

Dear Panel,

Please find below (in blue text) the final responses to your last few questions and comments (now highlighted in green text). This document accompanies the final Baseline report.

Kind regards,
Dr. Tara J. Anderson

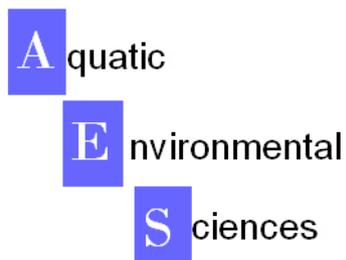
**Review comments to 'Baseline Report'
(Baseline monitoring report for new salmon farm
sites, Marlborough Sounds, report ref: NEL2014-020,
dated October 2014)**

**Report prepared for King Salmon Ltd and Marlborough District
Council**

by

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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 and the Baseline Report.

Comments on the Baseline Plan were provided as required and the Plan was finalised by NIWA in May 2014. One of the conditions for the Waitata and Richmond Farms was to provide the Ngati Koata Trust and Te Runanga o Ngati Kuia Charitable Trust the opportunity to set up a Tangata Whenua Panel (TWP) which would advise and provide input to the Peer Review Panel on matters of concern or issues from an iwi perspective. The following comments are preliminary until input is received from the TWP.

2. Review of Baseline Report

General comments

- The Baseline Plan approved and finalised in May 2014 provides a comprehensive set of monitoring requirements. As would be expected the baseline Report is a large, very comprehensive report on the findings from the baseline surveys which cover the immediate environment of the farms, sites nearby and far-field as well as reference sites.
- The PRP acknowledge the difficulties with such a comprehensive monitoring plan in a complex and dynamic environment and the effort involved in completing this report.
- The setting of Environmental Quality Standards (EQS) for the water column and details on how the benthic standards and before and after comparisons will be analysed is a critical step and is covered in the report along with a detailed analyses of the results.
- Overall the authors have done an excellent job of meeting the requirements set out in the Baseline Plan.
- The only component that doesn't appear to have been addressed is the collation of scallop data for Ketu Bay.
- Although it may be the intention it is important that it is variability outside the natural or non-farm state that is clarified as some of the standards appear to be more absolute. We would suggest the first response should be to assess natural variability before any subsequent action is required. More comments are provided below.

Topic	Sub-topic	Sect.	Comment
Executive Summary		ES	<p>There are some editorial matters that need attention throughout eg p10 only refers to the 4 farms granted not the 3 that were subsequently approved. Corrected in latest version.</p> <p>The surveys and data collected appear to be all in line with the baseline Plan and is thus fit-for-purpose.</p> <p>Agree re the need to avoid reefs and assume the “biogenic lumps” are not significant features.</p> <p>The BMP is still not finalised although unlikely to have major changes. We would suggest this same process is used for any subsequent changes (i.e Peer Review Panel have a chance to comment).</p> <p>We support the proposed method of surveying habitats with notable features, using ROV transects along a tape-measure laid on the seabed.</p> <p>The comments about diver fish counts is provided but there is no recommendation on whether this is critical. Clearly there is no baseline at this point so a decision needs to be made asap. The PRP would recommend that because of spatial, seasonal and annual variability that this be left as semi-quantitative. The PRP agree with the suggestion by NIWA that visual counts be included.</p> <p>Suggest double checking the genus names <i>Turbo</i> and <i>Melagraphia</i> as they may have been recently changed to <i>Lunella</i> and <i>Diloma</i>, respectively. Now corrected in 2nd revision</p> <p>Other recommendations and comments on WQS are dealt with below including not dropping TN but agree with adding PN, using absolute DO, reviewing information before any commitment for monitoring for “duration of consent”.</p> <p>Page 14, third paragraph, line 6, ‘variable’ should read ‘variables’. Corrected</p>
Methods	Sampling stations	2.2.2	<p>P18 para 2 – not sure the ES 5 and 3 relate to ones 1 and 2, should this be 2 and 3? Now clarified</p>
		4.2.1	<p>It would be easier to understand if the first Figure in this series of Figures included the locations of the proposes salmon farms. Location of farms now in figure</p>

