

Response to the Minute from the NRRP Hearing Committee re Hearing Stage 14

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1 Introduction

The Hearing Committee has asked ten questions in relation to issues that have arisen from the Stage 14 hearing on Section 5.5.6 – Reasonable and efficient use of water and Schedules WQN8 and WQN9. They have asked officers to provide further information in response to these in writing. The Minute is appended for reference to these questions (see Appendix 1).

The questions predominantly relate to three main topic areas, being Schedule WQN9 (Questions 1, 3, 4, 7, 8, 9, 10); the status of irrigation schemes and the issue of “dual consents” (Questions 2, 4, 6); and the possibility of improving Policy WQN18 relating to the transfer of water permits, in particular for surface water takes (Question 5). Question 4 is taken to be related to the two preceding questions (Questions 2 and 3), and will be answered on that basis.

In addition, the component of Question 2 relating to other uses such as horticulture and viticulture not covered in Schedule WQN9 will be dealt with as a sub-section of that topic.

Dr Tony Davoren and David Scott contributed to Sections 2.1, 2.2 and 2.3 below.

2 Schedule WQN9

2.1 *What are the comparative strengths and weakness of the “Davoren” model used by ECan, verses those of the Aqualinc model? How broadly applicable are these models across the region?*

2.1.1 Background

The Hearing Panel’s question regarding the comparative strengths and weaknesses of the “Davoren” and “Aqualinc” methods have prompted a series of meetings between Dr John Bright (Aqualinc), Dr Tony Davoren (HydroServices) and David Scott (ECan). The purpose of those meetings was to examine the basis of the different estimates of irrigation requirements and, if possible, develop a common understanding of the issues involved. This exercise was undertaken by evaluating records of rainfall, irrigation, soil

moisture and lysimeter drainage available at the Donkers site (Bankside) together with potential evapotranspiration (PET) data from Lincoln.

The initial step involved a re-assessment of the raw data. This revealed an accidental time off-set in Dr Bright's earlier analysis which has since been corrected. It also allowed for the filling of any gaps in rainfall and lysimeter records using an agreed approach.

Dr Davoren analysed the Donkers data using the approach taken when developing total water demand figures as used to establish the Schedule WQN9 figures. This provided the results shown in Table 1.

Table 1: Summary of seasonal totals from the Davoren analysis

Season	Total rain	Effective rain	Effective rain, %	Total Irrigation	Effective irrigation	Effective irrigation, %	Total Effective Demand	Demand Year Adjustment Factor	Total Demand (assuming 80% AE Irrigation)
1999-00	554.5	333.3	60.1	534.0	282.0	52.8	615	1.13	686
2000-01	295.0	187.1	63.4	765.0	567.0	74.1	754	1.19	896
2001-02	502.0	258.4	51.5	565.5	253.2	44.8	512	1.07	575
2002-03	329.5	169.9	51.6	647.0	384.0	59.4	554	0.94	650
2003-04	313.5	185.0	59.0	573.0	310.7	54.2	496	0.79	573

Where: Total Effective Demand = Effective Rainfall + Effective Irrigation
 Demand Adjustment Factor = Ratio of simulated demand to the 80th percentile demand (based on 1972 to 2006 data)
 Total Demand (assuming 80% AE Irrigation) = Effective Rainfall + Irrigation adjusted to an application efficiency of 80%; i.e. Effective Irrigation ÷ 0.8

These values are shown in Figure 1 below where they are superimposed on the total seasonal demand vs PAW relationship established for pasture in the development of Schedule WQN9. This demonstrates, that except for the season 2000-1, the Total Demand determined from Schedule WQN9 would have been adequate to meet the actual use at the Donker property if the irrigation system could operate with an application efficiency of 80% (■ on Figure 1).

However the irrigator system at the Donker property does not, and apparently cannot, operate with an 80% application efficiency. The lysimeter records show that no matter the irrigation depth applied the application efficiency is less than 80%. The average of all irrigation events is 60%, with a range from

20% to 90%. The total irrigation delivered and effective rainfall is shown on Figure 1 as ●. The application efficiency is a system design issue and not only a management issue.

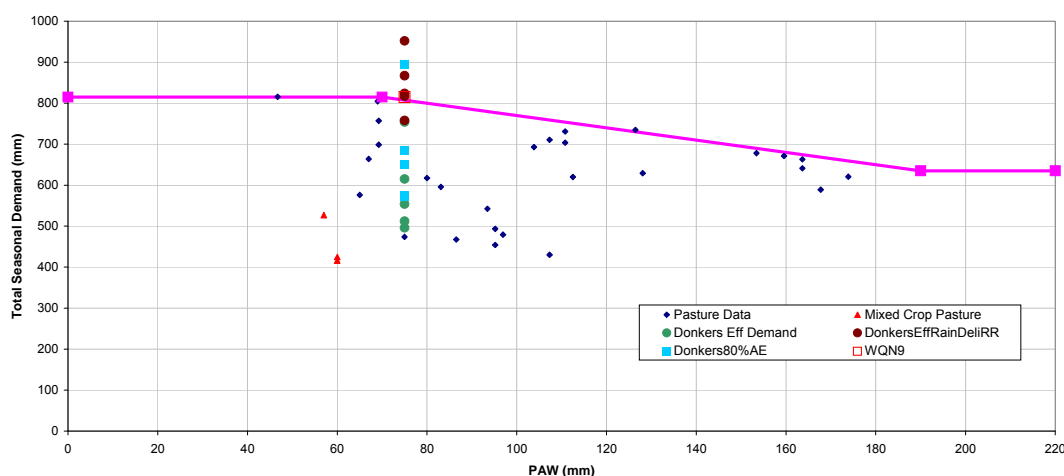


Figure 1: Demand totals from the Donker’s Lysimeter site superimposed on the Pasture Standard for Schedule WQN9.

Dr Davoren interpreted the difference between the actual totals and those required with 80% efficiency to largely be a consequence of the high application rates delivered by the Rotorainer irrigator. He believes that although adjustments to nozzle sizes could allow some improvement in efficiency the application rate will remain largely unchanged, particularly on the outside of the wetted pattern where the majority of the water is delivered. He is confident that a small to medium fixed centre pivot (up to 500-550 m long) and an equivalent linear system would be capable of meeting the 80% efficiency target.

Dr Bright has updated the irrigation demand simulation described in his presentation to the hearing panel to:

- calculate actual evapotranspiration (AET) from the rainfall, irrigation and drainage data for two years of record (1 July 1999 to 30 June 2001),
- derive a seasonally varying crop factor by relating the AET to Lincoln PET, and
- simulate conditions (using that crop factor) for the 1998/99 year.

The simulated drainage showed good agreement with measured drainage and was accepted as demonstrating that the derived crop factor series was appropriate.

The interim results provided by Dr Bright suggest that for a soil type similar to that at Donkers the 80th percentile simulated irrigation demand would be much greater than the **measured** irrigation demand for the 2000-01 season.

Dr Bright has re-applied the irrigation model to evaluate demand for a system

with an application efficiency of 80% using long-term climate data from Lincoln for a range of soil properties. The 80th percentile of the calculated annual series was higher than the corresponding WQN9v3 allocation – +95 mm (PAW = 60 mm), +118 mm (PAW = 80) and +165 mm (PAW = 120 mm). These figures were derived using a rule-based approach with irrigation triggered when available water fell to 50% of PAW and may not reliably represent typical practice for heavy soils. Dr Bright is undertaking some additional simulations and expects to prepare a report for Irrigation New Zealand which could be made available to the Hearing Committee.

