

26 November 2018

ID: 1845

Mark Preece
The New Zealand King Salmon Co. Ltd.
93 Beatty Street
Tahunanui
Nelson 7011

Cc: Peer Review Panel
Marlborough District Council

Dear Mark

Re: REVISIONS ACCORDING TO PEER REVIEW PANEL COMMENTS ON THE 2017-2018 ANNUAL MONITORING REPORTS FOR THE WAITATA REACH, NGAMAHAU BAY AND KOPAUA SALMON FARMS

You asked us to provide a summary of how Cawthron has taken into account the feedback from the Peer Review Panel (dated 27 April 2018) on:

- The 2017-2018 draft reports for annual benthic and water column monitoring for the Waitata Reach, Ngamahau Bay and Kopaua salmon farms (Cawthron Report Nos. 3146, 3144 and 3145),
- The annual reef monitoring results for these farms (Cawthron Report No. 3158),
- The blue cod monitoring report for Waitata Reach farm (Cawthron Report No. 3153).
- The underwater lighting effects for the Kopaua farm (Cawthron Report No. 3149).

The following paragraphs provide a summary of Cawthron's responses (blue text) to the applicable¹ comments from the PRP (black, italicised). We note that some of the PRP comments are not included in this summary, because; (a) we did not consider a revision or further explanation to be warranted (e.g. if it fell outside the scope of annual compliance monitoring or reporting), or (b) NZ King Salmon was better placed to respond. A teleconference (or similar) between the PRP, NZ King Salmon, and their science provider is the suggested platform for discussing any comments or concerns that fall outside the scope of annual monitoring reporting.

General comments:

(2) There is mention in the reports of a review after 3 years for general trends etc. Nga Mahua is now in its 3rd year of operation, Kopaua 2 years and 2 years. It is not clear whether this will involve additions to the annual report or a separate analyses. Should the 3 years of data for Nga Mahau have been included in this year's report?

No, only two years of data existed at the time of writing.

For Cawthron report 3144 (Ngamahau Bay):

(1) On Page (i) and within the document there is mention of DO falling below certain values. It may be useful to confirm in the same bullet point, that the results were still

¹ Note, this document omits review comments from the PRP that did not require a response.

compliant to the WQS (which, in the case of DO WQS require 3 consecutive months below the trigger value) It may be useful to mention if the observed levels cause any ecological concern.

Amended with an immediate note about results being compliant.

(2) On Page ii it is noted that a larger proportions of dinoflagellates were seen in the 2017 sampling compared to the 2016 results. Do the report Authors consider this to be of significance, for example could it contribute to in an increase in the chance of toxic bloom events? We also note that there is further comment about this on Page 35, and support further consideration as part of the third-year review of the WQS.

No changes were made on this matter, as it was already noted that in the report that “This result is not unusual for this time of year, when a warm thermally stratified water column can provide an ecological advantage to motile dinoflagellate species.” Accordingly, and because of the isolated nature of this observation, it was not considered significant in the context of salmon farm cause / effect. Changes to the proportional biomass of dinoflagellates is something that can be assessed across a longer time series of data (e.g. when Sound-wide data are reviewed). This was outside the scope of the present AMR.

(3) On Page 2 it is reported that nitrogen input for 2017 exceeded the maximum nitrogen discharge allowable in any year by 7 tonnes. Presumably this is a breach of the consent and should be clearly noted as such in the report? As this is an apparent breach of the conditions, it would be useful for the authors to also note if there was any associated observable ecological/environmental consequence. We also note the difference in %N in the feed for different farms, is this because different feeds are used?

No changes made as the draft report clearly stated this as follows: “Nitrogen input for 2017 therefore exceeded the maximum nitrogen discharge allowable in any year by 7 tonnes.” Furthermore, we note that annual reporting requirements under consent condition 66 a require only “A statement as to the tonnage of feed and nitrogen discharged each month over the previous year.” We also note the farm was operating at a reduced feed level, and that a 7% proportional cap on nitrogen discharge in feed is a somewhat arbitrary ‘paper’ threshold, not an environmental ‘tipping point’. The remainder of the report discusses environmental consequences of the farm’s operation in the context of the monitoring results within.

Finally, NZ King Salmon are best placed to clarify the differences in % N discharges across the different feeds/farms. This discussion is beyond the scope of the annual monitoring reports.

(5) Page 12 – last line, should the reference to Appendix 4 be 65e?

Amended.

(7) Page 15. At station 75N “The substrate at the 75N station was similar to beneath the pens...” were there any feed pellets or fish faeces noticed at this station? If they

were not observed a positive statement confirming they were not observable is recommended.

Amended.

(8) Page 20 – not clear how Fig 7 explains that sediment chemistry is the main driver, should the reference be to Table 6?

This paragraph was revised in the final report (page 21), and discussion of sediment chemistry was not retained.

(9) Page 24 – can we really say “Yes” that the farm is having an effect in the light of the following paragraph that shows same at mid-channel site? The “Yes” could be qualified in terms of “Yes, concentration gradients of ammonium, urea, and total nitrogen during August indicate that at that time, the farm operation locally elevated nutrient concentrations. However, the nutrient concentrations themselves were not outside historic ...”

Amended, see Box 1 of final report.

(11) Page 31 – para 4, line 3, please clarify what part of the N suite the 191 mg/m³ refers to (TN?).

