
in the matter of: the Resource Management Act 1991

and: submissions and further submissions in relation to
proposed Variation 1 to the proposed Canterbury Land
and Water Regional Plan

and: **Central Plains Water Limited**
Submitter

Rebuttal evidence of Stuart John Ford

Dated: 8 September 2014

REFERENCE: JM Appleyard (jo.appleyard@chapmantripp.com)
BG Williams (ben.williams@chapmantripp.com)

Chapman Tripp
T: +64 3 353 4130
F: +64 3 365 4587

245 Blenheim Road
PO Box 2510, Christchurch 8140
New Zealand

www.chapmantripp.com
Auckland, Wellington,
Christchurch



REBUTTAL EVIDENCE OF STUART JOHN FORD

INTRODUCTION

- 1 My name is Stuart John Ford.
- 2 My qualifications and experience are set out in my evidence in chief (EIC) dated 29 August 2014.

SCOPE OF EVIDENCE

- 3 In this evidence I:
 - 3.1 Comment on the statement of Dr Alison Dewes with regard to farm systems and the extent to which mitigation might be viable.
 - 3.2 Briefly comment on the statement of Mr Robert Wilcock with respect to lowering the nitrogen leaching rates of existing irrigators.
- 4 As with my EIC, I confirm that I have read the Environment Court practice note and have complied with it in preparing this rebuttal evidence.

COMMENT ON THE STATEMENT OF A DEWES

Case study farms

- 5 Much of Dr Dewes analysis is based on what she initially refers to as "*typical Canterbury farms*" (paragraph 44) however I consider this is quite incorrect and she appears to accept in the same paragraph that the farms relied on are in fact "*worst case scenarios*". It is my view that little weight can be placed on her analysis in terms of demonstrating reasonably achievable N loss reductions on a 'typical Canterbury farm' in the Selwyn Waihora zone.
- 6 In this regard, analysis of the farms assessed reveals that one is a border dyke property in the Culverden Basin and the other two are based outside the catchment in Mid Canterbury and are what could be described as DairyNZ System 5 farms (this means that they are very highly stocked at 4 and 4.5 cows / ha respectively and bring up to 50% of the feed required to maintain production).
- 7 Analysis of Dr Dewes Red Sky data appended to her evidence shows that for the wider Canterbury region the average stocking rate is actually 3.3 cows / ha and that the top 10% of farms averaged only 3.6 cows / ha. This appears to be consistent with the average stocking rate across the eight case study farms presented for the Selwyn Waihora Zone in the evidence of **Mr Duncan Smeaton** (an

average stocking rate of 3.5 cows / ha with a high of 4 and a low of 3.1).

- 8 I therefore consider that the three farms Dr Dewes uses to prove her point are very atypical of dairy farming within the catchment. Accordingly, the results of her assessment can only be considered to be extreme examples of what is possible in terms of N leaching reductions and it would not be appropriate to 'scale up' her assessment in terms of representing what might be possible across the wider catchment. Put simply, for many existing irrigated farms within the Selwyn Waihora catchment it will not be easy to achieve significant reductions in N loss without also having significant effects on operating profit (or requiring extensive capital input).
- 9 Dr Dewes then goes on in Paragraph 45 to claim that her modelling work is supported by Ridler et al. On reviewing her references to Ridler, all relate to some farm optimisation work done by Ridler on farms in the Horizons Region. Ridders work is based on a farm optimisation model which is also able to take into account N leaching results. This work is not comparable to the farming systems in Canterbury.
- 10 The farm systems adopted in Manawatu and Hawkes Bay are based on stocking at the maximum number of cows that can be fed at the peak of pasture production. This is in an environment where it is not easy to make much supplementary feed, therefore the best way to manage feed is to graze it with cows. As the peak pasture production fluctuates considerably between seasons because of the dual climatic factors of rainfall and temperature the majority of farmers have chosen to stock their farm at a rate which is supported by the maximum seasons growth. In this way they can maximise their production in the good seasons and suffer the costs of buying supplementary feed in the poorer seasons to feed their cows.
- 11 Ridders findings are that you can optimise the farming system in that location by reducing the number of cows, lifting per cow production and so avoiding the cost of supplementary feeding. These findings are somewhat controversial in that the optimisation model works on an average season, over a very long time period and with high quality cows. It is also heavily influenced by the milksolids payout which is factored in.
- 12 The situation in Canterbury is entirely different in terms of how the 'average farm' is set up. Because of irrigation the vagaries of fluctuating pasture production and the peak of pasture production are virtually eliminated and farmers know what level of pasture production they can grow annually and can choose the stocking rate which best suits this. That is why there has been the massive move

