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Comments on the reports:

- "2018-2019 Annual Environmental Monitoring Report for the Waitata Salmon Farm" (Cawthron Report 3323).
- "2018-2019 Annual Environmental Monitoring Report for the Ngamahau Bay Salmon Farm" (Cawthron Report 3333).

General Comments:

1. Generally, the reports are straight forward reporting of results from the recent monitoring programme. The reports are well written, easy to follow and fit-for-purpose meeting the requirements for the consent conditions and the current Marine Environmental Monitoring Adaptive Management Plan (MEMAMP).
2. The PRP are concerned about the level and extent of degradation beyond the pens in both cases. While this does not yet breach the EQS limits for ES it will need to be closely scrutinised as feed input increases.

We assume as per Condition 59 that the consent holder has provided the reports to the TWP to discuss and provide input? The PRP only have a few comments as listed below otherwise are happy with the reports. Most of these are minor and more around clarification.

Report 1: 2018-2019 Annual Environmental Monitoring Report for the Waitata Salmon Farm (Cawthron Report 3323) -marked as "DRAFT FOR CLIENT REVIEW"

1. **Section 2.1.1, second paragraph.** *"Three reference or 'control' stations were sampled, one near-field (PS-Ctl-6) and three far-field (PS-Ctl-3, PS-Ctl-4 and PS-Ctl-5). An additional reference station (PS-Ctl-8) was established during 2019 monitoring..."*

The description suggests that FIVE (5) benthic reference stations were sampled, so the text may need amendment.

2. Section 2.1.1 page 4, second paragraph. *“This is supported by changes in sediment chemistry, which suggest that natural conditions have not been maintained at both OLE stations.”*

The sediment chemistry (increased sulphides) is indicative of some enrichment at the OLE station. The PRP suggest that referring to an “enrichment effect” rather than *“natural conditions have not been maintained”* may be more appropriate in an effort to avoid misinterpretation.

3. **Section 2.1.1. page 4, third paragraph.** *“However, we note that under the BMP guidelines, background / natural conditions are assessed as enrichment stage (rather than individual variables), and the industry operational goal is for the OLE to be ES < 3.0. In the context of ES scores both OLE stations are compliant (i.e. ES < 3.0).”*

Suggest that rather than refer to industry operational goal, the reference is to the WTA consent conditions (which are also OLE ES of < 3.0). Maybe also clarify that this is an “overall” enrichment scale as ES is also applied to individual ones for organics, sediment chemistry and macrofauna?

The PRP also notes that the Table 3 in the conditions for Waitata includes other standards such as number of taxa and whether azoic, spontaneous outgassing, mats etc. Would be useful to also confirm these are all met as well as overall ES (assuming they are?).

4. **Figure 3.** Consent condition EQS limits are not identified in the figure / figure legend. They are labelled as “Industry operational goal EQS” and not as “Consent condition EQS”. The figure should be updated to clearly indicate the consent condition EQS.

5. **Section 2.1.2. “WTA depositional footprint – individual variables”. Page 11**

This section provides a useful comparison of the “Type 3” monitoring results and the DEPOMOD predictions used within the AEE (Ellis, 2011). The section, does not indicate that limited enrichment at the 600S and 600N sites was indeed actually predicted by DEPOMOD.

It is suggested, therefore, to include in the report a statement to confirm that the 600N and 600S sites were not necessarily anticipated to have ZERO enrichment effect. Figure 4 of the report (the DEPOMOD predictions) shows that the 600S and 600N sites are expected to receive farm derived enrichment loading of “<0.5 kg/m²/yr”. The report could indicate if the observed enrichment is greater than that level or not.

6. **Section 2.1.2. “Review of monitoring stations and EQS compliance zones”. Page 12** *“We have assumed that conditions are measured as ES as they are under the BMP guidelines (rather than individual variables), and in this context, the OLE stations are statistically comparable with relevant / appropriate reference stations (See Section 2.1.1).”*

The PRP are in agreement with this interpretation, that the conditions at the OLE are to be measured as overall ES rather than individual variables. Note comment above about other attributes included in conditions as EQS.

7. **Section 2.1.2. “Review of monitoring stations and EQS compliance zones”. Page 12** *“Because higher feed discharge levels are likely to result in increased enrichment at the footprint boundary, we recommend the OLE monitoring stations are extended further from the farms.”*

This recommendation should not be based or associated with an assumption, expectation, or qualification of higher feed levels in the future. In accordance with condition 39, the recommendation should be based on the 3 years operation at initial feed discharge levels.

As the report recommends for amendment to the dimension and area (and OLE monitoring station location), then the specific location (distance and GPS location) of the recommended revised zones and OLE monitoring stations should be identified within the report. Comparison of zone areas should be made. Consideration to be given to note (b) from Table 2 of the Waitata Consent

*“Notwithstanding, Condition 39a, the size and shape of the above Zones will be reviewed (to enable comparison with the zone dimensions contained in **Table 2**), after 3 years of operation at the Initial Feed Discharge level in **Table 1**, as part of the **Annual Report** (refer to Condition 67j) for that year. The dimensions and area of the Zones may be amended as a result of a recommendation in the **Annual Report**, provided that the total area of Zones 1, 2 & 3 does not increase by more than 10% from the area specified in **Table 2**.”*

In case there is insufficient data/information available to make a specific recommendation on the zone modification and revised monitoring sites, then the report should clearly identify what additional data is required in order to identify those zones. In that situation, the zones and compliance locations would need to remain “as-is” pending that data collection and associated recommendation. The recommendations p12 indicates further work if enrichment is unacceptable to Council beyond the OLE but doesn’t directly address regarding the issue that the ‘allowable’ 10% increase in area of the Zone 1,2,3 footprint. However as this is for overall ES and other attributes as per Table 3 in conditions then it may still meet the requirements of the conditions. However, the PRP shares the concerns about increasing enrichment at least in extent and will need to watch this. Can the authors provide any comments on whether they would be concerned with the variables that have indicated enrichment and levels that would be of concern.

