

Laura Drummond - Summary Statement

1. My name is Laura Drummond, I am an aquatic ecologist. My qualifications and experience are detailed in my technical report appended to the s42 report.
2. As set out in my evidence, there is inherent uncertainty in assessing the level of effect from the activity. I agree with the Applicant that the effects of the proposed activity on water quality, fauna, flora and ecosystems will be variable between sites and receptor sensitivities, the chemical used, and the application regime; discrete or periodic.
3. The Applicant has assessed the risk of adverse effects to surface water quality and ecology occurring as very low, provided "*all discharge occurs in accordance with all guidelines and proposed conditions*". I agree that the potential effects can be reduced if the conditions provide robust avoidance and mitigation.
4. I would like to make a correction to my technical report appended to the s42a report, where I discussed the Applicant volunteering a condition to provide a 50 m setback from inanga, trout and salmon spawning sites (paragraph 43). As discussed in the evidence of Ms Irvine, this was instead notification. I note that as per Ms Irvine's evidence, Fish & Game have agreed to this, therefore I agree that the requirement for buffers around known trout and salmon spawning sites can be removed from the proposed conditions in the s42a report.
5. I still recommended specific protection of other known sensitive aquatic habitats, such as springs and non-diadromous spawning habitat, in particular Canterbury mudfish, which have the threat classification of Threatened – Nationally Critical (Dunn et al. 2017). These are areas mapped on the Canterbury Maps Ecology and Biodiversity layers. This should be used as a first step screening tool, prior to confirmation of values by Council freshwater ecologists.
6. Due to the reliance on the Agrichemical Strategic Management Plan to the outcomes referred to in the AEE, and the timeframe in which this is to be developed (one year from granting of consent), I am uncertain what the final plan will contain. I therefore still recommend an external review panel is used to guide and approve the final Agrichemical Strategic Management Plan, to ensure transparency. I also consider it critical to include a mechanism to achieve a progressive reduction in the area in which agrichemicals are sprayed alongside or within aquatic habitat, as this is required to achieve improvements to ecological values over time (Mr Ensor example). The AEE details the Applicant's commitment to reductions in spraying, however this commitment does not appear to have a clearly trackable and transparent audit trail.
7. I maintain the recommendations of transparency in the avoidance of ecologically sensitive areas, progressive reduction in agrichemical use, additional surface water quality and ecology monitoring and audits, the removal of 'other chemicals approved in future by the EPA', and a more robust approach to the development of the Agrichemical Strategic Management Plan.
8. While I agree that effective controls can be put in place to reduce the level of effect to surface water quality and aquatic ecology, I do not agree that the effects to aquatic ecology over the global consent can be considered low. In my opinion, there is a moderate to high level of uncertainty in the actual level of effect associated with the wide range of habitat and application types. Improved controls and associated effects monitoring are required to reduce this level of uncertainty, coupled with a strategy to provide a progressive reduction in the area sprayed over time.

9. In response to conditions, Dr Gray and I have discussed the monitoring plan and agree on the following points:
- a. The mixing zone should be updated to be consistent with the regional plan (or subsequent iterations). I note that for braided rivers, this is specific in the regional plan.
 - b. Surface water quality monitoring. Agreed on 12 samples, this should be split between drains, small streams, lateral habitat within braided rivers (springs) and wetlands (3 per habitat). Agree that only the downstream sample should be processed immediately, the upstream sample should only be processed if there is an exceedance of the trigger value in the downstream sample.
 - c. Remove 2 day later requirement.
 - d. Water samples should be following NEMS procedure for discrete water sampling, but trained personnel.
 - e. If exceedance, compliance assessment undertaken. Propose a limit in which the investigation (3 x limit suggested) is turned over to pollution hotline, so an independent investigation is undertaken.
 - f. To provide a more robust approach to increasing knowledge on the ecological effects of agrichemical use, an ecological investigation should be required as a condition of consent. This could be worded in a similar manner to the groundwater monitoring condition (condition X2) and should include water quality, sediment, macroinvertebrate and continuous dissolved oxygen measures.
 - g. Inanga spawning - if not avoiding a 50 m buffer (u/s & d/s) of mapped zone. Use targeted hand spraying within the buffer to control weeds, if necessary.
 - h. Salmon and trout – agree that they are not particularly at risk from the spraying, as notification agreed on by F&G.
 - i. Mapped 'critical habitat' on Canterbury Maps. This includes at-risk and threatened fish such as Canterbury mudfish, bignose galaxias, lamprey spawning habitat etc. Habitat of threatened freshwater dependant species, as designed by the NPSFM.
 - j. Species-specific advice for critical habitats needed. This may require a commissioned report, to give advice to the rivers group. Condition 7, feedback to be included by a qualified person within 15 working days.
 - k. Amine-based Triclopyr use should be promoted for works under this consent, if available in NZ.