of Dairy farming to Canterbury over the last ten years (with the reduction of risk through the presence of irrigation).

- 13 Overall, I consider that that Ridlers work is not relevant to the Canterbury situation because it analyses a completely different farming system and cannot possibly support the modelling done by Dr Dewes.

MGM and mitigation

- 14 At paragraph 24 Dr Dewes questions:

“Why should an established farming operation be forced to undertake significant and expensive steps to reduce Nitrogen losses when new entrants are allowed to leach significantly more nitrogen”.

- 15 In asking this question it appears Dr Dewes has either misunderstood or not fully considered the intended approach of Variation 1. This includes initial compliance with the appropriate MGM system and then, under Policy 11.4.14, the possibility of further reductions to achieve further N loss but only in circumstances where overall farm viability is maintained.
- 16 It does not appear to be the intent of Variation 1 that anyone will be required to take unjustified and “*significant and expensive steps*” in order to reduce N loss. In my EIC I detailed some concerns around the extent to which the intent of Policy 11.4.14 was actually achieved, but again I do not consider that Dr Dewes concerns are correct in light of the wider objectives of Variation 1 which in short include:
- 16.1 allowing existing operations with an N loss less than 15 kg/N/ha to increase up to 15 kg/N/ha;
 - 16.2 accommodating the development of the Central Plains Water Enhancement Scheme (*CPW Scheme*); and
 - 16.3 allowing existing operators with N losses over 15 kg/N/ha to continue with an expectation N losses will improve over time, while maintaining the overall viability of farm operations.
- 17 In the particular case of the CPW scheme, I also note that the N load that is being sought for new irrigators is only sufficient to accommodate farming operations with a high standard of nutrient management and, relatively speaking, low average N loss compared to other existing irrigation uses within the Selwyn Waihora Zone. Individually no one will be leaching “*significantly more nitrogen*” as is suggested by Dr Dewes.

- 18 At paragraph 40 Dr Dewes goes on to list a range of mitigation practices and methods which she contends can have a "*significant effect on achieving water use efficiency and reducing contaminant losses to water...*". However, much of what she lists are already practices which are used by the vast majority of farmers in Canterbury. This is partly because of the requirements of the Council, requirements of the milk processor but also because the majority of the irrigators are relatively new to the area and have adopted the latest technologies and methods in the establishment of their systems.
- 19 One area where adoption is variable is moving to efficient irrigation. This factor is primarily related to the older irrigators in the region who developed their farms at a time when water was relatively cheap and capital was scarce and so the application systems were less than efficient. In my evidence I noted that there is room for improvement amongst some of these irrigators but also note that the cost to do this, which in many cases will require a complete replacement of the irrigation system, is particularly high. They also represent a relatively small proportion of the existing irrigation systems within Selwyn Waihora Zone. I however would further note that for the existing irrigators in the CPW scheme area the transition to surface water will open up the opportunity for them to upgrade their systems.
- 20 Most of the new centre pivot systems installed in the last five years are already very efficient in their water use and over time, with or without Variation 1, it could be expected that irrigation efficiencies will continue to improve as consents are renewed (subject to annual volumes) and older irrigation systems reach the end of their life and are replaced.
- 21 I also disagree with Dr Dewes contention that Advanced Infrastructure improvements are a viable option for the vast majority of farmers. As I stated in my EIC, the costs of establishment of the majority of these systems incur an added cost on the business which is not reflected in the theoretical gains made in nutrient leaching.
- 22 It is my opinion that the Advanced Infrastructure improvements of On / Off grazing and Winter housing, which Dr Dewes asserts are a viable option for farmers, are neither cost effective nor affordable for the vast majority of farmers. This is supported by my calculations:
- 22.1 On / Off grazing which reduces N leaching by 15 units meant an annual loss of \$165,000 on the average farm or expressed another is an expense of \$10,960 / kg N reduced (refer paras 106 and 111 of my EIC); and