2.1.2 Points of agreement and matters still unresolved regarding the two methods

Points of agreement

- The data for the Donkers site reveals that irrigation events often result in drainage even when soil moisture is below field capacity. This also occurs, but less often and to a smaller extent, with rainfall events.
- Irrigation application efficiency is highly dependent on the type of irrigation system and soil properties.
- Many existing irrigation systems are likely to be unable to achieve an application efficiency of 80% on soils with low water holding capacity. This includes Rotorainer systems.
- Small to medium fixed centre pivot (or equivalent linear) systems could reasonably be expected to deliver an application efficiency of 80% on light soils.
- It would be desirable to have many more complete datasets on climate, irrigation application, drainage and soil moisture.

Points unresolved

- The extent to which nozzle adjustments may allow improved application efficiencies with Rotorainer systems.
- The extent to which excess drainage (and hence low application efficiency) is a result of non-uniformity and/or high application rates.
- Why the 80th percentile simulated irrigation demand is so much in excess of the measured demand at the Donkers site.

2.1.3 Comparative strengths and weaknesses of the “Davoren” and “Aqualinc” methods

Table 2 (overpage) sets out the comparative strengths and weaknesses of the two methods and has been prepared by Dr Tony Davoren and David Scott.

2.1.4 How broadly applicable are these models across the region?

The Davoren model has been developed using observations over a relatively wide area of the Canterbury Plains. It should be particularly applicable for the Canterbury Plains area from Timaru to the Ashley River.

The Aqualinc model has been evaluated for a single site. Its applicability for other areas is unknown.

Table 2: Comparative strengths & weaknesses of the “Davoren” and “Aqualinc” methods.

Davoren method	
Strengths	Weaknesses
Based on measured water use on a range of soils, land uses and locations.	Water use measurements from a single season (1998/99).
Monitoring sites distributed geographically to the extent that the rank of the 1998/99 season varies. Since the majority of the 80 th percentile adjusted figures are accommodated within the envelope, the resulting limits are less likely to be underestimates than if a single site had been used.	Measured value adjusted to an 80 th percentile figure using a seasonal adjustment factor of unknown reliability.
Soil moisture monitoring approach identifies irrigation events where not all applied water can be accounted for.	
Seasonal adjustment of figures where drainage has been underestimated will result in higher estimated requirements. This makes it more likely that real irrigation requirements will be accommodated within the limits.	Inferred total water use may have underestimated irrigation induced drainage. As a consequence proposed limits may be generous.
Plan efficiency target explicitly built into the calculation.	For some combinations of soil and irrigation system these efficiencies may not be achievable.

Aqualinc	
Strengths	Weaknesses
Conceptually well-based water budget approach.	Requires comprehensive climate, soils and drainage data. The daily time step means that application rate is represented by a surrogate e.g. distribution uniformity.
Can explicitly consider range of irrigation efficiencies.	Argument in favour of heritage schemes undermines plan efficiency target.
	Evaluated for a single site and climate record - provides an uncertain basis for extrapolation to other sites.
	Implementation with a distribution uniformity of 0.7 results in lower efficiencies than plan requires.

2.2 What are the differences between SMHC as used by Mr Macfarlane versus PAW used by ECan? What are the implications for the numbers provided us of these differences?

The supplementary evidence of A McFarlane uses the term SMHC. It is not

defined but is assumed to be **Soil Moisture Holding Capacity** and is likely to be the same as the common nomenclature **Soil Water Holding Capacity** or **Available Water** and **Profile Available Water**. These parameters are defined to be the mm water (or moisture) in a given depth of soil between Field capacity and Wilting Point. No depth of soil is provided in the evidence for the SMHC values used.

The results of simulations run by Aqualinc for McFarlane comparing shallow (low SMHC) and deeper (high SMHC) soils are not surprising. If a soil moisture deficit trigger of 20mm is used to initiate irrigation, soil type becomes irrelevant. While on the shallow soils the pasture may be close to moisture stress, this will not be the case on the deeper soils. If a trigger of 40% SMHC had been used the results would be significantly different.

2.3 *What are the very general implications of having a reliability based on 9 years out of 10 versus 8 out of 10 for the existing numbers in Table WQN9 (recognising that this matter will be discussed much more when we look at Policy WQN14)?*

In the context of the NRRP the term “8 years out 10” is taken to mean that the irrigation annual volume will meet the full requirements in 8 years out of 10. In the 2 years out of 10 that will not be enough to meet demand. The full annual volume would still be available – hence it is only the additional demand, over and above the standard, which will limit the activity. Simulated irrigation demand figures suggest that a relatively small increase in annual volumes would be required to provide for the higher reliability (these figures were presented previously).

2.4 *What are the implications for changing the numbers in the Table WQN9 for the availability of groundwater for other existing and new users?*

2.4.1 *Implications for existing and new users*

If the values of the seasonal irrigation demand standards in Schedule WQN9 are changed such that they are increased to provide a higher reliability of supply say, this will result in both existing and any new users having a larger annual volume fixed as a condition of their consent. That is, those individuals will each get a larger “slice”, compared to the amount provided if the standards had remained unchanged.

Because each individual “slice” will be larger, this will lead to there being fewer “slices” available to be allocated to new users before the allocation block limit for a particular groundwater allocation zone is full. That is, fewer new users will be able to access the available resource and the outcomes in Objective WQN4 are less likely to be met.

If the values of the seasonal irrigation demand standards in Schedule WQN9 are changed such that they are decreased however, this will result in the converse. Both existing and any new users will have a smaller annual volume

fixed as a condition of their consent, and there will be the opportunity for more new users to access the resource. This assumes we maintain the same approach to determining effective allocation.

2.4.2 Implications for determining effective allocation

NRRP Policy WQN14(6) sets out how groundwater allocation regimes are to be managed including establishing allocation blocks and then setting out a method to calculate the combined total of water that has been allocated. In terms of the latter, where water is taken for irrigation use, the effective allocation within the allocation block is to be determined as the sum of 90% of the annual volume allocated to each take. This approach accounts for the fact that the maximum volume would overstate the amounts actually abstracted and used for irrigation when averaged over a number of years.

The "90%" value is an adjustment of the annual volume that is consented (based on the quantum of water required to meet demand in eight years out of 10) and the average actual use to meet demand over a period of years. It is estimated that 90% of the 8/10 year volume is needed to meet the average demand experienced.

There is also a possibility that this approach would need to change when a groundwater allocation regime is brought into Schedule WQN3. If groundwater takes become subject to restrictions, it may not be necessary to use the effective allocation approach. Instead, the council could count all that is allocated but use the restriction of takes to establish what can be taken each season.

If the reliability of supply changes from the 8 out of 10 year reliability (set out in Policy WQN14(7) and is used to develop the Schedule WQN9 demand standards) to a 9 out of 10 year reliability say, then there will be a need to review the percentage used to derive the effective allocation.

