In The Matter	of the Resource Management Act 1991
And	
In The Matter	Plan Change 7 of the Canterbury Land and Water Regional Plan

BRIEF OF EVIDENCE OF KALLEY SIMPSON

Evidence submitted on behalf on the Waimakariri District Council
Submitter ID PC7-3
11 November 2020

INTRODUCTION

1. My name is Kalley Simpson and I am the 3 Waters Manager for the Waimakariri District Council (**WDC**). In this position I have responsibility for the water supply, wastewater and drainage assets for the Council.

2. I hold a Degree in Natural Resources Engineering from the University of Canterbury and have 20+ years of experience in civil engineering. This experience includes the overseeing the management of the stockwater race network and community water supplies on behalf of WDC.

3. Although this is not an Environment Court hearing, and my evidence predominantly covers factual and background matters, I have read the Environment Court's Code of Conduct for Expert Witnesses, and I agree to comply with it in providing this evidence. I confirm that any opinions I offer in this brief of evidence are within my area of expertise, and I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed.

4. I covered matters relating to policies 8.4.36 and 8.4.37 (Consent Expiry and Duration) and 8.4.38 (Consent Review) of Plan Change 7 (PC7) of the Canterbury Land and Water Regional Plan in my Evidence-in-Chief dated 21 July 2020. In my evidence provided here I address matters relating to;
    a) The impact of changes to the proposed nitrate targets and limits for rivers and groundwater on the community, particularly Tables 8.5, 8.7, and 8.8.
    b) The impact of policy 8.4.22 regarding efficiency of water use and requirement to provide aquifer recharge.

IMPACTS OF CHANGES TO THE PROPOSED NITRATE LIMITS ON COMMUNITY

5. The Waimakariri Water Zone Committee agreed upon a range of possible nitrate limits and targets in the Waimakariri Zone Implementation Programme Addendum (**ZIPA**), from a median of 1.0 mg/L to 6.9 mg/L nitrate-N for most rivers and streams (equivalent to Table 8.5 of PC7), with lower limits in the Ashley River/Rakahuri and Waimakariri River. Economic, cultural and social impacts were also considered, particularly when the Zone Committee looked at how quickly limits could be achieved.

6. WDC supported in our written submission (dated 3 September 2019) Tables 8.5 (limits and targets for rivers), 8.7 (groundwater limit for community supply and private wells) and 8.8 (groundwater limit for Groundwater Allocation Zones) of PC7, as set by the ZIPA planning and community engagement process. However, WDC acknowledges that nitrate limits for rivers and groundwater in the Waimakariri Zone must now reflect the National Policy Statement for Freshwater Management (2020), and acknowledge 'Te Mana o te Wai' as these came into force in September 2020.

7. WDC continues to support the groundwater and river nitrate-N limits and targets of Tables 8.5, 8.7 and 8.8 of the notified version of PC7. However, WDC is unsure of how Te Mana o te Wai and the river nitrate limits of the National Policy Statement for Freshwater Management (2020) will be applied to PC7.

8. WDC supports in principle a 5.65 mg/L nitrate-nitrogen maximum (95th percentile) for community drinking water supplies in the Waimakariri Zone, as set in Table 8-7 of PC7, as it is a precautionary level below the Drinking Water Standards for New Zealand (2005, amended 2018) Maximum Acceptable Value (MAV) of 11.3 mg/L nitrate-nitrogen. A 5.65 mg/L nitrate-nitrogen median for private well drinking water supplies is also supported by WDC, in principle, for the same rationale.

9. WDC supports Environment Canterbury with a call for urgent New Zealand-based research into the link that has been found between nitrate levels in drinking water and colorectal cancer incidences. However, for use of Waimakariri Zone groundwater as a drinking water source, lower limits than what is proposed in Table 8-7 of PC7 are not required. If lower limits were proposed for drinking water reasons, a full assessment should first be carried out for re-evaluation of the nitrate-nitrogen MAV in the Drinking Water Standards for New Zealand.

10. WDC acknowledges that the NPS-FM 2020 has set a nitrate-nitrogen bottom line for rivers of 2.4 mg/l (median value), to be achieved within a generation. Although this limit is not directly for groundwater, indeed there is no National Bottom Line for groundwater, it is closely linked with spring water feeding a number of waterways in the Waimakariri District.

11. A nitrate-nitrogen limit of 2.4 mg/l (median value) 'within a generation' for rivers, if applied also as a *de facto* groundwater limit, would likely have a much more significant community implications than those contemplated by the Waimakariri Water Zone Committee and the community that participated in the ZIPA process. It is the understanding of WDC that the nitrate reduction targets to achieve a 2.4mg/l nitrate-N groundwater limit have not been modelled by Environment Canterbury or an economic analysis carried out on the subsequent implications for land use in the Waimakariri District for this scenario. WDC believes that nitrate reduction targets modelling and economic analysis is required to be carried out to inform the Panel on the proposed nitrate-nitrogen limit for groundwater in the Waimakariri District, if not already modelled, before a decision is made by the Commissioners.

