

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

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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 2011¹ 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 ($\pm 5\%$) 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 514Mm³/year)

Year	2008	2009	2010	2011	2012	2013	2014
Transfers	1	2	3	6	13	2	1
Annual volume (Mm³/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 1129.478Mm³/year)

Year	2008	2009	2010	2011	2012	2013	2014
Transfers	1	3	3	9	14	2	2
Annual volume (Mm³/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 respectively¹¹.

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 ECan².

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 100,000m³/year, some as small as 25,000m³/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, pLWRP³;
 - 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 use⁴ (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

46,000m³/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

187,500m³/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

731,860m³/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

52,090m³/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

45,642m³/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

45,700m³/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

33,000m³/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).

Canterbury Land & Water Regional Plan

What does it mean?



Advice Note - Transfer Provisions: Surrender of Consented Water Allocation

May 2014

The decisions on the proposed Canterbury Land & Water Regional Plan (pLWRP) were notified on 18 January 2014. The water transfer provisions in the pLWRP require that, in over-allocated catchments, a portion of transferred water is surrendered and not re-allocated.

This advice note provides background to the transfer provisions in the pLWRP and outlines how Environment Canterbury will implement these provisions.

The pLWRP provisions give effect to the National Policy Statement for Freshwater Management 2011 (NPS) and the Canterbury Regional Policy Statement 2013 (CRPS). To understand how the transfer provisions in the pLWRP will be implemented, it is important to understand the requirements of those documents.

National Policy Statement

The NPS details how regional councils are to manage freshwater in terms of both quality and quantity. Of relevance here are objectives and policies related to water quantity, and how to address over-allocation of water resources.

Objective B2:

*“Avoid any further over-allocation of fresh water and *phase out existing over-allocation*” [emphasis added].*

This objective requires that regional councils work to phase out over-allocation of water and, in order to achieve this, Policy B3 requires regional plans to:

“... state criteria by which applications for approval of transfers of water take permits are to be decided, including to improve and maximise the efficient allocation of water” [emphasis added].

Policy B6 requires regional councils to set:

“...a defined timeframe and methods in regional plans by which over-allocation must be phased out...”.

Regional Policy Statement

The CRPS gives effect to the NPS. Policy 7.3.4 – “Water Quantity” establishes how Environment Canterbury will address water allocation in over-allocated catchments. Part 2 of this policy is relevant here:

“(2) Where the quantum of water allocated for abstraction from a water body is at or exceeds the maximum amount provided for in an environmental flow and water allocation regime:

- (a) avoid any additional allocation of water for abstraction or any other action which would result in further over-allocation; and
- (b) set a timeframe for identifying and undertaking actions to effectively phase out over-allocation; and
- (c) effectively addresses any adverse effects of over-allocation in the interim.”

Land & Water Regional Plan

The timeframes and methods for phasing out over-allocation will be primarily addressed through the sub-regional sections of the LWRP. However, the region-wide policies and rules provide a starting point towards reducing the over-allocation of water. This gives effect to Policy 7.3.4 of the CRPS and Objective B2 of the NPS.

Specific provisions relate to reducing the rate or volume of water taken when transfers are proposed in over-allocated catchments. In particular, Policy 4.71 states:

“Enable the transfer of water permits to take or use water, provided:

- (a) the transfer of water is occurring within the same surface water catchment or sub-catchment, or the same groundwater zone, as defined in this Plan;
- (b) the same or a lesser amount of water is being taken or used; and
- (ba) the transferee’s water take is reasonable for their proposed use as determined under the provisions of this Plan including Schedule 10 for irrigation uses;
- (c) the adverse effects of the take and use of water are not more than minor; and
- (d) *that in an over-allocated surface water catchment or groundwater zone, a proportion of the allocated water is surrendered and is not re-allocated, unless there is a method and defined timeframe to phase out over-allocation set out in an applicable Sub-regional Section of this Plan”* [emphasis added].

The region-wide provisions do not provide guidance on the proportion of water to be surrendered through a transfer application. While sub-regional sections of the LWRP may specify methods for reducing over-allocation, these are yet to be developed.

Considerations for applications to transfer water

In developing this guidance, Environment Canterbury has considered the following matters:

1. In making a decision on an application, the decision-maker must have regard to the matters specified in section 104 of the Resource Management Act 1991. These include the provisions of the NPS and the LWRP requirements to reduce over-allocation, as well as the effects of the proposed transfer.

2. Existing water permits were granted for a specific activity; for example, irrigation of 100 hectares. They were not granted on the basis that the water would be transferred to another site, for another activity. A site-to-site transfer (whether partial or full) is an application for a new consent and by making the application the current consent holder is effectively stating that they no longer wish to continue the activity that was originally authorised. If the consent holder still required the authorised volume of water, why would they be transferring it? Requiring a portion of the volume of water being transferred to be surrendered back to the over-allocated zone cannot be considered derogation of the existing consent because, as a result of the transfer, a new consent, subject to its own conditions, is granted.
3. Annual volumes on existing water permits were typically set to fulfil demand in 9 out of 10 years. It would be unusual for all of the consented annual volume to be taken every year, and in most years some of the consented volume would remain in the river or aquifer.
4. While allowing the consented annual volume to be transferred in full would not result in an increase in the allocation, it does not achieve Objective B2 of the NPS. Further, it can also result in more water being taken from a catchment over the longer term. For example, if a water permit were to be transferred from a smaller property to a larger one, there is likely to be higher demand at the new property. A greater proportion of the originally consented volume would therefore be taken on a more regular basis in order to meet that higher demand. This situation is even more apparent in cases of partial transfers, where the take and use will continue, at least partly at the existing site as well as at a new site(s). Because it is unlikely that the entire annual volume of the original consent would be abstracted every year, the actual adverse effect of granting a transfer on an aquifer or river may be increased.

How much water do I need to surrender?

Environment Canterbury considers it appropriate for an applicant proposing to transfer water in an over-allocated catchment to surrender a proportion of the volume proposed to be transferred as follows:

Of the volume being transferred, the portion to be surrendered will be determined by reference to the current allocation state of the water body as determined by Environment Canterbury. So, for example, where the current allocation is determined to be 140%, the expectation is that 40% of the volume transferred will be surrendered.

What if I wish to surrender less?

Environment Canterbury recognises that each application should be assessed on its merits. However, where an application proposes to surrender less than this advice note indicates, an assessment of why it is appropriate to surrender less should be provided. This should include how the lower volume will assist in meeting Environment Canterbury's obligations to reduce over-allocation as required by the National Policy Statement for Freshwater Management 2011.