2.5 *Did hearings like Rakaia-Selwyn use the Table WQN9 numbers? If so did applicants accept those numbers?*

Most of the applications for the Rakaia-Selwyn Groundwater Allocation Zone hearing were received prior to the release of Variation 2 (the second version of Schedule WQN9) in November 2005, and as a consequence were submitted with a maximum pump rate and maximum daily volume only. In the auditing of those applications, Environment Canterbury estimated annual volumes using Schedule WQN9 as varied (Variation 2). These are the annual volumes that were adopted by the applicants, and thus have also been accepted by the consents hearing panel. There is no specific reference to these values in the final hearing decision document released and there have been no appeals to the decision relating to the annual volumes.

Similarly, some of the applications for the Selwyn Waimakariri Groundwater Allocation Zone submitted a Schedule WQN9 (Variation 2) annual volume to the hearing, while others only included a maximum pump rate and daily volume. During the preparation of the Officers Report for that hearing, the

details for each of the applications, including an estimated annual volume based on Schedule WQN9 (Variation 2) were confirmed by the applicants, with no specific comments relating to the relevance of the volumes given.

A group of applications to take and use groundwater in the Chertsey Groundwater Allocation Zone went to a hearing relatively soon after NRRP was first notified, as the group had reservations about the adequacy of the scheduled figures at that time. The consents were granted with annual volumes based on Schedule WQN9, 60% of 150 days or some other basis provided by the applicant, for the first period of five years. The conditions provide for those annual volumes to be changed at a later date (after 5 years following extensive monitoring) to volumes in excess of the Schedule WQN9 standards where the monitoring of climate, water use and soil moisture over a sequence of years demonstrates that a greater volume is required.

The Consents Section reports that currently the standards are generally being accepted, although any applications prepared by Aqualinc Ltd includes a statement to the effect that the applicant and Aqualinc have concerns about the methodology of Schedule WQN9 and therefore do not accept the seasonal allocation values. However, they do sign off on draft conditions that include those values and have not appealed such consent conditions once the document has been issued.

Under the Restorative Streams programme, where most of the existing resource consents to take and use water in the Rakaia-Selwyn Groundwater Allocation Zone are being reviewed, a condition is being recommended for inclusion specifying the annual volume for any consents that do not already have such a volume. The condition being proposed also includes a clause that will allow for the consent holder to apply within two years of the NRRP becoming operative to replace the stated annual volume with an amount calculated using Schedule WQN9, or its functional equivalent, in the operative Natural Resource Regional Plan.

From the summary above, it can be seen that there are a number of ways decision-makers are ensuring the activities meet the requirements of Policy WQN17. In terms of where there is no a specific dispute around the applicability of the demand conditions used to determine the Schedule WQN9 standards, but there is still the uncertainty surrounding the technical defensibility of the Schedule WQN9 standards, consent conditions are providing the opportunity for the replacement of the annual volume at a later date with the functional equivalent of the operative NRRP value.

Where there is evidence or sufficient doubt that the demand conditions are different to those used to determine the relevant Schedule WQN9 standard, then consent conditions are sometimes being included that require the consent holder to gather sufficient evidence over a number of irrigation seasons of climatic conditions, water use, crop types, area irrigated etc, and to provide that to the council for further consideration and validation, to help determine and confirm what a reasonable annual volume is in the particular circumstances. This is giving effect to the policy provisions as intended.

2.6 Other uses such as horticulture and viticulture presently not covered by Table WQN9

In Officer Report No 14, a recommendation is made to include an additional method for investigations to assist in the implementation of Policy WQN17. The new method sets out the requirement for Environment Canterbury to undertake investigations, and work with grower associations, Federated Farmers and other agencies, to develop irrigation standards for land use activities that are not yet covered by Schedule WQN9, with the intention of introducing any new standards into Schedule WQN9 by way of a plan change.

This recommendation is made as a result of a number of submissions, including Horticulture New Zealand, where relief is being sought to better represent the land use activities in Canterbury, and to address the perceived uncertainty for those whose irrigation use is not currently covered by Schedule WQN9. At the time of writing the officer report, it was acknowledged that such further work could ensure Schedule WQN9 is added to over time and, in that way, could provide greater scope for providing for permitted activities than is currently the case. However, it was considered that further technical work would be required before any specific recommendations could be made to add any additional land uses into Schedule WQN9.

This is still the case.

One of the submitters, Horticulture New Zealand, contends in their evidence at the hearing for Stage 14 that as the policy and associated rules are currently structured, the plan is “picking winners” by the fact that a resource consent is required for a discretionary activity for using water for irrigation of crops other than covered by pastoral or arable farming. They consider this is discriminatory as such users will have the compliance costs associated with the consent process and compliance. In their original submission to Variation 1, they also pointed out that Policy WQN17 establishes where exceptions may be made (Policy WQN17(3)(b)) and that these are unreasonable and that a discretionary consent application should consider all factors that are presented.

These points are discussed below.

2.6.1 Inclusion of new standard into Schedule WQN9 for these land uses

As pointed out by Horticulture New Zealand, a number of operations will fall outside the parameters set for Schedule WQN9, such as berry fruit, fruit, viticulture, some outdoor vegetables, covered crops, arable – where the mixture of crops has less low water demanding crops than the model and water for frost protection of trees and vine crops.

The submitter also points out both in their evidence and in their original submission on Variation 1, that where the irrigation is for pasture for example, it is simpler to ascertain than for crops where a greater range of variables exist.

When asked at the hearing about the nature and extent of horticulture carried out in Canterbury, this submitter indicated that there is a very diverse range of crops - there remains some glasshouse production (although there is less of this than in the past), about 600 hectares of blackcurrants (4 – 5 growers), traditional vegetable growers (market gardens), process vegetable production and viticulture (although they do not represent this group of producers).

Given the acknowledgement that there is a high degree of variability in horticultural production, it is going to be more difficult to set meaningful standards, and this will take time.

At the present time, the production systems used to grow grapes for wine are similar in the Canterbury region (as it is predominantly carried out in a single localised area) and is supported by a reasonable level of technical knowledge in grapes for wine production. Currently there is approximately 900 hectares¹ in production, and with some assistance from grower groups and research organisations, it may be possible to develop a standard for this land use, although there has been no specific request for this from the grape growers themselves. There is already some work being done in the Marlborough region on deficit irrigation techniques for viticulture that could help inform the thinking here also. However, at this time, it is not considered possible to make such a recommendation without more extensive consultation.

It is conceivable that the undertaking of such work could occur as a result of collaboration with water users in the Waipara Groundwater Allocation Zone, as part of establishing a more robust water management regime for inclusion in Schedule WQN3 for example.

2.6.2 Exceptions provided for in Policy WQN17

In re-reading Policy WQN17(3)(b), the relevance of the point made by the submitter as to the unreasonableness of the exceptions when a discretionary consent can be granted for discretionary activities has become clear (and was not properly understood by this officer at the time of writing the officer report).

As currently proposed, Policy WQN17(3)(b) does not clearly cover activities for the use of water for irrigation where the land use is not included in Schedule WQN9. It only describes activities for the use of water which will exceed the relevant standard in Schedule WQN9, or where irrigation use will not be managed in accordance with Policies WQL4, WQL9 and WQL12 (which may or may not apply in the case of horticulture or viticulture).

Thus, as pointed out by the submitter, the effect of this is that an activity to use water for irrigation for a land use not covered by Schedule WQN9 will still have to meet the exceptions set out in Policy WQN17(3)(b) before it could be shown to be consistent with the policy.

This is an oversight in the drafting of the policy provision and is not at all a

¹ Fresh Facts, 2006, The Horticulture and Food Research Institute of New Zealand Ltd

deliberate intent.

