

**BEFORE THE CANTERBURY REGIONAL COUNCIL
HEARING COMMISSIONERS**

IN THE MATTER of the Environment Canterbury
(Transitional Governance Arrangements)
Act 2016

AND

IN THE MATTER of submissions on Proposed Plan Change
7 to the Land and Water Regional Plan and
Proposed Plan Change 2 to the
Waimakariri River Regional Plan

**SUMMARY OF EVIDENCE OF GEOFFREY VERNON BUTCHER FOR
CHRISTCHURCH CITY COUNCIL**

11 November 2020

INTRODUCTION

1. My name is Geoffrey Vernon Butcher. I here summarise key points of my evidence, highlighting areas of agreement and disagreement between my opinion and that expressed by or on behalf of submitters and in the officer's report.

OVERVIEW

2. Proposed Plan Change 7 restricts land use activities such that there is a 50 % chance that nitrate-nitrogen levels in ground water will be no greater than 3.8 – 4.8 mg/L. These restrictions impose a cost in terms of reduced agricultural production. I have estimated the likely NPV cost of Stage I of the ZIPA to be around \$160 million, and the costs of Stages I & II combined to be \$457 million¹.
3. CCC would like to see considerably lower nitrate levels in city drinking water, and one way of moving towards this is to reduce farming nitrate emissions more rapidly. If Stages I & II of the ZIPA were to be both implemented within the first 10 years of PC7, the NPV cost of this, as opposed to implementing Stages I & II sequentially, is estimated to be an additional \$112 million (i.e. \$112 million more than the \$457 million referred to above for a total of \$569 million). I believe that the change sought by CCC, which is to say a 40 % reduction of N-emissions in sub-area A in the first decade of PC7, will have a similar cost.
4. A more extreme land use change, which may limit nitrate-nitrogen in groundwater in the City drinking water wells to around 1 mg / litre, would be to immediately stop all irrigated land use in the NPA and convert to dryland farming and/or forestry. I have estimated the cost of doing that at approximately \$2.55 billion, which is approximately \$2.1 billion more than the changes proposed under PC7. While I provide this cost in case it is helpful to commissioners, I note that the Council does not seek that outcome, and the economic cost of the relief sought in the Council submission by changes to Table 8-9 is an order of magnitude less than that.

¹ Over 100 years @ 3 % discount rate.

5. Against this cost of lost agricultural production should be set not only the benefits of not having to treat water to remove nitrates, any health costs associated with N in drinking water, and any improvement in other environmental outcomes.
6. If nitrate-nitrogen levels in ground water rise above levels considered acceptable, then the water will need to be treated. Mr Birdling estimates that this will cost NPV \$0.8 billion to \$1.5 billion, assuming that treatment needs to start virtually immediately. But if treatment did not have to start for another 50 years, then the NPV costs, viewed from today, would be only 23 %² of Mr Birdling's figure, or \$200 - \$400 million. If treatment was delayed for 200 years, the cost of treatment from today's perspective would be close to zero. It is this delayed figure which needs to be compared to the costs of reduced farm profits which would be required to achieve lower N-levels in ground water.
7. There is insufficient data to assess the health costs of the ZIPA solution compared to the current pathway, or compared to some solution with much lower nitrate levels. In principle, the benefits of maintaining lower nitrate-nitrogen levels in ground water would be either the value of these avoided health costs or the cost of nitrate removal – whichever is the lesser.
8. I note that the benefits of allowing nitrate levels to rise accrue to the owners of the land where farming which leads to nitrates entering groundwater occurs, whereas the costs accrue to the general public.
9. In my rebuttal evidence I addressed the evidence of Mr Ford and Dr Doole, and in particular their suggestion that the loss of profits associated with the reduction in nitrate emissions required by PC7 would lead to farmers going broke. Their evidence makes clear that there will still be significant cash operating surpluses, but they argue that these will be insufficient to meet interest and debt repayments.
10. I disagree with their conclusion on four grounds. First, that the likely loss in profits will already be reflected to some degree in land prices; second that their financial modelling is pessimistic and doesn't allow for

² Assuming a discount rate of 3 %.

repayment of debt or for the technology changes which are likely to reduce the loss of profits over the period during which the nitrogen reductions have to be met; third that current financial conditions have led to low interest rates, which reduce interest payments in the short term, and also enable farmers to pay off debt, hence reducing interest payments in the long term; and finally that the declines in profits (of the order of 30 % to achieve a 30 % reduction in nitrate emissions) are equivalent to around a 10 % reduction in milk solids payout, and farmers have historically been able to cope with much greater fluctuations than that. I also note that farmers will have quite some time to adapt to the changes in profitability associated with PC7, and will not face the loss in profits immediately. For this reason the estimated drop in profits which could be of the order of 35 % by the end of the second decade of the Plan, mean that land values will likely decline by only 10 % from what they would otherwise be. Inflation and the rise in asset prices generally may mean that nominal land prices do not fall at all over the period.

Dated at Christchurch this 11th day of November 2020



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Geoffrey Vernon Butcher