Water column monitoring	CCTD data analyses	4.2.3	<p>We are concerned about drift in conductivity but guess nothing can be done. Is there incidental data collected around the same time (eg by MDC?) that could be used to calibrate the present data?</p> <p>PRP acknowledge that nothing further can be done but would want to ensure this is not repeated. (e.g. calibration of the probe prior to each future measurement campaign)</p>
Notable biological features	Background	5.1	<p>5.2.1 mentions ecological surveys out to 300m but in 5.1 it notes the requirement to survey features out to 1 km. Just need to clarify how features further out were covered (i.e. screened with SWATH data?)</p> <p>Clarified in latest version</p>
		5.1	<p>It is acknowledged (final paragraph of Section 5.1) that scallops in Ketu Bay are important. Baseline data for these scallops, however, not presented. This data should to be included, as requested by the Tangata Whenua Panel.</p> <p>This is being addressed by NIWA but need Challenger Scallop Enhancement Company Ltd approval before completing.</p> <p>(26th Jan 2015): We have sent four separate emails to Challenger Scallop Enhancement Company Ltd requesting approval to use the two scallop data/figures in this final Baseline report. We have had no response, other than from Mitch initially saying that Buzz would respond – which he did not, nor did either respond to follow-up emails. Consequently while there is scallop data for the sounds this data is confidential, and we currently do not have Challenger Scallop Enhancement Company Ltd’s approval to include this in the Baseline report.</p>
Rocky reefs	Background	6.1	<p>As above re 1 km from farms. 6.2 suggests SWATH should satisfy this requirement?</p> <p>As above</p>
	Methods	6.2.3	<p>We would suggest there should be some sites marked so they can be repeated at exact location, not just randomly located each time</p> <p>Incorporated in recommendations – question is whether these are set up now or at the first annual monitoring?</p> <p>(26th Jan 2015): We would recommend that the fixed quadrats be set-up and sampled when the first annual monitoring is done.</p> <p>Note: We do not think that much would be gained by setting them up prior to the first annual monitoring survey, as the principal monitoring focus will be ‘reference’ vs ‘farm’ rather than ‘before’ (for which we would only have one datum) vs ‘after’. For comparison with the first annual sampling, if done now they would ideally be sampled at the same time of year as the first annual monitoring (May 2016 I assume, if NZKS get the fish in the water in May this year), which is unlikely to be possible.</p>
Results	Benthic - Richmond and Waitata	7.1.3	<p>Figs 23 and 24 – not sure why there is such a large seasonal change between summer and winter – same location exactly? Are these differences real?</p> <p>Clarified and highlights the importance of some fixed sites.</p>
Results	Benthic -	7.2.1	<p>Fig 29 – some high sulphides at times in reference sites?</p> <p>Occasional words missing eg line 1, p66 (), line 2 p71 etc. Also x-axis label formatting needs correcting.</p>

