Tabled at Hearing 30/09/14

BEFORE CANTERBURY REGIONAL COUNCIL

In the matter	of the first schedule of the Resource Management Act 1991
And	
In the matter	submissions on variation 1 Proposed Land and Water Regional Plan

EVIDENCE OF ANTHONY DAVOREN

29 August 2014

Duncan Cotterill
Solicitor acting: Hans van der Wal
PO Box 5, Christchurch

Phone +64 3 372 6435
Fax +64 3 379 7097
Hans.vanderwal@duncancotterill.com

Background and Qualifications

1 My full name is Anthony Davoren. I hold the qualifications of Bachelor and Master (First Class) of Science in Earth Sciences from University of Waikato and Doctor of Philosophy in Engineering Science from Washington State University. I am a self-employed consultant, and owner and director of HydroServices Ltd.

2 I have more than 30 years experience in soil moisture, irrigation management, groundwater and surface water research and other related consulting. After graduating from University of Waikato, I spent two years surveying the peat resources of New Zealand, followed by three years studying for a PhD on a National Advisory Council Fellowship. Water and Soil Division (Ministry of Works and Development) then employed me as a research scientist in the Hydrology Centre in Christchurch (now part of NIWA).

3 Since 1987, I have been involved as a specialist in soil moisture measurement and irrigation management. HydroServices now provides irrigation management advice to more than 350 clients in Canterbury. I have had a large involvement in preparing or supervising the preparation of technical assessments for resource consent applications irrigation.

4 In 2007 I founded HydroTrader Ltd with two other persons, Warwick Pascoe and Gus Walkden. In the seven years trading and transferring water permits we have gained invaluable experience and expertise with regard to transfers and transferees, including :

4.1 Their reasons for seeking transfers;

4.2 The volume of water typically transferred; and

4.3 The locations from which and to which it is typically transferred.

5 With respect to irrigation and groundwater, I have specialised in crop water requirements for irrigation, irrigation efficiency and irrigation design.

6 I was an expert witness and instrumental in developing Adaptive Management for applicants at the Rakaia-Selwyn, Selwyn-Waimakariri and Valetta-Ashburton River Groundwater Zone Hearings.

7 I am a past board member of Irrigation New Zealand and managed a Sustainable Farming Fund project Irrigation System Design Standards and Code of Practice for INZ (Irrigation New Zealand).

8 I acknowledge that I have read the code of conduct for expert witnesses contained in the Environment Court's Practice Note dated 31 March 2005. I have complied with it when preparing my written statement of evidence and agree to comply with it when giving oral evidence.

Introduction

9 I am presenting this evidence on behalf of HydroTrader. Much of the evidence has been prepared by Warwick Pascoe who is unable to be present to assist with the presentation. I am fully conversant with the content of the evidence.

Transfer Provisions of Variation 1

10 Policy 11.4.22 states that transfers should be restricted in order to minimise the cumulative effects on flows in hill-fed lowland and spring-fed plains rivers from the use of allocated but unused water.

11 In order to achieve this the policy requires that:

11.1 irrigation scheme shareholders within the Irrigation Scheme Area shown on the planning maps don't transfer their groundwater permits; and

11.2 no groundwater permit is transferred from down-plains to up-plains; and

11.3 in all cases 50% of any transferred water is surrendered.

12 Rule 11.5.37 locks these requirements in place, and makes any non-compliance with the rule a prohibited activity under Rule 11.5.39.

13 Applying the prohibited activity status suggests that transfers that don't comply with all of the conditions of Rule 11.5.37 will lead to such serious actual adverse effects or pose such a real risk of high impact adverse effects on hill-fed lowland and spring-fed plains that never authorising them is the most appropriate response.

14 The evidence does not however support that. First, it assumes that all transfers are of unused water. That is not correct, as transfers predominantly occur where existing consent holders decide to stop using water on a given property because transferring it to another property has greater benefits for them, be that financial or lifestyle-related. This is elaborated on with practical examples below.

15 In addition, transfers have been greatly limited by the introduction of rules in the pLWRP controlling the use of land in order to minimise nutrient losses to water. The use of extra water from transfers is now so severely limited by the land use rules controlling change in

a land use that almost always accompany such transfers, that they do not pose the risk perceived by ECan.

16 The evidence supplied by ECan in support of the requirement to surrender a percentage of the allocation being transferred fails to confirm this supposition because only data prior to and including 2011[1] has been used. Their analysis ends prior to the introduction of land use controls (notified on 11 August 2012) and does not include transfers since this date.

