

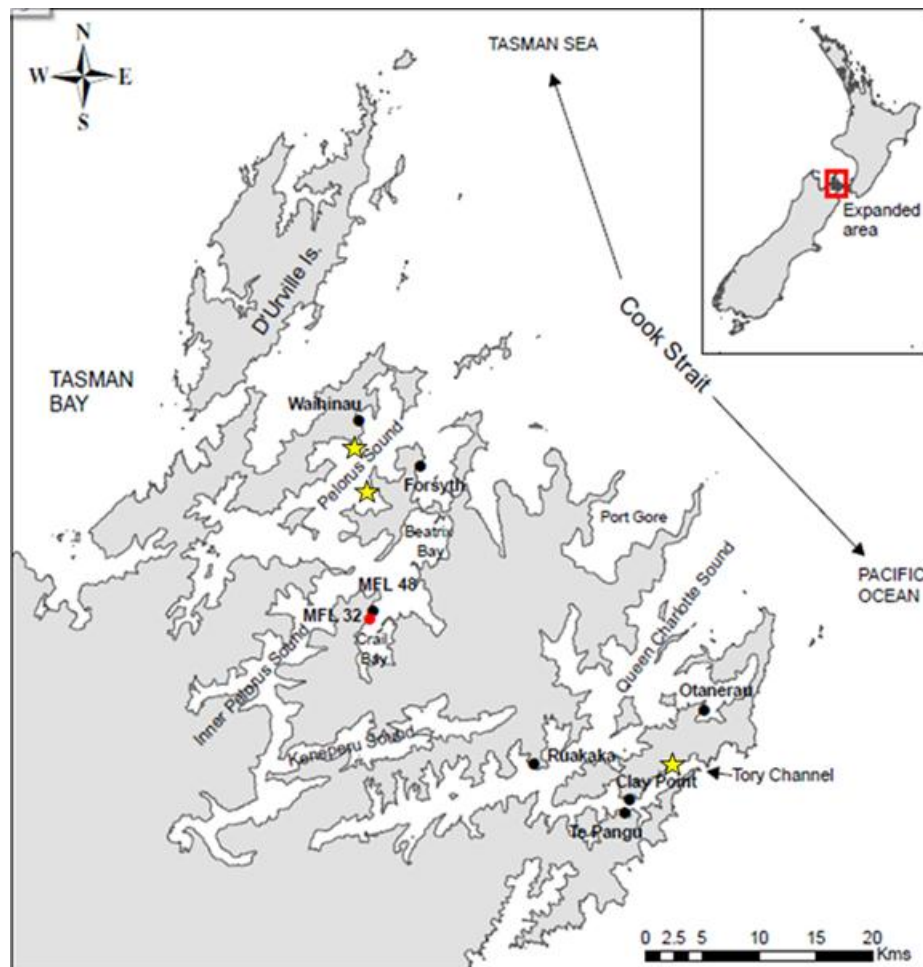
# Best Practice Guidelines for Salmon Farm Management Report to the Environment Committee 27 November 2014

## Purpose

1. To provide the final agreed guidelines for protecting seabed health and to brief the Committee on the public commentary received on the draft guidelines.

## Background

2. New Zealand King Salmon (NZKS) is the principal finfish farming company in the Marlborough Sounds and currently has consent to operate eleven farm sites in the region (Figure 1).



**Figure 1:** Location map of NZKS farms. Yellow stars depict the recently approved three new farms.

3. It is now widely recognised that environmental standards and associated monitoring are not consistent between farms. This is because the farms were consented at different times over the last 15 years. Over that time, scientific understanding of seabed enrichment effects from fish farming in the Marlborough Sounds has evolved, but consent conditions have remained relatively static.
4. NZKS, with the support of Council, initiated the development of best practice guidelines for salmon farm management in the Marlborough Sounds. The successful implementation of the best practice guidelines is intended to lead to greater certainty around consent compliance. The guidelines apply to the eight existing farms, as the three new farms have more stringent consent conditions.
5. Following a successful boat trip and workshop in December 2013, two working groups were formed to develop standards and monitoring guidelines for seabed health and farming/operations. The

outcomes from the group developing seabed health are the focus of this report. The working group for the farming/operations best practice is still several months away from completing its task.

6. The seabed (or benthic) working group comprised a representative from NZKS, Ministry for Primary Industries, the National Institute for Water & Atmospheric Research, the Cawthron Institute, the Sounds Advisory Group and a Council staff member (this report's author). They met five times over the course of 2014 to develop the guidelines.

