

Rangitāiki Freshwater Futures Community Group Workshop

8 Notes: Surface Water Quality

Galatea Hall, 50A Mangamate Road, Galatea

Wednesday, 24 September 2018 commencing at 9:00am

Members present: Larry Wetting (Chair), Christina Bunny, Kirsty Joynt, Linda Conning, Kerry Snowdon, John Gibson, Dan Phillips (standing-in for Colin Maunder), Matt Osborne, Nick Doney, Mark Ross (attended between 11.20am – 12pm).

Apologies: Alamoti Te Pou, Cr Bill Clark, Beverley Hughes / Keri Topperwien, Cathy Brown, Colin Maunder, Craig Rowe, James Doherty, Matt Gowe, Nicholas Woodley, Alan Law, Tom Lynch

BOPRC staff present: Kerry Gosling (Facilitator), Stephanie Macdonald (Facilitator), Nicki Green (Senior Planner – Water Policy), Michelle Lee (Planner), Paul Scholes (Water Quality, Science Team Leader), Rochelle Carter (Environmental Scientist).

Related documents previously circulated:

- 1 Workshop briefing note. Workshop 8: Surface water quality.
- 2 Rangitāiki Water Management Area: Draft measurable objectives to support in-river values.
- 3 Workshop paper: Analysis of contaminant mitigation costs and effectiveness.

These papers and the workshop presentation are available online [here](#). A copy of the full PerrinAg Analysis of Contaminant Mitigation Costs and Effectiveness report is available [here](#).

1 Welcome/Purpose

Kerry opened the workshop.

The purpose of workshop was to: gauge member's comfort with the draft measurable objectives; present surface water quality information from modelling, and further explore issues and causes.

2 National and Regional Update

Nicki noted potential upcoming changes to the National Policy Statement for Freshwater Management and/or national environmental standards. Central government is indicating discussion documents may be published in early to mid-2019, but there is uncertainty as to scope and content. Central government appears to be considering managing land use intensification regulations and has recently asked Councils to list catchments at risk, potentially with a view to prioritising policy and investment.

Regionally, Nicki noted that Council has accepted the hearing panel's recommendations for Proposed Plan Change 9: Region-wide Water Quantity, and that a decision version will be notified 9 October after which submitters may make appeals to the Environment Court.

Regional Policy Statement Change 3: Rangitāiki River will be made operative on 9 October. This recognises and provides for Te Ara Whānui o Rangitāiki and Council must give effect to it in this project (Plan Change 12).

Simon provided an update on actions relating to Rangitāiki River in the catchment, referring to the Rangitāiki Catchment Programme Annual Plan available [here](#). Simon noted \$17million will be spent by Council in Rangitāiki, the majority of which is in response to the flood events. Noted also that Whakatāne District Council is starting some more monitoring below the Murupara wastewater discharge to inform their planning prior to apply for consent renewals in 2026.

3 Progress and next steps

A current project time line was presented. We are still in the exploratory phase of understanding the issues, defining how much we need to reduce contaminants by, and working on potential solutions. Staff intend to prepare a discussion document for the public around mid-2019 before publishing the draft plan change. Iwi engagement is continuing.

Key work in progress includes modelling and research to support setting minimum flows and water allocation limits, reporting on recent science and monitoring (including the lowland drainage network water quality, and periphyton monitoring), and further work to understand nutrient effects on ecological health in HEP dam lake Matahina.

Following this workshop, next steps include determining:

- how much we need to reduce sediment (total suspended solids, TSS), nitrogen, phosphorus and *E.coli* by
- modelling mitigation actions to determine what we might need to do to achieve these reductions
- developing solutions
- wider public engagement
- drafting a plan change.

Surface water catchment model development

Staff briefly summarised catchment model development.

Key points from discussion:

- Significant effort went in to calibrating the modelling outputs with monitored data. Industry organisations were consulted during the model build.
- The current land use map has been ‘ground-truthed’.
- A report detailing the modelling assumptions and development will be available in the near future.
- The modellers are generally comfortable with the calibration. Good calibration with monitored data, with more confidence near monitored sites with continuous flow gauges. Some areas have no monitored data, e.g., for the catchments showing B band results for *E. coli*. The model assumptions are to be clarified in the upcoming technical report, which will be reviewed by staff and sectors. The industry groups who are feeding into the model include Zespri, Dairy NZ, Hort NZ, Regional Water Advisory Group members (forestry, farming).
- Modelling runs use data from last 30 years, but the results presented related to 2011-2016 5 yr period. Land use change scenarios estimate credible change in the next 30 years

- In the naturalised state scenario, assumed wild/feral animal faecal matter.

