested tabulated summary of proposed water column monitoring changes, the PRP agree with the technical basis for dropping phytoplankton biomass and community composition and silicate from near-farm fine-scale sites as these are unlikely to be impacted and limiting phosphorus to the seabed sampling around the pen. This assumes that P is no a co-limiting nutrient at any time in these systems?

- Please check reference to condition 63c (Waitata), perhaps this should be to condition 66c, which addresses modification to the parameters and nutrients being monitored as part of the '*long-term water column monitoring'* (as condition 63c deals with the baseline monitoring).
- We would question the need for far-field DRSi as changes are unlikely to be related to farms and the role of this monitoring is not to provide information on parameters that farming will not affect.
- Please consider including within the 'Executive Summary' and 'Recommendations' section the recommendation from Appendix 10 to <u>extend</u> the Urea-N monitoring during 'fine-scale monitoring'. The recommendation in the Exec summary and recommendations is for continuation, but Appendix 10 calls for extension to new sites. That recommendation for extension is rather lost in Appendix 10 as it is not clearly carried through to the report itself.
- We agree with the ongoing monitoring of urea and PN at this early stage. The idea that some parts of monitoring are reduced therefore in-lieu do something else is not appropriate especially with the effort and cost of monitoring. Whereas the consent conditions allow some flexibility for the '*long-term water column monitoring*' parameters, we are not convinced about the flexibility of the consent conditions to permit substitutions or changes for the '*targeted water column*' surveys. As a result, the PRP consider that diel studies and physical mixing investigations are more appropriate prior to installation and when deciding sites. There should also be information around on diel changes and there is no evidence of farm effects yet. Refer also to the general comments from the PRP regarding changes to the water column monitoring program

Other comments

- Although not specified in the MEM-AMP it would be useful to have a measure of stocking rates included if possible as this would impact on release of nutrients and other water column effects.
- P2 – Not clear why there was any feed added during when the farm lay fallow?
- P6 - Missing TP data from some monitoring stations (e.g. Note 4 on page 6 of Waitata Report). The note is understood, but the PRP note that it is the <u>consent holder</u> who is responsible to monitor in accordance with the consent conditions, not the MDC.
- P8 – are the water samples frozen when archived and if so suspect they will not last more than 6 months?
- See above re dropping phytoplankton composition and biomass.
- P12 - May have missed it in MEM_AMP but how is "statistically significant" shift defined? It would be useful to know when there will be enough data to meet the requirements of Condition 43.

- TN – second threshold – would it not be useful to define this before we get to the situation of needing it?
- The observations under the farm seem largely as expected but some aspects such as build-up of pellets will need to be watched.
- Use of terms such as "comparatively" need to be defined that is cf. to what?
- While most parameters are showing some changes at least at the Pen sites elevated sulphides and redox will need to be watched. While not specified in the condition s it would be useful to have a brief comment on levels that would be a concern included in the reports, particularly as we see changes over time and trends towards levels that could cause a breach of ES. The compliance levels are largely at the overall ES scale which may be too coarse to pick up trends in some of these parameters.
- As noted earlier could elevated levels of ammonia-N etc. be due more to stocking levels than feed inputs?
- Table 7, Table 8, Table 9, Section 4.24 and others which refer to the water column monitoring site NZKS12 as a "**near field reference site**". The site is described in the report and used for its conclusions as a 'reference' site which infers it is not impacted or affected by Salmon farm inputs. Please review the applicability of using the terminology "reference site" for this site (NZKS12). The consent conditions (63c - Waitata) require the monitoring of 'side embayments likely to suffer impacts'. If NZKS12 is called a reference site, then which sites, based on the dispersion modelling, meet the requirements of 63c? Suggest a review and if necessary amend tables and discussions accordingly.
- See earlier comments about changes to parameters for water column monitoring.

Ngamahau Bay Salmon Farm: Annual monitoring summary 2016-2016 DRAFT

Specific comments

Executive summary

- May be useful to say that Cu and Zn are below limits.
- See comments above under Waitata for:
    - terms such as "moderate"
    - TN second threshold
    - Sulphides and redox elevation
    - instrumentation issues
    - recommendations for future monitoring and further work.

- **This is the second annual monitoring report, so we would have expected to see commentary comparing results with the 2016 report, especially trends.**

Specific comments

- P3 – check bullet 2 as think should be 300 m in each direction.
- P27 – para 1, bit confused where it says "absence of fine-scale sampling" then later "observed in fine-scale March sampling?

Kopaua Salmon Farm: Annual monitoring summary 2016-2016 DRAFT

Most of the comments above also apply to Kopaua and need to be taken into account.

Specific comments

Executive summary

- May be useful to say that Cu and Zn are below limits.
- See comments above under Waitata and Ngamahau for:
    - metals
    - terms such as "moderate"
    - TN second threshold
    - Sulphides and redox elevation
    - instrumentation issues
    - reference to some monitoring sites (NZKS05) as 'near-field reference', when the sites could also be referred to as meeting the requirements of the conditions for the monitoring of 'side embayments likely to suffer impacts'.
    - recommendations for future monitoring and further work.

Other comments

- p18 – if there is a time-series for PS-Ctl-3 then would be useful to have a comment on any trends.

Reef Environmental Monitoring Results for the New Zealand King Salmon Company Salmon Farms: 2016 DRAFT

This report includes the results for a number of farms including Waitata, Ngamahau and Kopaua. We have only reviewed the ones relevant to these farms and there are only a few minor comments. The report looks good and we note no effects can be attributed to the farms. With such high variability between sites, years etc it does seem that changes would have to be very significant to be picked up. How will they assess potential, change with such high variability.

General comments

- Generally, this report looks fine and meets the consent requirements.
- We agree with the recommendation on alternate years for quantitative surveys as there is now sufficient information available at other farms to justify this. Would be useful to define what "appreciable change" means eg 10%?

Specific comments

- P13 – random may be a better term rather than "haphazard"

P61 – do we have any leads as to why Ulva is an issue with Ngamahau?

Tangata Whenua Panel

The PRP acknowledge that the TWP (Ngati Koata and Ngati Kuia) need to have the opportunity to provide input before the PRP finalise their review. We gather the draft reports have been forwarded to the TWP for input.