

From: [Andy Cockburn](#)
To: [Mailroom Mailbox](#)
Subject: Plan Change 7 to the LWRP Submission
Date: Thursday, 12 September 2019 2:00:52 PM

Please find my submission attached.

Plan Change 7 to the LWRP Submission

By Dr. Andrew Cockburn of Lyttelton. Ph: 0212962307

FOR THE ORARI, TEMUKA, OPIHI, PAREORA AND WAIMAKARIRI SECTIONS:

- I strongly support the caps on any new water allocation.
- I strongly support the setting of nitrate limits for rivers and groundwater and the policies and rules that restrict any further increase of nutrient discharges.
- I strongly support higher required reductions in nitrogen losses in High Nitrogen Concentration Areas beyond “Good management practice” but want to see greater reductions required in the life of this current plan.
- I strongly request all minimum flows and associated partial restrictions to provide for the ecological health of the stream, river, hapua (lagoons), etc. within the life of this current plan.

FOR THE WAIMAKARIRI SECTION:

- I consider the implications of nitrate leaching in the Waimakariri ‘Nitrate priority area’, which is modelled to result in a nitrate level of 3.8 mg/l, poses an unacceptable risk to the drinking water of current and future Christchurch citizens.
- I consider that the implication for future nitrate pollution of Christchurch’s drinking water is inconsistent with the following Strategic Policies in the Land and Water Regional Plan:
 - 4.4 Groundwater is managed so that: ...e. Overall water quality in aquifers does not decline
 - 4.5 Water is managed through the setting of limits to safeguard the life-supporting capacity of ecosystems, support customary uses, and provide for community drinking-water supplies and stock water, as a first priority...’.
- I consider the nitrate reduction rules should require appropriate reductions in the ‘Nitrate priority area’ which will maintain or improve the current quality of the Christchurch drinking water aquifers as is required under the NPS for Freshwater.
- The decisions we make today will have serious and lasting implications for current and future generations and I believe it is entirely inappropriate for the activities of private individuals and enterprises to put at risk the drinking water of nearly 400,000 people, with population projections estimating 500,000+ by the time nitrate contamination levels are expected to reach 3.8 mg/l.
- The economic assessments, which informed PC7, state: “The total reduction from Current Pathways to the Solutions Package will be approximately \$5.8 million in operating profit, and \$5.7 million per annum in regional GDP” and appear to have a minor impact (0.3%) on the \$1.57 billion GDP for the Waimakariri district.
- I consider that economic externalities must be taken into account alongside farm operating surplus assessments, such as the cost to younger and future generations if

they are faced with needing to treat their drinking water or source alternative supplies.

The future cost to the Christchurch public is likely to vastly exceed that of any short term economic impact on farm profits.

- I strongly support a science-based precautionary approach to both the protection of human health and the protection of Christchurch's drinking water sources, which rely on functional, healthy aquifer ecosystems.

- o Graham Fenwick (NZ's leading groundwater ecosystem scientist) suggests in his evidence to the Te Waikoropupu springs WCO hearing a trigger value of 0.4–0.5 mg/l as a precautionary value to ensure ecosystem health.

- o Chris Hickey (NZ's leading ecotoxicologist) recommends in his evidence to the Te Waikoropupu springs WCO hearing that where long lag times apply, a management limit of 0.55–1.1 mg/l is appropriate (Hickey considers a 'long time lag' to be 8 years, whereas in the lag effects for the Waimakariri 'Nitrate priority area' is modelled as being 50+ years).

- o I would like to see limits set in the life of this proposed plan that achieve those ranges of limits suggested as part of the Te Waikoropupu springs WCO hearing.

- o In Graham Fenwick's presentation to commissioners on behalf of Wellington Regional Council in 2018 he states: "Available research evidence empirically demonstrates that this standard [NZ Drinking Water Standard], designed to protect human health, is inappropriate for ensuring the health of aquatic ecosystems and invertebrates under long-term exposure."

In light of Fenwick's and Hickey's findings mentioned above, it is clear that further to being inconsistent with policies 4.4 and 4.5 the proposed nitrate limit of 3.8 mg/l will not provide for the ecosystem health of the Christchurch drinking water aquifers.

- Even though the biodiversity within New Zealand's aquifers is poorly known, the New Zealand Conservation Act 1987 and the New Zealand Biodiversity Strategy requires regional councils to ensure that the intrinsic and other values of all biodiversity (including that of "underground aquifers") are adequately maintained and safeguarded for future generations.
- The ecosystem services delivered by groundwater biodiversity are integral to sustaining groundwater and surface water resources, cultural identities and economies at local, regional and national levels.
- The Resource Management Act 1991 (and amendments) requires regional councils to ensure the sustainability of these ecosystem services (safeguard "the life-supporting capacity of air, water, soil, and ecosystems" by "avoiding, remedying, or mitigating any adverse effects of activities on the environment" to ensure that the needs of future generations are met.).
- The NPS-FM Appendix 1 sets out national values and uses for freshwater, which explicitly includes "aquifer" as one "freshwater body type". These compulsory national values for ecosystem health are:

The freshwater management unit supports a healthy ecosystem appropriate to that freshwater body type (river, lake, wetland, or aquifer).

In a healthy freshwater ecosystem ecological processes are maintained, there is a range and diversity of indigenous flora and fauna, and there is resilience to change.

Matters to take into account for a healthy freshwater ecosystem include the management of adverse effects on flora and fauna of contaminants, changes in freshwater chemistry, excessive nutrients, algal blooms, high sediment levels, high temperatures, low oxygen, invasive species, and changes in flow regime. Other matters to take into account include the essential habitat needs of flora and fauna and the connections between water bodies.

- For these reasons, I consider that the aquifer ecosystem which provides Christchurch's drinking water requires specific protection, greater than that is afforded in the current plans rules for nitrate reductions.
- I do not believe that because the modelled nitrate pollution is 50+ years away, that it is of any less immediate concern (particularly because ECan's monitoring shows the northern bores are already showing increasing nitrate levels – in line with the model's predictions). Younger and future generations will be facing much greater challenges in the form of climate disruption and all the social, cultural, environmental and economic issues associated with such disruption. The least we can do is provide them a safe, ecologically functional water supply, just like we enjoy today.

FOR THE OMNIBUS SECTION:

I support the rules applying to:

- Greater restrictions on activities to improve protection of the remaining habitat of native freshwater fish;
- Additional stock exclusion provisions for swimming sites,
- Greater recognition of values (such as mahinga kai) and protection of sites of significance to Ngāi Tahu, including wāhi tapu (sacred sites), wāhi taonga (treasured sites), tuhituhi o neherā (limestone rock art sites) and waipuna (springs), and,
- The addition of new salmon spawning sites.
- I could not gain an advantage in trade competition through this submission.

Thank you for considering my submission,
Dr. Andrew Cockburn