17 HydroTrader's own data shows the dramatic impact of these rules and is more credible. I Table 1 the volume transferred annually is insignificant – less than 0.5%. The cumulative volume transferred since 2008 is less than 1% and in my opinion is significantly less than measurement error, whether that be water level (surrogate measure of volume) or water meter (±5%) or rainfall or any other parameter used to determine allocation limits.

Table 1: Selwyn-Waihora Combined Allocation Zone – permanent transfers brokered by HydroTrader (granted or in process with a combined allocation limit of 514Mm^3/year)

Year	2008	2009	2010	2011	2012	2013	2014
Transfers	1	2	3	6	13	2	1
Annual volume (Mm^3/year)	0.140	0.058	0.263	1,427	1,621	0.233	0.500
% of Allocation Limit	0.027	0.011	0.051	0.278	0.315	0.045	0.097
Cumulative %	0.027	0.038	0.089	0.367	0.682	0.727	0.824

Note: Allocation limit does not include adaptive management volumes.

This trend is also reflected across all Canterbury 'Red' Groundwater Zones as shown in Table 2. The allocation limit has been estimated exclusive of adaptive management volumes for the Ashburton River and Valetta Groundwater Allocation Zones. The volume transferred year on year and the cumulative volume since 2008 are insignificant; respectively less than about 0.3 and 0.6%. These effects are not significant (as claimed by ECan) and are likely to not be measurable.

[1] Water Transfer Claw Back in Over-Allocated Catchments, Case Study: Rakaia Selwyn and Selwyn Waimakariri Groundwater Allocation Zones, Prepared by Sarah Hunt, 14 June 2012

Table 2: All Canterbury Groundwater Zones deemed to be over-allocated – permanent transfers brokered by HydroTrader (granted or in process with a combined allocation limit of approximately 1129.478Mm^3/year)

Year	2008	2009	2010	2011	2012	2013	2014
Transfers	1	3	3	9	14	2	2
Annual volume (Mm^3/year)	0.140	0.284	0.263	3,417	1,941	0.233	0.650
% of Allocation Limit	0.012	0.025	0.023	0.303	0.172	0.021	0.058
Cumulative %	0.012	0.037	0.060	0.363	0.535	0.556	0.614

18 The notification of Variation 1 and the tightening of controls on nutrient losses, will further limit the number of transfers in the Selwyn-Waihora Combined Allocation Zone to a few situations, such as:

18.1 Increasing annual volume to improve reliability of supply to meet demand conditions that occur nine years out of ten, as allowed for under the pLWRP (Schedule 10); and

18.2 Where nutrient losses can be shown to comply with Rules 11.5.6 through 11.5.15.

19 While HydroTrader is not the only company facilitating the transfer of water permits in Canterbury, the above data strongly suggests that ECan's estimate of how long it would take to return the Rakaia-Selwyn and Selwyn-Waimakariri Groundwater Zones to the point where they are fully allocated, instead of over-allocated, by requiring the surrender of 50% of the volume transferred, is a gross under-estimate, being 74 & 24 years respectively[1].

20 Furthermore, in our experience, many of the transfers that have occurred in the past have not led to an increase in water use, as claimed by ECan[2].

21 For example where irrigated farmland has been subdivided for housing or industry; or has reverted to dry land due to changed landowner circumstances such as poor health,

[2] section 11.6.2, s32 report on Variation 1, and Advice Note – Transfer Provisions: Surrender of Consented Water Allocation – May 2014

old age or a reduced economic return; or where consented and planned irrigation development did not proceed (Examples 1 to 3, Attachment 1).

22 In this setting, water transfers are not a significant cause of increased water abstraction to the degree that they should be subject to the drastic step of imposing prohibited activity status. There are other ways in which water use can increase, which do not involve the transfer of a water allocation, for which ECan has not considered the prohibited activity status the most appropriate response. For example:

22.1 additional dry land blocks within the irrigated area being brought into production utilising an existing water allocation;

22.2 additional wells drilled in order to improve system capacity limitations, enabling the land to be irrigated to meet peak demand, rather than a lesser demand;

22.3 irrigation system upgrades, where guns, K-line or Rotorainers are replaced by centre pivots or laterals; enabling the land to be fully irrigated;

22.4 a change of land use, such as from sheep and beef to crops or dairy support; or

22.5 a change to a more water demanding arable farming system.