This oversight should be addressed by amending Policy WQN17(3)(b) to specifically include reference to activities not covered in Schedule WQN9 (see Appendix III, Policy WQN17(3)(b)(i)), and to ensure that the exceptions currently required for activities exceeding Schedule WQN9 volumes. Such activities will instead need to meet the requirements of Policy WQN17(1) and WQN17(2).

2.7 What are the merits of more (or less) categories of land use being included in Table WQN9 versus the two current groupings?

2.7.1 Merits of more categories of land use in Schedule WQN9

The main merit or benefit of having more categories of land use being included in Schedule WQN9 is that this would bring greater certainty to any applicants seeking to take water for irrigation for those land uses, as the use of the water would be permitted if all the conditions in Rule WQN25 are able to be met. This would also go further in providing a more enabling framework through the NRRP than is possible without a plan, and many submitters are seeking just such relief.

The difficulties in including more land uses into Schedule WQN9 have already been discussed in 2(b) above, and relate to ensuring that technically robust information is available on which to base any new standard.

Perhaps another consideration as to whether or not a particular land use should be added is whether it is likely there will be substantial benefit in doing so, given s32 requirements. If both the current and likely future extent of a particular land use is limited and minor, relative to the region as a whole, then it may not be sufficiently beneficial to include it in Schedule WQN9 given the costs that will be incurred in developing the new standard and incorporating it into NRRP via a plan change.

These costs and benefits will need to be weighed up. Where a particular land use is likely to be variable in nature and/or limited in extent within the region, it may be more sensible to have such activities remain as discretionary activities, especially given the amendments being proposed above to improve Policy WQN17(3)(b) which set out the policy requirements for such activities.

2.7.2 Merits of less than the two current categories of land use in Schedule WQN9

The option of having less than the two current land use activities would lead to removing one or other of the current two categories. There are submissions that have supported removing the arable land use category and leaving the total seasonal demand standard currently set for intensive pasture.

However, the submitters are essentially seeking an alternative to just an intensive pasture land use category, by seeking the removal of any reference

to land use. They are therefore supporting a generic standard for total seasonal demand, that is, independent of land use. So this is a different scenario to removing either one or other of the existing two categories.

This means there are probably three possible options for which the merits could be explored:

2.7.2.1 Merits of retaining only the arable category

The merit in retaining the arable category is that it will provide that greater certainty associated with the permitted activity status for those people who are carrying out this land use.

2.7.2.2 Merits of retaining only the intensive pasture category

The merit in retaining the intensive pasture category is the same as for the option above of providing the greater certainty associated with the permitted activity status for those people who are carrying out this land use.

2.7.2.3 Merits of retaining only a single generic standard - independent of land use

This is also an alternative – whereby a single standard could be adopted that is actually deemed to be independent of land use. Such an approach would mean everyone would have access to the same quantum of water irrespective of their actual or proposed land use (at least as a permitted activity). This is seen by many as the most equitable means of allocating water. A number of submitters to the NRRP suggested adopting just such an approach and suggested using the current intensive pasture category standard as this represents the higher level of water demand.

The merits of this option were evaluated as part of Officer Report No 14 (see Recommendation WQN8.178 and Appendix II – Summary of the comparative strengths and weaknesses of different options for determining annual volumes for irrigation use).

The merits can essentially be summarised as follows:

- it is simple and straight forward and avoids “picking winners”
- it is considered more equitable across different land uses as it does not differentiate or regulate on the basis of this factor, which leaves the land owner able to decide future land use without being constrained by lack of access to additional water resources
- provides sufficient for higher demand activities and therefore provides more land use flexibility

While these are the merits of retaining only a single standard independent of land use, there are considered to be many aspects to this option that make it unsuitable as a means of achieving both Objectives WQN4 and WQN5. These drawbacks are already highlighted in Officer Report No 14 Appendix II – Summary of the comparative strengths and weaknesses of different options for determining annual volumes for irrigation use, and are the reason this

option has not been recommended for adoption. It is not considered appropriate to have a policy approach that is inconsistent with the Objective that is intended to be achieved.

3 The status of irrigation schemes and the issue of “dual consents”

“Are there any policy amendments that could be made to clarify the following matters:

- ***The “dual consents” issue***
- ***The status of irrigation schemes under the policy”***

“Is it the intention that component schemes of larger irrigation schemes (such as the Ashburton-Lyndhurst as part of the RDR) acquire separate resource consents? If so, is this necessary and how could it be clarified in the policy?”

In the first three sub-sections below, there is clarification of the three issues – dual consents, status of irrigation schemes, and whether component schemes are required to acquire separate resource consents; and how the policies and rules as currently proposed (up to and including the Officer Report No 14) have intended these issues to be addressed.

This is then followed by a sub-section identifying suggestions for addressing these issues by amending relevant policy provisions, methods and rules.

3.1 The “dual consents” issue

Trustpower Ltd, RDRML and the Irrigator Forum in particular raised the issue (which they refer to as “dual supply”) as approximately 40% of their shareholders also hold water permits to take groundwater for irrigation use, in addition to holding shares with RDRML. By also gaining access to groundwater, the irrigators are able to ensure a much higher overall reliability of supply.

For the 60% of properties operating as part of the scheme that only access this single source of water, the use of the water on individual properties is currently permitted under the NRRP as currently proposed (Rule WQN25 Activity 1(b)).

However, in contrast, the use of the component of water for irrigation that is supplied by an irrigation scheme (that has a water permit to use water) to the 40% of properties that also use water from another source, say groundwater, is not provided for as a permitted activity, and it will fail Rule WQN25. In that scenario, the use of water on such properties becomes a discretionary activity under Rule WQN26(1)(b), and consideration must be given as to just how the two sources of water combined are to be managed to ensure efficient and reasonable use.

Rule WQN26 then effectively sets up the need for “dual consents” by requiring a consent to use water on any group of properties that are supplied from an irrigation scheme – a “global” scheme consent to use water, and by also requiring a consent to use water specifically on a property supplied from both private surface and groundwater takes, and an irrigation scheme.

This may appear to be an unnecessary overlap, as effectively there will exist two resource consents to use water on the same area of land. However, in circumstances where two sources of water are being used to irrigate the same property, it is considered necessary in order to ensure at both the scheme level and at the individual property level, the use of water for irrigation is efficient and reasonable, and is not compromising water quality objectives. It also provides for situations where circumstances change in a way that, in all likelihood, was not explicitly considered at the time of preparation and processing of the “global” scheme consent. Thus, when an individual seeks additional access to water resources, consideration will be required of the reasonableness of the use of both sources on the one property.

This means that once the NRRP becomes operative, at the time an irrigation scheme is required to apply for a resource consent, there is a need to ensure that the proposed use across the scheme is efficient and reasonable, and at such a time, it must be demonstrated that Policy WQN17(3)(b) is met. If there are other existing water permits irrigating some of the same area, this will need to be identified in a general way and included in any assessment and audit of the scheme’s application to use water. An assessment would need to provide a clear indication of the gazetted area, the quantity of scheme shares that will be available and what they equate to in terms of application rate and area irrigated. The assessment will also need to demonstrate how the use of scheme water, when used in conjunction with other existing authorised water permits of scheme members, is an efficient use of water. This can be done at a scheme level generally, and would not preclude scheme shares from being traded and water being re-distributed over the life of the scheme consent.