Actions:

- 1 Council staff to share modelling technical report once published.

4 Contact recreation

Staff noted the RPS: Rangitāiki objective (Change 3) and the group’s preferred state objective for contact recreation.

Staff then presented working draft measurable objectives for *E.coli* and sought feedback. Objective is A (where currently A) or B band (where “naturally B” band), and arrest declining trends. Maintain or improve is a requirement. B band may be appropriate objective in catchments where B is “natural” but this may need some monitoring as there are no monitoring sites in the B band catchments.

Staff presented monitoring and modelling results for the current state, and modelling results for the naturalised scenario and two potential future scenarios.

Group members were asked to indicate their *level of comfort* with the draft measurable objectives for *E. coli* using the following scale. Note this *does not* mean the group formed its recommendation to Council.

Level of comfort/Gradient of agreement	
1	Whole hearted agreement
2	Agreement with minor point/s of contention
3	Support with reservations
4	Abstain
5	More discussion needed
6	Don't like but will support
7	Serious disagreement
8	Veto

<p>Level of comfort with draft measurable freshwater objectives for <i>E. coli</i> for Contact Recreation:</p> <p>1 seven members</p> <p>2 one member</p> <p>3+ no members at the 24 September 2018 workshop.</p> <p>Generally members supported the draft measurable objectives.</p>
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Key points from discussion:

- Community group preferred state: safe ‘where people swim’ is not appropriate – suggest it should be safe everywhere.
- There is a schedule in the Regional Natural Resources Plan with monitoring bathing sites. Staff are still recording information about sites.
- There was a suggestion that perhaps staff should instead note where not to swim and the rest should be safe for swimming.
- Long term trends could not be defined for Matahina because of insufficient data

- Other toxicants are not being considered for contact recreation values.
- Members noted there appears to be very little difference between government's A, B and C bands.
- Maintain or improve are requirements in the National Policy Statement. We cannot set an objective that allows degradation, reducing water quality is not an option.
- PC12 project will have to manage risk associated with any significant land use change. However, discussions with CNI suggest large scale land use change to more intensive land use is not likely.
- *E. coli* survival in rivers depends on various things, e.g., temperature, sediment predation, and we can get naturalised populations. Model makes assumptions about decay.
- The proposed development scenarios are estimates of a future which is uncertain, but they have been checked with industry organisations and community group. It was noted that Murupara is probably too high and cold for kiwifruit as suggested in scenario C, but cherries do well.
- Scenario C contains more extensive wetlands area than Scenario D. The wetland expansion is related to assuming sea level rise/water table rise in Scenario C, whereas Scenario D assumed additional pumping to mitigate sea level rise and enable arming to continue. The scenarios are exploratory only, enabling us to consider different outcomes through the modelling.
- The purpose of the scenarios (naturalised, current state, Development C and Development D) was to explore what contaminant generation we should expect naturally and so should not be a problem vs. contaminants generated by human activity. We have only explored current and potential future land use change that we anticipate might happen. We will explore change in *practice* solutions next, before considering whether land use change is necessary.

Actions:

- 2 Amend preferred state statement to “water quality should be safe for swimming, except after heavy rainfall”.
- 3 Staff to consider clarifying which locations are not swimming locations rather than all of the swimming locations.
- 4 Potentially explore (using model) whether higher *E. coli* in lower reaches is locally sourced or cumulating from upstream.

5 Ecosystem Health

Staff presented current state monitoring information about the Rangitāiki River and HEP dam lake Matahina. They then presented the approach to the draft measurable objectives, i.e., A or B band applied. Refer to Table 3 in the *Rangitāiki Water Management Area: Draft Measurable Objectives to Support In-river values* document.

Key points from discussion:

- Dissolved oxygen is an attribute in rivers, below point discharges as set out in the National Policy Statement for Freshwater Management.
- Note some attributes bands are a part of the National Objectives Framework that is not subject to changes at the regional or local level. Please see Table 3 for descriptions of the bands.
- A member does not like the use of the terms “excellent, good, fair and poor” for invertebrate index results as found it emotive. The member suggested instead, use

objective wording like 'no observable difference', 'slight change/effects', 'moderate', 'large/high'. It was acknowledged that the indices record presence, abundance and diversity which are objective – see Table 3.