## Comments

7. NZKS agreed to advertise for public comment on the draft seabed guidelines. This was not a statutory consultation process *per se*, as this is a voluntary initiative by NZKS. However, the public were actively invited to make comments on the appropriateness of the guidelines during October.
8. The draft guidelines, along with a less technical public summary, were posted on Council's website from 3 October to 31 October 2014. A total of 120 page views were recorded, of which 95 were unique visitors. The average time on the guidelines page was 3 minutes 44 seconds. Most views were from Auckland (27), Blenheim (25), Wellington (18), Nelson (14) and Christchurch (9).
9. Printed copies were also made available at Council's Blenheim office and the Picton Library. A total of nine people asked for copies of either the public summary and/or the draft guidelines. The guidelines were also emailed to the different Iwi in the Top of the South.
10. Three sets of comments were received. These were from the Kenepuru Central Sounds Residents Association (KCSRA), Marine Farming Association (MFA) and Mark Denize of Arapawa Island. All supported the need for the guidelines, however there were concerns about some of the technical aspects (KCSRA), applicability to other salmon farmers (MFA) and carbon footprints (Denize).
11. The benthic working group considered the comments and made minor changes to the guidelines only. A summary of the comments and the working group's response is **attached**.
12. This document also incorporates a full scientific peer review by Professor Kenny Black of the Scottish Association for Marine Sciences. Professor Black described the guidelines as: "*coherent, clear and achieve their objectives...The scientific basis of the guidelines is well presented and justified*".

## Where to From Here

13. NZKS has an internal process to consider the guidelines in the near future.
14. Once formally received by Council, the guidelines will be considered by Council's Policy staff as a resource to be examined in the development of the new Marlborough Resource Plan.
15. The guidelines will be posted on Council's website, along with the summary of public comments, and a tracked changes version showing how comments have been incorporated into the final document.
16. The implementation of the guidelines will be the subject of an ensuing project, which may include transitional arrangements to progressively bring all farms under the guidelines.

## Summary

17. The seabed health component of the best practice guidelines has now been completed. This has been a collaborative process involving a number of organisations, including the Sounds Advisory Group. The guidelines have been exposed to the public and several sets of comments received. Those comments have been considered and minor amendments made to the guidelines. The final guidelines will be posted on Council's website. An implementation project is to be developed.

## Summary of technical review and public comments on salmon best practice guidelines, and response from the Benthic Standards Working Group<sup>1</sup>

No.	Comment	Who by	Analysis	Outcome
1	The guidelines are coherent, clear and achieve their objectives. The scientific basis... is well presented and justified.	Professor Black	External scientific peer review is important to ensure that the guidelines are robust and credible.	No change required.
2	Define low and high flow sites in Table 3 (p20) and justify distinction for management guidelines.	Professor Black	It is important to clearly distinguish between low and high flow sites due to different environmental effects that manifest depending on current speed.	Accept. Modify text accordingly. Definitions of Low Flow and High Flow are now in the Glossary.
3	Resolve incorporation of FF-Ref monitoring stations into state of environment regional monitoring network (Footnote 13, p15). <i>(Note: FF- Ref = Far Field Reference sites - which are areas where effects from salmon farms are unlikely to occur).</i>  Currently the footnote reads:  "Sampling of FF-Ref is not required for Type 1 monitoring on the assumption the scope for effects at the NF-Ref is negligible. However, the FF-Ref stations should still be routinely monitored, ideally as part of a regional monitoring network program. Details as to how this will practically be implemented are yet to be resolved."	Professor Black	The development of state of the environment seabed monitoring throughout the Sounds is a separate matter for the Marlborough District Council (MDC) to determine, depending on the availability of resources and priorities. Therefore, the second sentence has been amended and the third sentence of the footnote has been deleted.	The footnote has been revised so that it now reads:  "Sampling of FF-Ref is not required for Type 1 monitoring on the assumption the scope for effects at the NF-Ref is negligible. However, the FF-Ref stations should still be routinely monitored, as part of a regional monitoring network program that is under development."
4	Clarify the sentence on page 21: "A major management response is required if a significant increase is observed and the mean incremental increase is >0.4ES, or if ES < 3.0." (Section 4.2, p21).	Professor Black	This refers to the situation where the level of enrichment exceeds the permitted level at the outer level of effects (OLE). This requires clarification.	Accept. The sentence has been revised so that it now reads:  "A management response is required if a significant increase is observed and the mean incremental increase is >0.4ES, or if ES > 2.9."
5	Support the initiative to develop the guidelines and view them as a big improvement on current practices.	KCSRA  (Kenepuru & Central Sounds Residents)	Expressions of community support are important for the public understanding and acceptance of the	No change required.

<sup>1</sup> The Benthic Working Group comprised Mark Gillard (The New Zealand King Salmon Co. Ltd); Dr Nigel Keeley (Cawthron Institute) (lead author of the guidelines), Dr Niall Broekhuizen (National Institute of Water and Atmospheric Research), Dr Richard Ford (Ministry for Primary Industries), Rob Schuckard (Sounds Advisory Group to Marlborough District Council), and Dr Steve Urlich (Marlborough District Council).