In addition, when the intention is to use an additional source of water for irrigation on a property already sourcing water from an irrigation scheme, a resource consent will be required for the use of both sources of water. It will need to be demonstrated that the combined use of water is efficient and therefore reasonable, and that water quality objectives are not being compromised. In this case however, the onus is on the individual seeking the resource consent, to demonstrate this. There is not a requirement for the scheme to seek a change to their resource consent each time a new consent is sought by scheme members.

It is accepted that there have been considerable efforts made already to improve the reliability of supply of scheme water by improving the distribution generally, and on-farm application efficiency. Additional improvements are being planned for the near future for the Ashburton-Lyndhurst Scheme, to convert some of the existing open channel delivery system to pipes. This will not only reduce leakage losses but will also increase production land as head

ences are no longer required. The same scheme is also constructing storage ponds, which will enable more timely delivery to farms, even when the RDRML is on restrictions. This on-going infrastructural development work is ensuring constraints in the original design of the scheme are being overcome, and is improving the efficiency of this scheme as a whole.

In discussions that occurred during the hearing, it seems that in many instances of “dual supply”, where groundwater is used in addition to scheme water, the groundwater is used for spray irrigation of areas of properties which otherwise do not receive irrigation water sourced from the scheme. That is, there are areas on the individual properties that are spray irrigated using groundwater exclusively, while other areas of the property are irrigated via borderdyke systems with water sourced entirely from scheme water. In other instances, irrigators are also installing water storage ponds in which scheme water is stored until it is applied via spray irrigation to areas of the property where groundwater is also able to be used.

Trustpower Ltd, RDRML and the Irrigator Forum have expressed real concern with regard to this issue of “dual supply” because they consider it is not sufficiently clear in reading Policy WQN17 and Rules WQN25 and WQN26, that they will be able to demonstrate that their activities meet the policy requirements. In particular, they appear to be fearful that **all** of their activities, including the use of water at component scheme level, and at individual consent holder level will be audited against the seasonal irrigation demand standards set out in Schedule WQN9 as the default audit threshold.

These submitters were not any clearer or more specific at the hearing as to just how they consider this may affect them, or what specific amendments to the policy and rules would overcome their concerns. However, it is likely that the current total combined quantity of water taken and used throughout the scheme areas (via both the scheme take and the additional combined groundwater takes) will be well in excess of the annual volume that would be provided for using the appropriate Schedule WQN9 seasonal irrigation demand standards for that total irrigated area. In this way, it appears their concern is that the activities of the scheme and the activities of individual scheme shareholders sourcing additional water will be considered not to meet the requirements of the NRRP and some of the water allocation will be considered excess to reasonable requirements, resulting in a reduction to their allocation and the as a result.

There are a number of reasons why the total quantity of water from all of the combined takes in the scheme area may appear very high. These include:

- individual groundwater permits may have annual volumes sufficient to fully irrigate a property, even though they are only using groundwater to supplement seasonal irrigation demand requirements not being met by scheme water;
- it may be difficult to determine where and how scheme water is being used to irrigate a property, that also uses groundwater, particularly when a single irrigation method is being used, say, spray irrigation; and
- there will be distribution losses from the scheme that may be

overlooked when doing the “accounting”, and will be assumed to make up a part of the irrigation water use;

- The schemes re designed to supply borderdyke irrigation systems and by virtue of this, properties rely on far more water than they would for spray.

3.2 The status of irrigation schemes under the policy

The submitters did not clearly annunciate concerns as to the status of irrigation schemes under the policy, but a part of the ambiguity alluded to above may arise from the fact that Policy WQN17 itself does not specifically refer to irrigation schemes, while Rules WQN25 and WQN26, which give effect to the policy, do.

Rule WQN25 provides for the use of water for irrigation to be permitted where the seasonal irrigation demand standards are not exceeded for seasonal irrigation use (and where water use is managed in accordance with a number of water quality policies). The same rule however, also permits the use of water for irrigation on a property supplied entirely from an irrigation scheme, **where the irrigation scheme company has a water permit for the use of water that is supplied by the scheme.**

Rule WQN26 Activity 1(c) explicitly states that the using of water for irrigation on any group of properties that are supplied from an irrigation scheme is a discretionary activity. The intent has been that an irrigation scheme (a group of properties) will be required to have a resource consent to use the water, and when it does, the use of that water at a property level, will be permitted where no other sources of water are used to irrigate on the same property.

3.3 Status of component schemes of larger irrigation schemes (such as the Ashburton-Lyndhurst as part of the RDR)

As stated above, currently Rule WQN26 Activity 1(c) requires that the using of water for irrigation on any group of properties that are supplied from an irrigation scheme is a discretionary activity. Thus, it is the intention that component schemes of larger irrigation schemes will need to obtain resource consent to use the water for irrigation within the scheme area.

It is also the intention that where the same water (that is taken for irrigation) is used for hydro-electricity generation, a resource consent will also be required (unless the activity is of a small scale), and where some of the water that is taken, will be used for stockwater or some other use, this will also require a resource consent if it is on a larger scale (see Rules WQN27 – WQN32). By setting out these requirements in the NRRP, it allows for the potentially different effects of each of these uses to be considered. In particular, it will need to be demonstrated that each of these uses will be efficient and that any potential adverse effects arising from the use of that water will be avoided, remedied or mitigated.

Even where there is essentially only a single resource consent for the taking

of water, where it is to be used for a number of separate irrigation schemes, it is considered important to assess the use of water in each of these schemes separately. This is because each scheme will be able to operate relatively independently of the other schemes in terms of the use of water, and may have quite specific geographic or other opportunities (or constraints) that require different management approaches in order to achieve efficient use of the water resource. Thus, it is considered advantageous to assess these water uses separately.

3.4 Suggested policy and rule amendments to clarify “dual supply”, status of irrigation schemes and component irrigation schemes

To address the above issues, a number of amendments are proposed. Firstly, amendments are proposed just to ensure greater clarity between the intent of Policy WQN17 and its implementation via the rules. It is not intended that these amendments in themselves change the original intent, just that Policy WQN17((3)(a) and (b) are more explicit as to which activities are to fall into the permitted and discretionary status.

In addition, amendments are proposed that provide for a discretionary activity, for the use of water for irrigation for individual irrigation schemes supplying water to a group of properties, or, for a principal water supplier (such as the RDRML), who is supplying water to component irrigation schemes. This will provide for either option, where either the principal water supplier obtains a resource consent for the use of water for irrigation for all the component irrigation schemes, or each individual component scheme obtains a resource consent for the use of water for irrigation by their scheme.

Where the individual schemes each obtain a resource consent, then it will be necessary for the principal water supplier to obtain a resource consent for the use of the water for conveyance to those component schemes. This requires an additional rule to be included in the NRRP to specifically provide for this activity. In this way, all aspects of the respective activities are able to be addressed.

The proposed amendments to the policy and rules are covered in more detail below, and the specific amendment to the wording is included in Appendix III.

These recommended amendments arise out of the concerns expressed at the hearing by RDRML, the Irrigator Forum and Transpower of the difficulty in understanding how the policy provisions are intended to apply to irrigation schemes. The original submissions by these submitters did not specifically identify this issue (regarding irrigation schemes and “dual supply”) although they presented in detail on this in their evidence at the hearing. The original submissions did identify a number of other concerns however, including seeking an amendment to Policy WQN17 to detail how water uses, other than irrigation, are to be assessed for reasonable use. The amendments recommended here do not cover this aspect of the submission, but rather are an attempt to provide clearer and more explicit guidance in light of the expressed difficulty in understanding the intent of the policy and related rules

by the submitters at the hearing. The amendments are not considered to change the original intent of the policy and rules, however the hearing committee may need to consider whether they are fully justified given the scope of the original submissions.