8. P16/17. Technically the water quality results are not breaches as they don’t occur for 3 consecutive months. The attribute levels for the parameters are exceeded but WQS not breached. Interesting that some will be two consecutive months so something to keep an eye on.
9. **Section 4. “Key Findings”.** *“Clarification is required on the EQS at the OLE as to whether the observed level of enrichment beyond the OLE is acceptable, despite conditions being within the industry operational goal of ES 3.0, and comparable to reference sites as measured by ES”.*

It would be preferable for this section to make the comparison to “consent conditions”, rather than “industry operational goals”. Readers of the report may not necessarily know that the two are the same.

The annual report should provide a clear recommendation for the amendment of the dimension and area of the effect zones (possibly including the compliance measurement locations) – see the comment above.

10. **Section 4. “Key Findings”.** *“However, individual variables demonstrate natural conditions have not been maintained at the OLE and that the overall area experiencing minor to moderate enrichment at WTA is at least 14 ha greater than the consented depositional*

footprint. As a result, ambiguity remains as to whether Conditions 37c and 40 are met. It is for the regulatory body to decide as to whether the observed level of enrichment is acceptable beyond the OLE, and therefore whether the WTA farm qualifies for a feed increase."

This section should be updated based on the above PRP comments regarding amendment of the dimension and area of the effect zones. The report should provide the dimension/area comparison (old vs recommended).

11. Has the Working Group finalised the water column approach or could anything be said on this as relevant or will this be covered in the next MEMAMP?

Report 2: 2018-2019 Annual Environmental Monitoring Report for the Ngamahau Bay Salmon Farm (Cawthron Report 3333) -marked as “DRAFT FOR CLIENT REVIEW”

12. See comments above for Waitata re treatment of ES, zones, whether we should be concerned at levels of some variables indicating enrichment away from pens, use of the word “breach” etc.
13. **Figure 3.** Consent condition EQS limits are not identified in the figure / figure legend. The legend refers only to “Industry operational goal EQS”. The figure should be updated to clearly indicate the “Consent condition EQS”.
14. **Section 2.1.2 “Type 3 monitoring”.** *“...and the shape of the NGA depositional footprint after three years of farm operation at the initial feed level (consent conditions 39b, 65i and 66j, also see Keeley & Taylor 2011).”*

Should the reference here be to Clark et al 2011 ? (the Ngamahau benthic report used for the AEE). – also note that Keeley & Taylor 2011 is not in the reference list.

15. **Section 2.1.2. “Review of monitoring stations and EQS compliance zones”.** **Page 10** *“We have assumed that conditions are measured as ES as they are under the BMP guidelines (rather than individual variables), and in this context, the OLE stations are statistically comparable with relevant / appropriate reference stations (See Section 2.1.1).”*

The PRP are in agreement with this interpretation. That the conditions at the OLE are to be measured as overall ES rather than individual variables.

16. **Section 2.1.2. “Review of monitoring stations and EQS compliance zones”.** **Page 11** *“Because higher feed discharge levels are likely to result in increased enrichment at the footprint boundary, we recommend the OLE monitoring stations are extended further from the farms.”*

This recommendation should not be based or associated with an assumption, expectation, or qualification of higher feed levels in the future. In accordance with condition 39, the recommendation should be based on the 3 years operation at initial feed discharge levels.

If the report is recommending for amendment to the dimension and area (and OLE monitoring station location), then the specific location (distance and GPS location) of the recommended revised zones and OLE monitoring stations should be identified within the report. Comparison of zone areas should be made. Consideration to be given to note (b) from Table 2 of the Ngamahau Consent

*“Notwithstanding, Condition 39a, the size and shape of the above Zones will be reviewed (to enable comparison with the zone dimensions contained in **Table 2**), after 3 years of operation at the Initial Feed Discharge level in **Table 1**, as part of the **Annual Report** (refer to Condition 66j) for that year. The dimensions and area of the Zones may be amended as a result of a recommendation in the **Annual Report**, provided that the total area of Zones 1, 2 & 3 does not increase by more than 10% from the area specified in **Table 2**.”*

In the case there is insufficient data/information available to make a specific recommendation on the zone modification and revised monitoring sites, then the report

should clearly identify what additional data is required in order to identify those zones not just leave to Council to decide if levels are acceptable. In which, the zones and compliance locations would need to remain “as-is” pending that data collection and associated recommendation.

17. Section 4. “Key Findings”. *“Clarification is required on the EQS at the OLE as to whether the observed level of enrichment beyond the OLE is acceptable, despite conditions being within the industry operational goal of ES 3.0, and comparable to reference sites as measured by ES”.*

It would be preferable for this section to make the comparison to “consent conditions”, rather than “industry operational goals”. Readers of the report may not necessarily know that the two are the same.

The annual report should provide a clear recommendation in relation to the amendment (or non-amendment) of the dimension and area of the effect zones (possibly including the compliance measurement locations) – see the comment above.

The PRP agree with the suggestion to look at Tory Channel data to ascertain whether the changes can be linked to the salmon farm.