- Dissolved oxygen monitoring in the Rangitāiki River suggests more investigation needed in the lower reaches. Need to monitor DO both up and downstream of discharge. The water is warmer and has lower DO level at Edgecumbe site. The two are related.
- Aniwhenua behaves more like a slow stretch of river so not using lake attributes like TLI. Matahina behaves more like a lake so using lake attributes.
- Meaning of terms, Oligotrophic etc. Oligotrophic / clear ↔ Supertrophic / Grows a lot of plant material / productive (usually not natural)
- Thinking towards solutions, members suggested water could be applied to land to remove nitrate, but would need to ensure it is taken up by plants. Concerns were raised relating to Tuna being quite hardy vs. trout having higher needs for water quality and quantity. The Nitrate and Ammonia toxicity measure relates to fairly sensitive species and are relevant for trout.
- It was noted Brown trout temperature, DO tolerance similar across species, Rainbow probably most sensitive to water quality
- Where any long term trends are degrading (getting worse), we will need to halt that decline, even though, for example, Nitrate toxicity is currently in the A or B band.

Actions:

- 5 Lowland water quality report will be sent out once published. The MCI methodology is explained.
- 6 Council will seek Fish and Game input to review significant habitat for trout schedule. Note staff are also reviewing lists for indigenous species.

6 Nitrogen, Phosphorus and Total suspended solids

Staff presented cumulative load graphs and sub-catchment yield/source maps for nitrogen, phosphorus and total suspended solids for naturalised, current, and two potential future scenarios.

The information is detailed in [section 4 of the briefing note](#).

Members level of comfort with nitrogen and phosphorus modelling results:

Level of comfort scale (1 to 8, 1 being comfortable as a whole) for nitrogen info: Comfortable.
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Level of comfort scale (1 to 8, 1 being comfortable as a whole) for phosphorus info: Comfortable.
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Key points from discussion:

Total Suspended Solids

- Total Suspended Solids is measured/estimated in the water, so sub catchment yield maps do not tell us what is causing the TSS e.g., bank/bed erosion vs. erosion from land. Whirinaki is contributing a large amount of sediment into the Rangitāiki River.
- Challenge on East Coast / Tolaga Bay – no pulp and paper mill means logs are left on the land and come down the rivers in floods.

- We are under no illusion as to where sediment ends up - in Aniwhenua dam lake and on farms.
- By comparing “naturalised” and current state results we can infer the sediment generated by productive land use/caused by human activities.
- Forestry results were worse than members expected in modelled results. The Forestry sector have been involved in the model development, provided input into assumptions around forest harvest cycles. The sector will also review the technical report on the model assumptions, such as different forest age classes/stage of rotation at any one time.
- Concern was raised that there might be limits on natural sources that affect the community. Staff advised that we may need to explore impacts of climate change further, but wouldn't expect to be managing natural levels of sediment for ecosystem health value.
- Individual practices can make a huge difference and are difficult to manage. Members suggested further exploration is required into contribution from poor practice.

Nitrogen

- Nitrogen occurs naturally in the environment and cycles through different forms as it moves through the landscape. Excess nutrients can come from a range of sources including fertilisers, agricultural sprays, uncontained waste dumping, animal urine, sewerage overflows and storm water.
- The natural nitrogen load (e.g., from organic material) is largely a result of the catchment size, because the load is cumulative down the river.
- Current N load at Te Teko is about ~17% on top of natural. Still working through how significant this may be. Need to consider, understand the relationship between TN load and Periphyton, and HEP dam Lake TLI.
- For Developments C and D, the change isn't as great as some members might have thought. Need to remember the large size of the catchment and the small areas of change proposed.

Phosphorus

- The Whirinaki is contributing about 30% on average where it discharges into Rangitāiki River.
- Some phosphorus attaches to sediment. Dissolved Reactive Phosphorus is the phosphorus available to plants.
- The amount of Nitrogen and Phosphorus that is suitable for healthy ecosystems is still being explored.
- Total Phosphorus is a key measure for lakes and lake fed rivers. We monitor both TP and Dissolved Reactive Phosphorus.
- Some phosphorus becomes bound to soil (the amount depend on soil type) and some is dissolved and plant available.
- It was noted that some fertiliser recommendations are excessive and Council may want to target fertiliser reps about this.
- Most P levels are above the ANZECC guidelines naturally (the guidelines are not always appropriate for our catchments). However we do need to look at the impact of Dissolved Inorganic Nitrogen and Dissolved Reactive Phosphorus on periphyton growth. This is work in progress.