23 Like transfers, the above examples are not widespread and do not give rise to significant cumulative adverse effects. In fact, based on my experience, increases in water use of the above types are likely to be of a similar (small) scale to those arising from transfers.

24 Transfers may also result in a reduction in both water use and nutrient losses where the water allocation is moving from an irrigated farm to an industrial (often non-consumptive) use (Examples 4 & 5, Attachment 1).

25 Consequently, the requirement to prohibit the permanent transfer of groundwater allocations from down-plains to up-plains and surrender 50 percent of any water being transferred, are inappropriate and unnecessary and will not give any real effect to Policy 11.4.2 of Variation 1, Policy 7.3.4 of the RPS or Objective B2 of the NPSFM (2011).

26 It is noted that in ECan's s42A report on Variation 1 (at para 14.38) the officer has recommended that condition 3(c) of Rule 11.5.37 be deleted as further analysis has shown it to be "unnecessary" given the other restrictions in the proposed rule.

27 Furthermore, prohibiting such transfers will actively frustrate giving effect to Objective B3, and Policies B3 and B4, NPSFM (2011). The compulsory surrender and prohibited activity status are therefore not the most appropriate means to give effect to Part 2 and the objectives and policies that implement it.

28 Situations where it is shown that a transfer or transfers will lead to or give rise to a real risk of a significant increase in water abstraction could be dealt with as a matter of discretion. In that way the most appropriate means of ensuring that an increase in water abstraction does not occur can be imposed on a case-by-case basis. It should be remembered that in most cases the ability to significantly increase water abstraction volumes via transfers will also be limited by the nutrient management rules.

29 If a compulsory surrender condition is considered as appropriate, a more pragmatic approach would be to require a percentage to be surrendered based on the scale and significance of the transfer(s). It would then also be preferable and pragmatic to set a threshold, below which a transfer could be processed without having to surrender a portion of the allocation. This would avoid pointless debate over very small transfers that will never, even cumulatively, have a measurable effect on the level of allocation. HydroTrader has been involved in several such transfers less than 100,000m^3/year, some as small as 25,000m^3/year, an infinitesimal percentage of the zone allocation limits (Examples 6 & 7, Attachment 1).

30 The key issue is to not resort to prohibited activity status for water transfers of allocated water to minimise the cumulative effects on flows in hill-fed, lowland and spring-fed plains streams and rivers. There are other less draconian means whereby this can be achieved, which are not contrary to the NPSFM objectives raised above.

31 By classifying such transfers as discretionary, this will more appropriately give effect to the objectives and policies of the NPSFM (2011), by allowing decision-makers to readily grant small transfers and those that are unlikely to give rise to a significant increase in water use or nutrient losses, while imposing suitable mitigation on transfers that could contribute significantly to over-allocation and water quality degradation.

32 Such an approach is also considered to be more consistent with Part II of the Act, and the visions and principles of the CWMS, by allowing for an appropriate "weighing up" of actual and potential effects on a case-by-case basis. This was envisaged by the pLWRP hearing panel when they removed similar requirements to surrender a specific percentage of transferred water from Rule 5.107 (now Rule 5.133).

33 By way of contrast, Rule 11.5.37 as currently worded is not considered to promote sustainable management as it penalises all transfers, regardless of their positive or negative effects. This approach discourages or may even eliminate opportunities to improve and maximise the efficient allocation of water in line with Objective B3 and Policy B3 (NPSFM 2011).

34 For example, a farmer may wish to transfer an allocation of water to a dry land block of land they own that has deeper soils with a higher water holding capacity. This would enable a larger area to be irrigated, result in more efficient water use and a reduction in nutrient losses. Rule 11.5.37 would treat such a transfer no differently to one that seeks to transfer a previously unused water allocation from deep to shallow soils, or from an industrial use to an intensive dairy farm.

35 HydroTrader considers that there are far more effective and appropriate methods available to ECan to address over-allocation, such as:

35.1 quality assurance of their Consents database, which has been shown to still harbour errors such as double-counting;

35.2 reviewing water permits in the Selwyn-Waimakariri Groundwater Zone and fixing annual volumes based on the reasonable use test of Schedule 10, pLWRP[3];

35.3 revising the level of allocation in groundwater zones to be no more than 90% of the actual or assessed annual volume of all groundwater permits, as a conservative, and more realistic, estimate of actual or potential water use[4] (what ECan refers to as 'effective allocation'); and

35.4 removing the annual volume of adaptive management consents from the allocation, since these consents were granted so that the allocation limit and existing users were safe-guarded.