3.4.1 Policy WQN17(3)(a) and Explanation and principal reasons

Policy WQN17(3)(a) does not include reference to the additional circumstance currently permitted in Rule WQN25 Activity 1(b) of water used on a property supplied entirely from an irrigation scheme, where the irrigation scheme company has a water permit for the use of water that is supplied by the scheme. A new Policy WQN17(3)(a)(ii) is suggested to cover this.

It is also suggested to include in that provision reference to the “principal water supplier” and the “component irrigation scheme” to clarify that either of these must hold a resource consent for the use of the water for irrigation.

Some additional wording in the Explanation and principal reasons is also suggested.

3.4.2 Policy WQN17(3)(b) and Explanation and principal reasons

Policy WQN17(3)(a) now specifically includes reference to the use of water on a property supplied entirely from an irrigation scheme where either the principal water supplier or the component irrigation scheme has a consent to use water for irrigation. Policy WQN17(3)(b) then does not explicitly include reference to irrigation schemes. Given that such an activity is explicitly not permitted but is provided for in the rules as a discretionary activity, this could usefully be described at policy level to assist in clearer implementation.

By amending Policy WQN17(3)(b) to include a new (i) to include explicit reference in this provision to principal water suppliers or component schemes, it will overcome any ambiguity around the status of such activities at the policy level.

In addition, it is suggested that Policy WQN17(3)(b)(ii) describe the circumstances at the individual property level when the use of water for irrigation is to be a discretionary activity. This includes the addition of reference to where the land use is not included in Schedule WQN9 (an issue raised earlier regarding horticulture and viticulture). Such an activity will be a discretionary activity, at least in the first instance.

In addition to these changes, there is a rationalisation of the policy provisions providing guidance as to the circumstances when exceptions can be made, as well to the Explanation and principal reasons. This makes it clear that these exceptions can be considered in the situation where an individual property, a principal water supplier and/or a component irrigation scheme is seeking to use the water for irrigation.

As stated in Officer Report No 14 (Recommendation WQN8.51, page 59, last

three paragraphs), there may be implications for the provision relating to water quality, in light of evaluations of submissions made on NRRP Chapter 4 Water Quality relating to the use of land and use of water where it may adversely affect water quality. If, following the evaluations of the relevant policies and rules in Chapter 4, it is not considered appropriate to retain a permitted activity rule for the use of water for irrigation for example, there will need to be consequential changes to Policy WQN17(3) and Rule WQN25. This must be kept in mind by the hearing panel, as submitters have sought just such relief in Chapter 5.

3.4.3 Rule WQN25 Using water for irrigation

As part of the evaluations of submissions on the general structure of the rules set out in NRRP that seek a simplification of them, recommendations have already been made to the hearing panel to amalgamate rules where they are for a particular activity that will then cascade through a number of the rule categories. While the specifics of this with respect to Chapter 5 rules are yet to come before the hearing panel, the changes being recommended here, incorporate that intent, and so only one rule, Rule WQN25 is amended, but that rule is shown to encompass the discretionary activity for the use of water for irrigation that is currently included in Rule WQN26.

An amendment to Activity 1(b) adding in reference to principal water supplier or the component irrigation scheme is recommended to stay consistent with the amendments proposed for Policy WQN17(3)(a)(ii).

The addition of Activity 3 into the rule, provides for the activities that previously were covered by Rule WQN26. It is expanded however to include reference to where water is to be used to irrigate a land use not included in Schedule WQN9, as well as differentiating the two circumstances of either a principal water supplier or a component irrigation scheme supplying water for irrigation.

There is no recommended amendment to the rule explanation, as the rule may yet change again following evaluation of explicit submissions made to it. This will be covered in a later officer report.

3.4.4 New Rule WQNXX

It is recommended that a new rule be added to cover the activity of a principal water supplier using water for conveyance to supply component irrigation schemes, hydro-electricity generators, community and stockwater supply and/or other users. This rule will only apply where the principal water supplier itself does not hold all the necessary resource consents for all the related uses of water by all the component entities to which it supplies water. This rule only covers the use of water for conveyance to the component entities, as this aspect of the activity would not necessarily be covered by any of the consents that the component schemes etc may hold for their specific activities. It ensures that all activities are provided for by the rules of NRRP more explicitly than was the case previously.

3.4.5 New definitions of terms

Given the changes proposed above, there is a need for definitions for the two terms “principal water supplier” and “component irrigation scheme” to ensure clear implementation of the policies and rules.

The two terms are intended to differentiate between two different water abstraction and use practices relating predominantly to irrigation in Canterbury. The first is where there is a the sole abstractor of water which subsequently conveys and distributes that water to component irrigation, community and/or stockwater schemes, hydro-electricity generators and/or other users of the water. The second is where either one of component irrigation schemes supplied by the “principal water supplier” seeks and holds resource consent for their activities, or alternatively, where the component scheme is actually a stand-alone scheme that abstracts, conveys and distributes water to a group of properties for the purpose of using water for irrigation.

The policy and rules are now set out so that where component irrigation schemes and other users that obtain their water from the principal water supplier, seek and hold resource consents for their specific activities, then the “principal water supplier” will only need to obtain a resource consent to using water for conveyance to supply those component schemes and other users. Alternatively, the “principal water supplier” may seek and hold a resource consent that covers all of the associated water use activities.

3.4.6 Can any additional methods be proposed that may help resolve some of these issues over the life of the Plan?

In addition to the amendments to the methods for Policy WQN17 already proposed in Officer Report 14, there are a number of new suggestions that could assist with resolving some of the issues raised by Questions 1 – 3 above, which are included in Appendix III.

3.4.6.1 Inclusion of additional investigations

Additional investigations could be undertaken to review seasonal irrigation demand standards by analysing water use data (that will be collected and collated as part of the implementation of Policy WQN16 Measurement and recording of water abstraction) and undertaking more comprehensive monitoring of water budget components including measurement of drainage. Such investigations should also take into account the effects of any restrictions arising from water management regimes, and test options such as carrying unused annual allocation forward into subsequent seasons. Such investigations will be useful to confirm or otherwise the current approach, and may lead to assisting reviewing the standards, or developing new approaches to allocating water for irrigation use.

3.4.6.2 Additional advocacy functions to develop protocols for dual supply and self-monitoring to demonstrate compliance

It is also considered there is merit in expanding Method WQN17(a) Advocacy

to include advocating also for:

- the use of monitor farms to apply and demonstrate best irrigation practises and so encourage efficiency improvements;
- dialogue between Environment Canterbury and irrigation scheme companies to develop protocols to be followed when irrigation scheme shares are being traded and/or resource consent applications are made for the use of water on a property supplied from both private surface or groundwater takes and an irrigation scheme to help ensure water allocated for use for irrigation is fairly and equitably shared; and
- irrigation schemes to develop self-monitoring systems to demonstrate compliance with consent conditions as a means of possibly reducing the compliance costs and helping to provide information that will assist with consent information requirements at the time of seeking replacement or review.