	Ngamahau		Labelling corrected and high sulphides clarified.
		7.2.2	Table 11 caption needs correcting to Nga Mahau sites. Corrected in latest version.
	Ngamahau – macroalgae and grazing invertebrates	7.2.3	Not sure why there would be patches of reef in winter but not summer, shouldn't they be sampling the same area. Same with barnacles appearing in winter p72, nothing in summer (p75)? Top of page 71, extra word 'and' needs to be removed from middle of second line. Clarified and corrected in latest version.
	Water column	7.3	Suggest NIWA should make sure they know what instruments are recording (bottom p79). The limitations here are somewhat concerning in that it restricts the ability of these 'baseline' data to be compared with future 'farm operating' monitoring data. Happy with NIWA's response and cross-checking of Exosonde against Seabird.
		7.3.1	Page 79, last paragraph, end of second line doesn't make sense. Corrected in latest version.
		7.3.6	P98 – cant see how TP could ever be lower than DRP, wording needs correcting p98,99.
		7.3.8	Phytoplankton – although not absolutely necessary, a set of correlations between Chl-a and phytoplankton carbon would be an interesting addition. Figure 64 symbol shapes aren't explained, and looking back to section 4.2.1 (as suggested in the caption) doesn't seem to help. Therefore it is difficult to work out why there is such a spread in the January data. Extra figures added to show relationship – The additional Figure (68) and text is appreciated, though the figure would benefit from the legend showing the symbol shapes. (26 th Jan 2015): Figure 68 – symbols now added to the legend; a legend for Figure 69 has also been added for visual clarification.
		7.3.9	Agree need to avoid duplication, should some KS sites be dropped if there are MDC sites that can be used or add to the MDC eg TP? Agree with NIWA response and something for KS to follow up with MDC to see if some do overlap.
Discussion and recommendations		8.1	Agree that can only do so much with placement of anchors but should avoid large areas of reef as identified. Now clarified Missing reference or text on page 109? Corrected
	EQS	8.2.1	Shouldn't the ES be actually estimated even if all appear similar, should be just a simple calculation, and would be beneficial for the baseline report as it would then be unequivocal ES values now included

			<p>Agree should follow BMP but any changes should be assessed by PRP</p> <p>Sentence added</p>
			<p>We are not convinced stations at Zone 2/3 can be omitted if we are looking for trends. Maybe assess after each annual report?</p> <p>NIWA have now added that this should be reviewed after annual reports rather than omitting now.</p>
	Notable biological features	8.2.2	<p>Agree that fixed sites are not appropriate for soft bottom but should be used for some reef sites. This would avoid some of the high variability.</p> <p>Now have recommended fixed sites for reefs.</p> <p>May be wrong but we thought observations of fish such as blue cod during dive surveys for other surveys was sufficient?</p> <p>Agree with NIWA's inclusion of diver visual counts to provide better information.</p>
	WQS	8.3	<p>Agree natural variability critical when analysing changes. This should apply to the response decision making as well.</p>
		8.3.2	<p>Any changes in standards should also be referred to the PRP</p> <p>Comment added</p> <p>All standards must take into account natural variability eg if chl did exceed 5ug/l at controls then this must be taken into account before any action required.</p> <p>Have clarified that natural variability must be taken into account.</p> <p>Suggest that the proposed WQS are not worded in such that they are right 'at the limit' of what is acceptable as per the consent conditions. From the BOI decision it is clear that the Board intended there to be a scaled response – with the limits such as those bulleted on p120 and 121 being the absolute endpoint of what was deemed by the Board to be 'acceptable'.</p> <p>Comment added and PRP happy with changes</p> <p>Suggest PN and TN be measured at least initially.</p> <p>Addressed in latest version</p> <p>May be standard for DO to look at saturation but are actual levels not more important i.e the oxygen level?</p> <p>PRP happy as long as the information is there if required and DO levels get low.</p>

