

BEFORE THE CANTERBURY REGIONAL COUNCIL

In the matter of the Resource Management Act 1991

And

In the matter a submission by **Waimakariri Irrigation Limited** in relation to proposed Plan Change 7 of the Canterbury Land & Water Regional Plan

STATEMENT OF REBUTTAL EVIDENCE OF BIANCA JANE SULLIVAN
18 SEPTEMBER 2020

Chapman Tripp
Solicitor acting: Ben Williams

Phone +64 3 353 0343
ben.williams@chapmantripp.com

INTRODUCTION

1. My name is Bianca Sullivan. I am an environmental planner and Director at Enviser Limited.
2. My qualifications and experience are set out in paragraphs 2 to 5 of my evidence in chief (*EIC*) dated 17 July 2020 and, in addition, I have since become an Associate member of the New Zealand Planning Institute.
3. I repeat the confirmation given in my EIC that I have read and agree to comply with the Code of Conduct for Expert Witnesses as contained in the Environment Court Practice Note 2014.

SCOPE OF REBUTTAL EVIDENCE

4. This statement of rebuttal evidence responds to planning evidence on on the proposed Plan Change 7 to the Canterbury Land and Water Regional Plan (*PC7*) prepared by Ms Janice Carter for the Christchurch City Council (*CCC*). My rebuttal addresses the following:
 - 4.1 Nitrate nitrogen limits in groundwater and addition of Christchurch-West Melton deep drinking water supply bores to Table 8-7;
 - 4.2 Staged reductions in nitrogen loss for farming activities, specifically Table 8-9; and
 - 4.3 Consideration of Te Mana o Te Wai in relation to the above.

NITRATE NITROGEN LIMITS IN GROUNDWATER

5. I have read and considered the evidence of Ms Carter¹. Ms Carter considers that the CCC's deep aquifer bores should be added to Table 8-7 and that both the maximum and median limits for nitrate nitrogen included in Table 8-7 should be amended to less than 1 mg/L. This is due to concerns about contamination of, and increasing concentrations of, nitrate nitrogen in the deep aquifers in the Christchurch – West Melton

¹ Evidence in chief of Ms Janice Carter, dated 17 July 2020.

groundwater system. Ms Carter bases her evidence on that of Mr Mike Thorley, who addresses the potential for nitrates in groundwater to be transported from the Waimakariri Zone to the Christchurch water supply aquifer; and Dr Tim Chambers, who addresses the health impacts of nitrate in drinking water.

6. My rebuttal evidence addresses the above as follows:
 - 6.1 The appropriateness of a 1 mg/L nitrate nitrogen limit, with reference to the Drinking-water Standards for New Zealand 2005 (Revised 2018) (DWSNZ) and the rebuttal evidence of Dr David Black;
 - 6.2 The uncertainty of the modelling that indicates a connection to Christchurch's drinking water aquifers;
 - 6.3 Whether section 8 of the LWRP is the appropriate place for limits on groundwater quality in the Christchurch-West Melton sub-region; and
 - 6.4 The lack of s32 analyses for a 1 mg/L limit.
7. I agree with Environment Canterbury's approach to use the current Ministry of Health guidance on the maximum acceptable value (MAV) for nitrate in drinking water, which are based on guideline values from the World Health Organisation (WHO). The levels set in Table 8-7 are half of the MAV for nitrate nitrogen. The DWSNZ are set under the Health Act 1956 and were most recently revised by the Ministry of Health in 2018 following the Government Inquiry into the Havelock North Drinking-Water Outbreak.
8. Dr Black discusses the appropriate process to review and set drinking water standards. I understand from Dr Tim Chambers' evidence that a comprehensive review of the standards is currently underway. Should this review result in an amendment to the MAV for nitrate nitrogen I consider that it should be incorporated into the LWRP by a plan change. I do not consider it appropriate to include harsher nitrate nitrogen limits in PC7 in advance of a review of the DWSNZ.

9. In recommending that Christchurch's deep aquifer bores be added to Table 8-7, Ms Carter relies on the evidence of Mr Thorley who considers that there is considerable groundwater connection between the Waimakariri and Christchurch Zones. I have read the Joint Witness Statement for Groundwater Science and, while it is agreed that there is potential for transportation of deep groundwater from the Waimakariri Plains to the Christchurch aquifers, the extent and flow direction is not agreed among experts in groundwater science. There is considerable uncertainty expressed about the modelling and I am concerned about the lack of documented peer review of the model.
10. I agree with the s42A report² that setting groundwater quality limits for the Christchurch-West Melton aquifers is outside the scope of PC7. The LWRP framework would place such limits in Section 9 – the Christchurch-West Melton sub-regional section – rather than in Section 8. The approach taken in PC7, which I support, is to manage concentrations on the north side of the river to ensure that any groundwater transported to the south side will have acceptable nitrate concentrations.
11. In proposing a 1 mg/L nitrate nitrogen limit, Ms Carter does not evaluate the economic or social costs other than stating at paragraph 32 that the section 32 evaluation does not assess health costs. The rebuttal evidence of Mr Copeland and Mr Ford discuss the economic effects of a 1 mg/L nitrate nitrogen limit, which they conclude would be crippling. Mr Copeland's rebuttal also compares Mr Butcher's costs of water treatment to that of converting to dryland farming and forestry, with the costs of conversion being significantly higher.
12. I consider that, irrespective of my rebuttal, a comprehensive section 32 analysis would be needed to inform a decision to support the CCC's requested 1 mg/L limit. That being said, I consider that there is currently little justification for including such a limit in PC7.