While the latter of the above was not specifically discussed during the hearing, it is our understanding that the schemes are in general favour of this type of approach.

3.5 Other matters arising from the “dual consents” issue– sale of irrigation scheme shares

Another issue alluded to by the submitters is where scheme shares are being sold to a property owner who may already have another source of supply. The usual situation where this occurs is where someone has a resource consent to take and use groundwater already.

Under the NRRP and Rules WQN25/WQN26, that existing activity to use water (not to take water) may be permitted (if the water is supplied entirely from a private surface or groundwater take that only supplies that property), where the amount of water allocated for use is within the standards set out in Schedule WQN9 for the intended end use. Alternatively, where the volume is greater than Schedule WQN9, the activity to use the water is discretionary.

Where the activity for the existing use of water is permitted, the additional use of scheme water on the same property will change that, and the activity to use water for irrigation from the two sources on the same property will be a discretionary activity. A resource consent will be required to use both the water from the scheme and groundwater to irrigate the same land area, or even different land areas on the same property. In such instances, the scheme water will be considered the constant (as there will be shares associated with it), while the individual consent to take and use groundwater, will be manipulated to ensure a reasonable use of water.

Given the requirements of the NRRP, where scheme shares are being sold, the scheme could make it a requirement of the sale of the shares, that the purchaser obtains or holds a resource consent for the use of water for irrigation. In that way, the scheme operators can be assured that all water users will be meeting the NRRP policy provisions.

4 Review of the suggested Policy WQN18 put forward by Mr Kyle

The hearing committee have asked a number of questions regarding Policy WQN18, including whether there could be more enabling provisions for surface water takes; what are the merits of proposed amendment to the policy advocated by Mr Kyle and which suggestions of his might be more appropriate as standards in rules?

As stated in the evaluations in Officer Report No 14 relating to Policy WQN18, it is considered possible and even desirable to provide for a more comprehensive and dynamic transfer system. It was not considered appropriate to propose such a system as part of recommended changes in the officer report however. This is because it was considered that the extent of such changes would be more appropriately proposed by a plan variation or change, allowing for submissions to be made by those who may not have submitted directly on the policy provisions to date but who may consider themselves affected by a broader, more comprehensive policy. In addition, it was considered changes taking into consideration temporary transfers now provided for in s136((2A) under the RMAA 2005, as well as the possibility of allocating resources among competing types of activities may also be useful (and were being sought by at least one submitter – Meridian) and that such changes should be able to be submitted on more widely.

With specific reference to the suggested policy framework put forward by Mr Kyle, it is noted that much of the change he is now suggesting, goes beyond the original relief sought by his clients in their original submissions.

All of these submitters sought the same relief of deleting Policy WQN18 and replacing it with two provisions. The first provision is to simply enable the transfer of the point of take of a water permit to another location within the same catchment, while the second provision proposed is to reiterate condition 3 in Rule WQN33. This requires where the use of water is from a water body included in Schedule WQN1 is to be transferred, the amount able to be transferred shall reduce by the proportion specified in Schedule WQN1 for that catchment and that portion shall be surrendered. They also sought the inclusion of a new method setting out the “conditions” or provisos under which transfers could be provided for. The wording suggested is a replicate of wording being proposed by Environment Waikato in their Variation 6 for Water Allocation.

The suggested amendments being put forward by Mr Kyle, particularly in terms of the cascading levels of activities, is not relief that has been explicitly sought by any other of the original submitters either.

Notwithstanding the above concerns, it is considered possible to provide more enabling provisions in Policy WQN18 for the transfer of surface water takes, both in terms of the transfer of the point of take, and the transfer of the use of such water. It is noted that the amendments suggested by Mr Kyle also include the transfer of the point of take of groundwater, and that these suggestions have merit, albeit contingent on more comprehensive and

stringent conditions.

4.1 *What are the merits of the proposed amendment to the policy advocated by Mr Kyle? Which suggestions of his might be appropriate as standards in rules?*

The specific merits or otherwise of his suggestions are indicated below for each of the provisions he has suggested (see Appendix II for reference to these). Comments include whether the particular provision would be appropriate as standards in a rule.

4.1.1 Comment on Policy WQN18(1)(a)

This is similar to that currently proposed in Policy WQN18(1)(a) (page 5-137 Officer Report No 14), although it does not include groundwater takes classified as having a high degree of hydraulic connection in Policy WQN8(1)(a).

It is not clear why Mr Kyle has not included such groundwater takes although it may be because he used the original proposed policy, not the amended policy included in Officer Report No 14 as his starting point. Mr Kyle has not included these specific activities elsewhere, although they would be covered by (1)(e) below. Based on the recommendations made in Officer Report No 14, it seems appropriate to include such takes.

The amended Policy WQN18(1)(a) in Officer Report No 14 is still considered more appropriate than Mr Kyle's suggestion for inclusion in the NRRP. This provision is not considered suitable as a standard in a rule.

The request seeking an indication of when zones in rivers will be included in Schedule WQN5 is considered reasonable, particularly given the concerns raised in the hearing regarding this.

Recommendation

It is suggested that an additional sentence be added to Method WQN18(a) to indicate that these investigations will be undertaken as part of the environmental flow reviews being undertaken as set out in the LTCCP (see Appendix IV).

4.1.2 Comment on Policy WQN18(1)(b)

For an activity to have permitted status, the effects have to be minimised at the outset, as such activities are not subject to discretion. The general intent of this provision is consistent with the approach Environment Canterbury has taken to date with respect to providing for permitted activities for the transfer of the point of take, although this detail has not been included at policy level, but rather included as a condition of Rule WQN33. Condition 2 requires that for any surface water take, the transfer must be downstream of the original take, which is intended to ensure the non-derogation principle is adhered to. This provision is considered more appropriate to be included as a standard or condition in a rule.

Given that this provisions expands on (a) above, which does not include transfers of the point of take for groundwater, the reference to groundwater bores seems out of place.

To date, Environment Canterbury has considered that because of the complexity of the groundwater system, only those groundwater takes that are classified as having a direct degree of hydraulic connection could be provided for as a permitted activity to transfer the point of take, as they are being treated the same as a surface water takes in earlier policies (e.g. Policies WQN8 and WQN14).

For all other groundwater takes, it is considered more appropriate to scrutinise on a case by case basis to ensure the non-derogation principle is adhered to and to ensure no other adverse effects will arise from the transfer (e.g. effects on surface water). To a certain extent, that would appear to be the same position supported by Mr Kyle, as he has provided for such activities in (f) that have controlled status. Environment Canterbury considers a level of activity that provides the opportunity to decline any such applications where effects may be more than minor, therefore a restricted discretionary or discretionary activity would be preferred.

In Policy WQN18, such activities have so far been provided for under Policy WQN18(1)(b). The submitters have earlier expressed their concerns regarding this approach in Mr Kyle's original evidence (paragraph 2.2, page 4) where he points out that under section 136(4)(b)(ii), "all transfer applications shall be treated as if the application were an application for a fresh resource consent." The submitters consider a transfer regime in the plan should be and could be more enabling.