12. An even lower nitrate-nitrogen limit of 1mg/L for groundwater, as has been proposed by some submitters, would have significant impacts for farming. In the 28 October 2020 Environment Canterbury memo from groundwater scientists Kreleger and Etheridge, modelling indicated that in order to achieve a nitrate-nitrogen concentration of 1 mg/l for the Christchurch aquifer

recharge area, there would be a need to convert to low intensity land use; dryland sheep and beef farming, and forestry. This would have substantial social and economic impacts.

13. The full range of environmental, social, cultural and economic matters addressed in the preparation of the ZIPA remain pertinent considerations, whilst giving effect to Te Mana o te Wai. In particular, the timeframes at which nitrate reduction limits should be achieved, given the long lag times possible within Waimakariri Zone groundwater aquifers from recharge areas to where groundwater resurfaces or is abstracted.

14. I ask the Panel to note in particular the following three of nine outcomes set by the Waimakariri Water Zone Committee in the Waimakariri Zone Implementation Programme Addendum (ZIPA):

> **Outcome 7 – Optimal water and nutrient management is common practice**
> Narrative: All land and water users' practise management that maximises water use efficiency and minimises inputs of nutrients and pollutants to water. Industry agreed Good Management Practices and Farm Environment Plans are adopted as everyday farm management tools.
> **Outcome 8 – There is improved contribution to the regional economy from the zone**
> Narrative: The zone has thriving, and vibrant communities supported by a sustainable local economy based on diverse and productive land and water use. Integrated and sustainable management of the effects of flooding, earthquakes and climate change protects assets and amenities and builds resilience in communities and ecosystems.
> **Outcome 9 – Land and freshwater management in the Waimakariri Water Zone will, over time, support the maintenance of current high-quality drinking water from Christchurch's aquifers**
> Narrative: Nutrient discharges to groundwater in the Waimakariri zone are managed to maintain the high quality groundwater resource beneath Christchurch, recognising that nitrate concentrations may increase in the medium term due to the nitrogen load already moving through the system, before reducing in the longer term. This Priority Outcome is in response to recent science investigations which have concluded that a proportion of the Christchurch aquifer system recharge is likely to be derived from north of the Waimakariri River, within the Waimakariri Zone.

These outcomes demonstrate the importance to improve groundwater quality while balancing economic, cultural and social impacts and acknowledging the nitrate load 'in the post' i.e. moving slowly through the aquifer system.

15. In summary, I consider that the proposed nitrate targets and limits for groundwater set out in Tables 8.7 and 8.8, as determined by the Waimakariri ZIPA process, are robust and appropriate. If more stringent measures are to be imposed to groundwater, to give effect to Te Mana o te Wai and the river nitrate limits of the National Policy Statement for Freshwater Management (2020), then a full assessment of environmental, social, cultural and economic

impacts, that takes into consideration timeframes for achieving a reduction in nitrate limits, should be undertaken.

EFFCIENCY OF WATER USE AND REQUIREMENT TO PROVIDE AQUIFER RECHARGE

16. Policy 8.4.22 requires any decision on a proposal to maximise efficient use in accordance with Policy 4.69 associated with the alteration of a system used to convey water owned or operated by Waimakariri District Council or an irrigation scheme, takes into account:

    a. the benefits of existing water losses for diluting nitrate-nitrogen concentrations in groundwater; and

    b. the benefits of existing water losses for supporting groundwater levels and stream flows; and

    c. how any potential adverse effects will be avoided or mitigated.

17. The stockwater race network in the Waimakariri District is not a Managed Aquifer Recharge system. There is incidental aquifer recharge. Most Waimakariri stockwater races were created over 100 years ago, and therefore can potentially hold heritage, biodiversity, fire-fighting and other values in addition to its primary purpose as a utility. Policy 8.4.22 could unfairly put constraints on how the primary purpose and other values of the stockwater race system are managed.

18. Mitigation of nitrate-nitrogen, and the associated costs, should be addressed and paid for by polluters of nitrate-nitrogen with effects-based rules and mitigations, in line with the purpose of the Resource Management Act (1991), namely Section 5 (2) (c) which states the purpose as 'avoiding, remedying, or mitigating any adverse effects of activities on the environment'. Waimakariri District Council is a net diffuser of nitrate from the stockwater race system, not a nitrate polluter with an activity to be avoided, remedied or mitigated. Therefore Policy 8.4.22 is not in line with section 5 (2) (c) statement on the purpose of the Resource Management Act.

19. Taking into account nitrate-nitrogen concentrations and water losses for supporting groundwater levels and stream flows, is outside the reasonable considerations for a stockwater race network. The rights of this Council, as a current consent holder to take water for the stock water race system, and comply with consent conditions, would be compromised by this proposed policy.

20. In summary, Policy 8.4.22 unfairly imposes a requirement on WDC as an operator of a stockwater race system to use it for mitigating an effect that it does not cause. This policy is not consistent with the purpose 5 (2) (c) of the Resource Management Act.

KALLEY SIMPSON

Dated 11 November 2020