² At para 8.78, page 482.

STAGED REDUCTIONS IN NITROGEN LOSS FOR FARMING ACTIVITIES (TABLE 8-9)

13. Ms Carter³ also considers that the nitrogen loss reduction targets in Table 8-9 should be brought forward to reduce the predicted effects on the Christchurch aquifer system.
14. Ms Carter has based her recommendation primarily on the evidence of Mr Thorley and there appears to be no supporting assessment of the social impacts and little supporting evidence of the economic costs of the accelerated reductions. Mr Butcher considers the proposed accelerated nitrogen reductions, but states:⁴ *"While I am not able to accurately assess the costs of this, I believe that the costs of the first stage of that proposal (40 % reduction in dairying in sub-area A) would be of the same order of magnitude as the \$112 million I calculate above"*. Mr Butcher also discusses the costs of converting to dryland farming and forestry immediately – these effects are significant and are addressed in the rebuttal evidence of Mr Copeland and Mr Ford.
15. Targeted stream augmentation (TSA) and managed aquifer recharge (MAR) are potential water quality mitigations that can be used while nitrate nitrogen loads from farming activities are being reduced, as is shown in the evidence in chief of Mr Jeremy Sanson. Ms Carter does not acknowledge the potential water quality benefits of initiatives such as TSA and MAR or that these initiatives will not be viable if farmers are unable to pay for them due to tougher nitrogen loss requirements.
16. There is also no acknowledgement of the uncertainties inherent in the groundwater modelling, which is acknowledged in the Joint Witness Statement. While the evidence in chief of Mr Neil Thomas and Mr Sanson suggests that the modelling is overly conservative, should nitrate nitrogen concentrations continue to increase and monitoring shows that this is attributable to farming land uses on the Waimakariri Plains, I suggest that a further plan change would be the appropriate way to address this. This can be informed in part by the monitoring proposed by WIL, detailed in the evidence in chief of Mr Thomas, which is

³ Evidence in chief of Ms Janice Carter, dated 17 July 2020, para 26; proposed Table 8-9 amendments on page 9 of Appendix 1.

⁴ Evidence in chief of Mr Geoff Butcher, dated 17 July 2020, para 6.

designed to provide a greater understanding of the hydrogeology of the area and track water quality trends.

17. At paragraph 69, Ms Carter considers that the staged reductions for nitrogen loss proposed in Table 8-9, intended to “achieve a limit of 3.8 mg/L nitrate-nitrogen over time in the Christchurch aquifers”, are not consistent with the objectives and policies of the Canterbury Regional Policy Statement (RPS), in particular policies 7.2.1 and 7.2.3. I am unsure whether Ms Carter is referring to objectives 7.2.1 and 7.2.3 (which address the sustainable management of freshwater and protection of the intrinsic values of waterbodies respectively) or policies 7.3.1 and 7.3.3, (which address the natural character of freshwater and freshwater environments and biodiversity respectively).
18. Ms Carter refers at paragraph 10 to a 3.8 mg/L nitrate nitrogen concentration being a consideration in Kreleger and Etheridge (2019)⁵ to protect spring fed streams in Christchurch. The considerations for setting targets and limits for spring fed streams are different to those for setting limits for drinking water supplies from groundwater, and I find Ms Carter’s connection between the two to be confusing. Further to my paragraph 10 above, I consider that setting limits for spring fed streams in the Christchurch-West Melton sub-region is also outside of the scope of PC7.
19. In any event, I consider that PC7 is consistent with the RPS, including the objectives and policies referred to in my paragraph 17. PC7, both as proposed and more so with the relief sought by WIL, will result in improvements in water quality and instream habitats while providing for the economic and social well-being of people and communities.

TE MANA O TE WAI

20. The National Policy Statement for Freshwater Management 2020 (NPSFM 2020) is now relevant to PC7 and should be implemented where the necessary changes are within the scope of submissions. The concept of Te Mana o Te Wai has been strengthened and further

⁵ Kreleger A. and Etheridge Z., 2019. Waimakariri Land and Water Solutions Programme Options and Solutions Assessment: Nitrate Management. Environment Canterbury Report No. 19/68.

defined through the NPSFM 2020 and I have considered it in the preparation of this rebuttal.

21. I consider that the relief sought by WIL is consistent with the concept of Te Mana o Te Wai and the policies of the NPSFM 2020. The package of staged nitrogen loss reductions, catchment mitigation such as TSA and MAR, along with a monitoring package to track progress, will improve water quality and prioritise the health of freshwater. The CCC's proposed relief, as discussed above, will also likely result in improved water quality but with likely significant impacts on social and economic well-being.

Dated 18 September 2020

Bianca Sullivan