		Association)	guidelines.	
<b>6</b>	Reason for the absence of the Department of Conservation (DoC) requested.	KSCRA	The regulation of the farming effects on the seabed is a matter for MDC under the Resource Management Act (RMA) 1991. DoC was aware of the guidelines through their participation in the Sounds Advisory Group (SAG) to MDC. The SAG has been involved in the formulation of the guidelines, being represented by Rob Schuckard.	No change required.
<b>7</b>	The community requires a professional (technical) representative to assist community groups with understanding and commenting on the guidelines	KCSRA	MDC retained the services of Professor Kenneth Black of the Scottish Association for Marine Sciences (SAMS) as the community expert to provide independent technical review of the guidelines. Professor Black recently did a review of the draft guidelines (see comments on page 1).  A public summary of the guidelines was developed by Council's coastal scientist. An invitation to contact Council's scientist for more details and clarification was also included in the summary.	No change required.
<b>8</b>	Reservations about ES level being set at 5.0 directly below the farms, as this may be close to "benthic meltdown". The ES level below the farms should be 4.0 as more sustainable.  <i>[Note: ES = Enrichment Stage which is a measure of the ecological and geochemical effects of organic matter on the seabed (Keeley 2013. PhD thesis University of Tasmania)]</i>	KCSRA	This matter was discussed extensively by the working group. The setting of the ES at 5.0 was consistent with the determination of The Board of Inquiry (BoI) into the NZ King Salmon plan change requests, and international best practice.	No change required.
<b>9</b>	Reservations about Enrichment Stage (ES) <3.0 as the limit of the outer level of effect (OLE). This may lead to the ES levels that creep unacceptably upwards over potentially large areas.	KCSRA	The level of ES <3.0 recognises that it is difficult to untangle naturally occurring 'background' enrichment levels (which can fluctuate between ES 1.5 and 2.5 in the Sounds) from that caused by salmon farms. This is also consistent with the BoI determination that ES <3.0 was appropriate. An additional safeguard to prevent spatial creep is that the ES is not to be >0.4 higher than the previous year at the same sample site, and not statistically different than reference (control) sampling stations.	No change required.
<b>10</b>	The threshold for exceeding ES5.0 should be following instead of the graduated consequences in keeping with the BoI.	KCSRA	This comment supports the dissenting view of one of the working group. However, the BoI's approach was preferred by the majority of the working group.	No change required.

Summary of responses of the benthic working group to technical review by Professor Kenny Black, and to public comments 11 November 2014

			<p>This is for several reasons, including consistency between existing consents and new Bol consents. The ES tool is also not a precise measure (or 'scalpel') as it involves averaging many parameters to calculate an overall ES score. Therefore, there are confidence intervals around the data, and these can vary in width depending on whether enrichment is patchy or uniform under the pens. A graduated response reflects this uncertainty and imprecision. It also gives the consent holder the opportunity to bring the consent back into compliance whilst continuing to operate on the site. This approach is essentially an iterative process that will eventually force the site to be fallowed if the ES score does not improve. The effectiveness of the graduated consequences will also be reviewed after 5 years, when the guidelines are reviewed in their entirety.</p>	
11	Monitoring should be undertaken by an independent qualified organisation and reporting should occur in weeks not months	KCSRA	<p>The comprehensive monitoring (Type 2) is currently carried out by an independent science provider as required under existing consent conditions. No change to that arrangement was considered. Type 1 (or more qualitative) monitoring will also be done annually by an independent science provider. The consent holder is able to undertake their own Type 1 monitoring at any time as part of good management practices to gauge seabed health. There is no obligation for the operator to make their own sampling results available to Council; compliance will be assessed by reference to the annual, independent monitoring data only.</p> <p>The Working Group also addressed the time taken to report results after monitoring, which is currently 4-5 months. Currently it is done in November and results are delayed by the Xmas holiday period. The time involved in reporting has been reduced in the guidelines by the recommended shift to summer sampling in February-March.</p>	No change required.
12	Do not support allocation of further sites as an appropriate response to over-enrichment or other environmental issues	KCSRA	Implementation of the best practice guidelines, including transitional arrangements, is a separate process to the formulation of the guidelines. It is therefore outside of the working groups' purview.	No change required.

Summary of responses of the berthic working group to technical review by Professor Kenny Black, and to public comments 11 November 2014

<b>13</b>	Guidelines cannot be considered industry agreed standards	Marine Farming Association	The agreed guidelines have been developed by NZ King Salmon Co. Ltd (NZKS), MDC, Sounds Advisory Group, Cawthron, NIWA and MPI.	No change required.
<b>14</b>	Support the need for guidelines but do not support the contents of the draft document as it is 'pseudo-science'	Mark Denize	The guidelines are underpinned by published peer-review studies in the scientific literature.	No change required.
<b>15</b>	Salmon farming is not sustainable as it relies on fossil fuels	Mark Denize	Carbon footprint measurement and accounting were not part of the guidelines which focused on seabed effects.	No change required.
<b>16</b>	Salmon farming has negative ecological effects due to heavy metal deposition and excessive amounts of organic matter	Mark Denize	The Guidelines address these issues. No comments were provided to identify how the Guidelines are deficient in this regards.	No change required.