Actions:

- 7 Make modelling maps for all constituents available for members online through a hyperlink. [Note the modelling maps are included in briefing note and presentation slides.]
- 8 Check sedimentation modelling with forestry. [Note this is a planned component of the project.]

7 Approach to modelling mitigation bundles

At the last workshop, the community group provided feedback on mitigation bundles. The bundles were amended and the economic cost and contaminant reduction report has been prepared by PerrinAg. This was summarised in the briefing note circulated.

Looking towards modelling mitigation scenarios, staff propose:

Applying the M1 bundle across all land uses and the whole water management area to explore the water quality outcomes if everyone applied good practice. Once we are clear on what contaminant load reductions we need to achieve, we can then estimate whether good practice (M1) would be enough to achieve them. If not, staff propose to model M2 and M3 targeted to key source areas or activities.

Level of comfort (1 to 8, 1 being comfortable as a whole) with the approach to applying mitigation bundles in the modelling scenarios:

1 two members

2 three members (see notes below requesting some actions be moved out of M1)

3 one member

4 nil

5 two members

Rest none on the 24 September 2018 workshop.

Generally agreed to the approach, subject to considering shifting some actions to M2 and seeing more detailed specifications of the scenario.

Feedback:

- Member would like to see some actions moved from one bundle in to another, e.g., Dairy Action M1 action 16 should be stock exclusion from all waterways not just those >1m wide. A member disliked the alignment with the Dairy Accord. Also amend wording to include the words “stock exclusion”.
- Some discussion about whether only permanent water bodies or also intermittent should be included in stock exclusion. Noted that including intermittent and even all permanent would extend the stream length.
- Each action is open to lots of interpretation to do a little or a lot. Lots of wriggle room. Need clear definitions, audit process and compliance. Actions should be industry led.
- Check M1 alignment with the new industry approved good farming practice agreement.
- Complete protection of gully heads is now in M0 but it is not currently happening.
- Dairy M1 actions 7, 14 and 15 should be M2. Things people would not be happy to have to implement.
- Kiwifruit M1 action 2 Maintain optimal Olsen P. Is Olsen P the right measure?
- Drystock M1 action 11. Add the words “stock exclusion” to be clear and consistent with M2 action 6.

- Kiwifruit M1 action 6 could be in M0, assuming there is no extra cost. It is also a risk in assuming all actions have a cost, and assuming all farmers are doing M0.
- M1, M2 and M3 should be more clearly and separately costed in the report so farmers aren't scared off. M1 is not so costly and first actions in M1 will *increase earnings before interest and tax* (EBIT).
- Note the tables showing N inputs and N losses are very interesting. Also recommend reading the "further observations" sections of the full report.
- Dairy M1 action 3 - reduced tillage practices – should be tilling on sloping soil around the contour (not down).
- Buffer widths of riparian areas are not specified. There's a difference between 1, 5 or 10m. The distance will be specified for modelling mitigation scenarios. However, Simon noted that in practice it should be fit for purpose.

Actions:

- 9 Suggested amendments to Mitigation bundle lists to be sent to Santiago and PerrinAg for consideration.
- 10 Share the PerrinAg Economic Analysis report. Members to send comments directly to Santiago.Bermeo@boprc.govt.nz
- 11 Staff progress M1 scenario specifications and send to community group.

8 What's next

Staff summarised next steps and intention to hold another workshop in December.

Staff noted that an unexpected event meant a large number of members were absent. Given the importance of the information, the attending members suggested to include one catch-up workshop to members who could not make it today. A small catch-up workshop would be organised.

Workshop ended at 2.25pm.

Appendix One – Actions

1	Council staff to share modelling technical report once published
2	Amend preferred state statement to “water quality should be safe for swimming, except after heavy rainfall”.
3	Staff to consider clarifying which locations are not swimming locations rather than all of the swimming locations.
4	Potentially explore (using model) whether higher <i>E. coli</i> in lower reaches is locally sourced or cumulating from upstream
5	Lowland water quality report will be sent out once published (note the MCI methodology is explained as a part of the report).
6	Council will seek Fish and Game input to review significant habitat for trout schedule. Note staff are also reviewing lists for indigenous species.
7	Make modelling maps for all constituents available for members online through a hyperlink
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