Correct, TN; clarified in final report.

(6) In the last paragraph of Page 14, it is reported that “A review of at least three years of data....should be done prior to any feed increased at a given farm”. We agree with this, and note that for this farm, this monitoring round completes the third year of data, and so this review can now happen (see comment above).

(12) Page 34 – don’t we have 3 years of chl-a data now?

(13) Page 36 – Recommendation as part of 3rd year review but this is the 3rd year?

(15) We generally agree with the recommendations but note that the 3 years is now up for this site.

In response to the four above comments; no, only two years of water quality data had been collected for Ngamahau at the time of writing, the farm is presently in its third year of operation.

For Cawthron report 3145 (Kopaua):

(1) On Page i it is noted that in the August sampling, a diatom bloom was captured, during which Chl-a concentrations up to 5.2 mg/m³ were recorded. Are the Authors able to make further comment about whether this is a typical or a novel event? It would be good to know if this is something that naturally occurs on occasion in this area, or if it is this something new that has not been seen in previous monitoring (both for the farms, and as part of the wider MDC monitoring effort).

Amended. Text updated in report 3146, and statement removed from report 3145.

(2) Page i and summary – as above re: DO and level not of concern

Noted already in main text, but summary revised.

(3) Location of Fig 1 caption?

See next page. Note that reports were in draft format and had not been through the full editing/formatting process.

(4) The caption on Figure 2 (Page 7) has the words “at the” doubled up.

Amended. Note that reports were in draft format and had not been through the full editing/formatting process.

For Cawthron report 3146 (Waitata Reach):

(3) Executive summary – as above re: DO being below the 90% threshold and if any ecological concern.

Amended as per previous amendments.

(4) The terms moderate, slightly, minor etc are commonly used and think we have raised this before i.e. how are these terms defined. An example is Fig 7 in this report and free sulphides, in the text it says the levels under the farms are moderately elevated but these look considerably higher than refs? This is particular relevant to Section 4.1.2.

No amendments made. With reference to ES, these terms are defined in the BMP. In other cases, it should be stated what it is relative to, so a precise definition of each term would not be useful to the reader.

(6) Page 11/12 – there is no mention why sampling was changed from March to May (Table 2)?

Typo, amended.

(7) Page 13 – It would be beneficial to provide the reason/justification to support the non-sampling of replicates for Chl-a and phytoplankton from August 2017 onwards (e.g. as it was not required in accordance with the MEMAMP?, a consent change to condition xx was endorsed by the MDC and the sampling program adjusted in agreement with the PRP ? etc...)

We note that replication of water samples was not a requirement of the consent conditions, but in some instances (e.g. Chl-a) replication was incorporated as ‘additional’ sampling at the outset of the monitoring programme. Phytoplankton samples have been collected without replication since the start of the monitoring programme. Nonetheless, the MEMAMP provides justifications on the monitoring design where applicable, and the final report has therefore been amended to include a cross reference to the 2017-2018 MEMAMP.

(9) Page 21 para 2 – At station 150N “The substrate at the 150N station was similar in appearance to beneath the pens...” were there any feed pellets or fish faeces

noticed at this station? If they were not observed a positive statement confirming they were not observable is recommended.

Amended.

(10) Page 21 para 3 – does this suggest at 600 m the effects are still evident? Any additional comments on why sediments are similar to under pens to 600 m in both directions (maybe natural?)?

This statement was rephrased as follows:

“Substrate at the OLE stations (600 N and 600 S) comprised light grey sand with shell hash.”

(11) Page 25 – similar to comment above. The overall scores was 2.4 was described as mild to moderate enrichment but would have thought this was only slightly enriched and similar to 600 m and reference levels?

Typo; amended.

(13) Page 29 – again high sulphides under farms, are these levels of concern?

Discussion of this is outside the scope of compliance reporting; the overall ES is the bottom line for compliance.

(14) Figure 8 – is this referenced anywhere?

Yes, see draft. No changes made to final report.

(15) Figure 13 – does this need a legend?

Added.

For Cawthron report 3158 (Reef monitoring for all farms):

There are no applicable responses to document in this letter.

For Cawthron report 3153 (Blue cod sampling):

(1) It would be useful if this report had an Executive Summary up front.

Executive summary added.

(2) Given the aim of this study, it seems counter intuitive that the sampling was undertaken at a farm that was not in production at the time of sampling (see Page 14) ... This study will probably therefore need to be repeated, at a farm and time where salmon feed pellets will actually be available for potential cod consumption. We agree this could wait until the UoO study is completed to ensure it is focussed on the right questions and contaminants.

There had been ~3,000 tonnes of feed discharged in the 12 months prior to sampling, and a similar amount in the previous year. Because the question relevant to this study is one of chronic exposure and accumulation, the results from the Pelorus farm are still relevant to the consent condition despite the farm being fallow immediately prior to sampling. Also see other results included in the report.

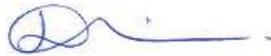
For Cawthron report 3149 (Underwater lighting effects; Kopaua):

There are no applicable responses to document in this letter.

We thank the PRP for their comments and feedback. Should further clarification be required from Cawthron, in particular on any of the PRP comments that fell outside the scope of compliance monitoring or that were omitted from this letter, we are more than happy to discuss.

Yours sincerely

Scientist



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