22.2 Winter housing which reduces N leaching by 2 units meant an annual loss of approximately \$268,000 on the average farm i.e. costs \$134,172 / kg N reduced (refer paras 106 and 112 of my EIC)

Payout – use of the ‘correct number’

- 23 At paragraph 114 Dr Dewes makes the claim that “*At the projected payout in the 2014 – 15 season (\$6.00 per kg MS) many farmers will not be “solvent” nor economically resilient*”. She makes this assumption based on the fact that DairyNZ reported that 38% of farm businesses in their survey are making a loss after interest and drawings at a \$6.00 kg MS payout.
- 24 Dr Dewes should be aware that the payout system from Fonterra (which is closely mimicked by all the other processors) allows for a proportion of the expected payout to be paid out during the production season, starting in August, with the final end of year payment being made in October of the following year. This has the effect of evening out the ups and downs of payout seasons by providing an over lapping of payments between seasons.
- 25 Accordingly, the issue of whether a farm makes a loss in any one season is largely academic as it just creates a situation whereby they need to increase the amount of working capital to allow for them to trade through to the following season when the payout will most likely have improved and so the need for working capital is reduced.
- 26 All farms work under this system, the spreading out of the payment and the availability of sufficient working capital arrangements means that farms are certainly solvent no matter what level of payout is received in any one season and have a high degree of economic resilience to fluctuations in productivity and or payout.
- 27 I am well aware of the financial state of all of the irrigation schemes and their shareholders in Canterbury and Otago and have no knowledge of the situation Dr Dewes describes occurring. This is regardless of whether other irrigation schemes have annual irrigation charges lesser or greater than those proposed by CPW.
- 28 Having been involved in the development of the dairy industry in Canterbury over the last twenty years I am also certainly not aware of any “*overly permissive lending regimes*” that Dr Dewes claims has been cited by “*several parties*” in her evidence.

Input versus output controls

- 29 At paragraph 179 Dr Dewes advocates for standards in regards to nutrient leaching (output controls) as well as input controls through mandating that minimum standards are met through regulation. I

am not sure why she believes that both are necessary. Although it would be possible to have both in place I do not know what would be achieved by having both input and output controls in place other than a potentially significant (but unnecessary) compliance burden.

- 30 As I set out in my EIC, in the case of the CPW Scheme I believe that the Council is achieving its objectives by establishing an appropriate level of outputs in the form of the total tonnage of N leached from within the area. It is then up to the scheme to determine how best that is achieved and to encourage its shareholders to reduce their N leaching sufficiently to meet the total tonnage. As I pointed out, how each individual meets these requirements is best left to them to work out according to their farming type, financial position and appetite for risk exposure etc.
- 31 Having additional constraints on what mix of methods they used would not only be counter-productive but would also ensure that a lower level of total economic output would be achieved.

COMMENT ON THE STATEMENT OF R WILCOCK

- 32 Mr Wilcock sets out in paragraphs 36 of his evidence that in his opinion N leaching losses in excess of 80kg/ha/yr under irrigated dairy farming on lighter soils are unlikely to be greatly reduced by GMP. I disagree with this statement and expect the leaching practices of existing irrigators will be lowered well below the quoted rate of 80kg/ha/yr by the use of GMP (and in some instances BMP even though those practices are not yet fully defined).
- 33 I maintain my view that the appropriate mechanism for managing N leaching is to set a total limit and allow the CPW scheme to determine the best means of operating within that.

Dated: 8 September 2014



Stuart John Ford