

From: [Michael Greer](#)
To: [Aaron Johnston](#)
Subject: RE: WAR120258 Martinborough WWTP assessment of effects during remedial works project
Date: Monday, 13 March 2023 11:16:04 am
Attachments: [image002.jpg](#)
[image004.png](#)
[image003.wmz](#)
[TELNZ_MTB_effects_assessment13032023.xlsx](#)

Hello Aaron,

I have used the conservative approach described in the scoping document to assess the effects of continued non-compliance with the land-discharge limits and effluent quality standards on water quality and ecology in the Ruamāhanga River. As discussed on the 06/03/2023, I am writing this email before documenting my findings in full in a technical memorandum to advise you that this analysis has revealed a low risk of adverse effects. Justification for this assessment is provided below.

- The combination of increased discharge volumes and concentrations allows for the effects of the discharge on the following contaminants in the Ruamāhanga River to increase by:
 - Total nitrogen = 61% to 72%
 - Ammonia = 61% to 72%
 - E. coli = 1309% to 1257%
 - BOD₅ and total suspended solids = 2% to 8%
 - Dissolved reactive phosphorus = 46% to 55%
- While the numbers set out above appear large, the discharge has such negligible effects on most parameters due to the dilution available in the Ruamāhanga River (1:>2000) that these increases in relative effects are not predicted to have meaningful impact on the mass concentrations of the parameters listed above (all numbers below represent an increase from the consented baseline):
 - Total nitrogen = 0.01 mg/L (less than laboratory detection limit)
 - E. coli = 0.5 to 3.75 cfu/100mL
 - BOD₅ and total suspended solids = <0.003 mg/L (less than laboratory detection limit)
 - Dissolved reactive phosphorus = 0.002 mg/L
- The only exception to this is ammonia, for which an increase in concentration of 0.01 mg/L is expected; which is the equivalent of the median concentration in the Ruamāhanga River. However, ammonia concentrations are sufficiently low in the Ruamāhanga River upstream of the Martinborough WWTP discharge (< 1/3rd of the NPS-FM 2020 A band for ammonia toxicity) that the increase caused by non-compliant discharges is likely to have a negligible effect on the risk of toxicity or periphyton effects.
- In summary, my analysis suggests that while non-compliant discharges from the Martinborough WWTP may significantly increase the relative effects from the consented baseline, the absolute effects on water quality and ecology are unlikely to be more than minor and are probably negligible. It is also worth noting that this assessment is conservative as it:
 - Treats the non-complaint land discharge as direct river discharge; and
 - Does not factor in any of the planned upgrades to improve compliance over time.

It is my understanding that these findings mean that the agreed technical memorandum is probably no longer necessary, and this email will suffice. Could you please confirm whether this is the case?

Yours sincerely
Michael

P.S.

Attached is a spreadsheet of my workings. Tabs ending with “_Flow” assess the effects on non-compliance with the land discharge volume limits; tabs ending with “_conc” assess the effects on non-compliance with the surface water discharge standards; tabs ending with “_conc_flow” assess the combined effects on non-compliance with the volume limits and effluent standards.



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