Conclusion

36 HydroTrader:

36.1 Considers that Policy 11.4.22 and Rules 11.5.37 & 11.5.39 are a 'blunt instrument' that make no distinction between beneficial and potentially harmful transfers, and therefore they:

36.1.1 do not constitute the most appropriate method to give effect to Objective B2 and Policies B3 and B6, NPSFM (2011), and Policy 7.3.4(2) of the RPS (2013);

36.1.2 are inconsistent with Objective B3 and Policies B3 and B4 (NPSFM 2011), and the vision and principles of the CWMS; and

36.1.3 do not promote the sustainable management of water in accordance with Part II RMA.

---

[3] which will give effect to Policy B6, NPSFM (2011)
[4] while past surveys have shown that water use is increasing, it is unreasonably conservative to assume that water use throughout the region will ever reach 100% of the amount allocated

Dated 29 August 2014

Anthony Davoren

Attachment 1

Example 1

46,000m^3/year was transferred from land that had been fully irrigated for intensive pasture grazing (dairying) under CRC031520 (JB & MP McDermott) which was now being subdivided for housing, to a block of land that was partially irrigated under CRC972579 (ND Thomas Estate), but which had insufficient water to meet the design system capacity.

Water use will not increase as a result of this (small) partial transfer as irrigation is ceasing on the dairy farm. There will be a net gain in water use efficiency (higher system capacity) and a net reduction in nutrient leaching.

Example 2

187,500m^3/year (less 10% that was surrendered) was transferred from a mixed farming operation that had been fully irrigated under CRC010429.2 (PM & DJ Kennedy), and which was no longer required due to a change in personal circumstances (farmer reaching retirement age and a recent family bereavement), to a partially irrigated dairy farm (CRC143998 Williams Global Ltd).

Water use will not increase as a result of this partial transfer as irrigation is ceasing on the Kennedy farm. There will be a net gain in water use efficiency (higher system capacity) and nutrient leaching has been mitigated.

Example 3

731,860m^3/year was transferred from a mixed farming operation that was partly irrigated under CRC041360.3 (MW & BA Mulholland), to a partly irrigated dairy farm (CRC120488 WJ & AA Thomas) which had insufficient water to meet the design system capacity.
Water use did not increase as a result of this partial transfer as irrigation development planned (and consented) on the Mulholland farm will no longer proceed.

Example 4

52,090m^3/year was transferred from a mixed farming operation irrigated under CRC960602.2 (PC Smith), to a vegetable washing factory (ST & BT Spain CRC960602.3).
Water use and nutrient losses will both decrease as a result of this transfer because irrigation has ceased on the irrigated block and water at the factory is recycled prior to being discharged to land as a permitted activity (given that it only contains vegetable wash water). Therefore significantly less water will be used and nutrient losses will also decrease.

Example 5

45,642m^3/year was transferred from a mixed farming operation irrigated under CRC930729.1 (Lincoln Gorst Busters Ltd) to a chicken factory for industrial use and irrigation under (Canterbury Chicken Ltd CRC052320.1).
Water use will not increase as a result of this transfer because irrigation has ceased on the Lincoln Gorst Busters farm. As with example 4, water use and nutrient losses will decrease.

Example 6

45,700m^3/year was transferred from a mixed farming block that had been irrigated under CRC001981.6 (HP Skinner) and was now being subdivided, to a dry land block of land (CRC133844 HP Skinner).
Water use will not increase as a result of this transfer as irrigation has ceased on the irrigated block. There is nil net change in water use or nutrient leaching.

Example 7

33,000m^3/year (less 10% that is being surrendered) is currently being transferred from an intensive pasture farm (dairying) irrigated under CRC131202 (River Road Dairies Ltd), to a block of land that is partially irrigated under CRC011341.2 (MA Righton) in order to improve system capacity and water use efficiency.
While water use may increase as a result of this transfer (the water was previously used as a back-up for when a surface water take was on low flow restrictions), the amount is very small and is used efficiently via a centre-pivot irrigator. Nitrogen losses have already been mitigated through a land use consent fixing these at no greater than 15kg/ha/year (in accordance with the nutrient rules of Variation 1, pLWRP).