			<p>(26th Jan 2015): DO (%) and DO mg/L were both measured. We have now added that “data are also available as concentrations in mg/L on request” (page 79, line 7).</p> <p>all the CTD profile data that would have yielded the DO%age plots. I have (just now) inspected a couple of (what I hope are) the appropriate spreadsheets. They list both DO(%) and DO (mg/L). Failing that, I think one can derive mg/L from percentages if one knows water temperature, salinity and atmospheric pressure</p> <p>The conditions also require an integrated trophic index WQS (e.g. TRIX index or similar) – refer to e.g. condition 44 for Waitata farm. This seems to be missing at present from the report.</p> <p>New section added and agree at this point it is not appropriate to include as a threshold until more work is done on its application.</p>
		8.3.3	<p>The conditions state that farm operations must not cause reductions in DO to levels that are potentially harmful to marine organisms. Can NIWA confirm that the proposed 70% level for DO meets this requirement for the Sounds? It seems rather low relative to (the suitably vague) ANZECC guidelines.</p> <p>PRP happy with the approach which includes >90% at 250 m from farm</p>
		8.3.4	<p>Table 24 needs some discussion. It will be important that the natural variability and controls are considered before any management response is required. It may be what is intended but we would see the first response be to assess data against controls and then if there is an issue look at additional monitoring. The third level would be if it was judged as significant and due to the farm then there may be a management response required. This should be discussed with NIWA.</p> <p>Would be useful to present this schematically.</p> <p>Referring to the ‘second level response’ to a breach in the WQS.</p> <p>Suggest a change to the second level response as follows (suggested insertions highlighted in yellow):</p> <p><i>If the first-level response identifies a breach of any one of the WQS, the salmon stock need to be reduced following the next harvest for a period of 3 months. Hereafter the first-level response will be repeated. If the WQS is still breached, and the farm(s) is deemed to be a contributing factor, reduced stocking will be extended (or further reduced in consultation with the regulator) for a further 3 months, and so on, until WQS are met.</i></p> <p><i>The degree of stock reduction should be a consultative process between the regulators and the farmer. If the breach is determined to have been driven by persistent over-stocking (rather than a climatologically driven temporary reduction in the system’s carrying capacity), the stock reduction may need to be indefinite.</i></p> <p>Changes made as recommended by PRP. Schematic diagram to be included here by NIWA following agreement on content</p>

			<p>(26th Jan 2015): We agree Table 24 should be a schematic but at this point in time it needs to wait until all points have been finalised through discussions with all stakeholders, as Table 24 are just NIWA's recommendations. We expect that some changes are likely. Once agreement on content is reached regarding Table 24 by all parties, NIWA is happy to produce a schematic.</p>
		8.3.5	<p>Need to discuss LAC with NIWA and King Salmon as this is meant to be determined in consultation with the community and is not a trivial exercise. We are not convinced that the BOI intended this by its comments referring to the PRP or setting limits for phytoplankton change?</p> <p>NIWA have suggested this doesn't have to be laborious and there is a framework in place with the PRP. The key will be if key stakeholders and Council agree that the PRP accept the PRP provide forum to consider LACs. This may need some further consideration maybe at a meeting with NIWA, KS and MDC.</p> <p>Using the inverse distance-weighted average method for what would be expected is worth considering but is 6 years down the track so should be discussed and agreed maybe after the first annual report or at a workshop where LAC could also be considered.</p> <p>PRP would still like to see this discussed in the next annual report.</p>

The PRP don't think any of the discussion around standards and future surveys should hold up development (unless critical to baseline) and consider a meeting with NIWA should be able to finalise other points raised.

Tangata Whenua Panel input is still to be finalised but the PRP met with Ngati koata and have had a written response from Ngati kuia which supports the PRP comments. However, in this regard, we raise the following points:

- The authors have done a good job of adding in the extra sampling sites, as requested in Tangata Whenua feedback.
- It is excellent that taonga species have receive extra attention and featured in the monitoring, and that species requested by Tangata Whenua, being blue cod, triplefin (as food for blue cod), paua, kina scallops, mussels, oysters, crustaceans and algae (as food for other species) and blue cod, were all monitored in the video analysis. It would be good if tuere (hagfish) could be added to the list, though accept that this could be a difficult species to monitor with baited traps probably the best method. The scallops in Ketu Bay are also of particular interest to the TWP.
- Mauri is still an unresolved issue. BOI made it clear that this an important aspect of the monitoring, and it is important for the TWP that iwi monitoring of mauri is included in the ongoing monitoring. The baseline surveys and assessment contained in the Cultural Impact reports from Ngati koata and Ngati kuia can be regarded as a baseline with the overall assessment being that the sites are in a "moderate" state at present.

The Tangata Whenua Panel and King Salmon will need to discuss and ensure included in future monitoring.

- It is acknowledging that the development of cultural health indices and definition and monitoring of mauri is ongoing thus this aspect of the monitoring will need regular reviews and remain flexible. It is anticipated that in time other cultural attributes may be added.

Shaun may have something to add but shouldn't affect this report