RMA s136(2)(b)(i) specifically provides for transfers to be expressly allowed in a regional plan. Therefore, where a plan expressly provides for permitted activities, there will be no need to obtain a resource consent. However, s136(2)(b)(ii) then sets out that any other transfers be processed as applications for a resource consent under s136(4), where they will be subject to s88 – s115, s120 and s121. This is the case even if a rule in a plan provides for them as controlled, restricted discretionary or discretionary activities. Given this, the point Mr Kyle is making is of less relevance as all activities for the transfer of a water permit, other than those expressly allowed for as permitted activities, will be treated subject to the same provisions when being processed as if they are applications for resource consents. That is, even if there are more explicit policy provisions in the regional setting out the activity status for particular transfers etc, such applications will be processed in the same manner as any applications where there are no explicit policy provisions in a plan.

Notwithstanding this, policies in a plan could provide guidance for a cascading set of rules governing transfers and so be more enabling, by supporting a particular type of transfer through policy, terms, standards and conditions in rules. With this approach, it should be easier to obtain a transfer as a result of that rule and policy.

In light of this it is agreed that in order to provide more enabling policy, a cascading approach (as used in Policies WQN14 and WQN17 for example) as suggested by Mr Kyle seems the most effective means for achieving it. As noted earlier however, this relief is considered beyond the scope of the original submission.

It is suggested that groundwater takes other than those classified as having a direct degree of hydraulic connection be treated as restricted discretionary activities, and that the non-derogation issue be addressed by requiring the meeting of the provisions of Policy WQN20.

An example of the amendments required to give effect to this in Policy WQN18 is included in Appendix IV, and examples of the types of cascading rules and associated conditions etc are included in Appendix V.

If it is agreed submissions do not cover this relief, then the Panel could make a recommendation for a variation to the plan.

4.1.3 Comment on Policy WQN18(1)(d) (note: there was no (c))

It is agreed that provision for this is needed, but that such detail be better provided for in a condition of relevant rules (see suggestions in Appendix IV and V).

4.1.4 Comment on Policy WQN18(1)(e)

Such an activity may impact on the allocation regime for that water body as there may be different allocation block limits for different reaches in the same river catchment.

Providing for such transfers as controlled activities may place the Council in the position of being required to grant the activity when it may contravene the relevant allocation regime and may include conditions which do not adequately ensure non-derogation of existing users etc. This is not a position Environment Canterbury supports.

It is considered that activities such as are described above are better provided for as either restricted discretionary or discretionary activities to avoid the situation of possibly compromising existing flow and allocation regimes.

4.1.5 Comment on Policy WQN18(1)(f) and (g)

As commented in 4.1.2 above, such activities as described in (f) are considered to be better classified as restricted discretionary or discretionary, rather than as controlled activities.

The intent of provision (g) is considered more appropriate as a standard or condition of a rule, and as indicated in 4.1.2 above, it is considered more relevant to refer to the need to demonstrate that Policy WQN20 is being met as a means of achieving the intent expresses.

4.1.6 Comment on Policy WQN18(1)(h)

This provision is supported in principle, although as stated above some of the activities that are being proposed for controlled status are considered more appropriate for discretionary status.

These matters are considered more appropriate as standards or matters of discretion however, rather than as a provision in the policy. The listing of these two matters is not considered to be a comprehensive enough list of the matters for discretion, and there are other aspects of transferring the points of takes that have not been covered here. Examples of additional matters that would need to be considered are included in Appendix V.

4.1.7 Comment on Policy WQN18(1)(i)

It is not clear why, in the circumstances described in this provision, it would be necessary or advantageous to apply for a transfer, as opposed to applying for a new consent to take groundwater still available for allocation in the groundwater allocation zone the transfer is being proposed to go to.

In principle, transferring the point of take of groundwater to another groundwater allocation zone would not be supported as it would essentially be transferring water between different allocation regimes.

It is considered that there is no requirement for this provision, and that transfers of the point of take for groundwater need only to be enabled within a groundwater zone where there is no further allocation readily available.

4.1.8 Comment on Policy WQN18(1)(j)

Given that Policy WQN18(1)(i) is not supported, this provision is not required as such. However, the intent of the provision is supported in principle for any transfer of the point of take of groundwater within groundwater allocation zones for example. The provision would be more appropriate as a standard or matter for discretion in rules however.

There are other aspects of transferring the points of takes that have not been covered here. Examples of additional matters that would need to be considered are included in Appendix IV.

4.1.9 Comment on Policy WQN18(1)(k)

Including a provision like this is considered appropriate and is consistent with the current Policy WQN18 approach.

4.1.10 Comment on Policy WQN18(2)

It is unclear if the first activity referred to in 2(a) of the transfer of water to irrigation use is also associated with users in the same community irrigation scheme. However if it is assumed to be the case, then provided there is no allocation to specific activities, either as part of the resource consent or under any relevant allocation regime, then providing for it as a permitted activity is supported. If Rule WQN25/WQN26 is retained in the NRRP, which provides for the use of water for irrigation under certain conditions, then there may not be a need to transfer the use in all situations. NRRP provides for the use of water to be permitted where it is supplied by an irrigation scheme, subject to

the irrigation scheme already holding a resource consent to use the water.

If there exists an allocation regime that provides for given quantities of water for particular activities (such as is currently provided for in the Waitaki Plan, or that may develop in the NRRP when surface water bodies and groundwater allocation zones are added to Schedule WQN3), such transfers between uses may not be provided for, may be limited by conditions under which such transfers are to be allowed or maybe prohibited. Because of the likelihood of this, it is only considered appropriate to provide for them as permitted activities where there are no specific allocation blocks for particular activities. If there are allocation blocks for specific activities, then it may be beneficial to develop policy to provide for the temporary access to and possible transfer of water permits for that water to be used for another purpose, until such time as it is required for the purpose for which it has been allocated.

Providing for the second activity described in 2(a) of transferring water for irrigation between users within an irrigation scheme as a permitted activity is supported only where there are no other sources of water being used for irrigation of the same property. Where there will be two sources used to irrigate, such an activity would need to be assessed to show that the use from both sources is reasonable and efficient. As suggested in the changes to Policy WQN17 and Rules WQN25 and WQN26 in response to Question 2, the use of water for irrigation in this context is to be a discretionary activity and it seems that the transfer of that water should also have the same activity status.

With respect to 2(b), the same comment made in the above two paragraphs for 2(a) is also relevant. Where the transfer provides for water for irrigation of a quantum of at least no more than provided for in the relevant standard in Schedule WQN9, this could be permitted subject to a number of other conditions.

With respect to the provision "To otherwise process transfer of use in accordance with RMA s136(2)(b)", it is considered that this may not be necessary where there is a more developed cascading policy framework as is being proposed.

4.2 More enabling provisions - for surface water takes and others

There could be more enabling provisions for surface water takes, and for groundwater takes but it would require considerable reworking of the policy and the changes required will go beyond any relief that has been directly sought by submitters to date. Thus it is still recommended that such changes only be made via a plan variation.

However, for assistance in considering how the policy may be improved to be more enabling of both surface and groundwater takes, some suggestions are shown in Appendix IV for Policy WQN18 specifically. Appendix V then includes an example of how the rules could be structured and the conditions and matters for discretion would be required. These are examples only, and would require more consideration before a plan variation could be developed

for consultation.

As noted previously, in their submission, Meridian (544.255 – 544.257) consider there is a need for a far more dynamic transfer system that would provide greater flexibility by enabling, for example, transfer of any unallocated blocks reserved for particular use until required for that use, as well as transfer between authorised users or consent holders, by agreement and subject to any consented restrictions. They sought the inclusion of criteria or circumstances and a process under which transfers can occur more flexibly and simply. They recommended that the framework needed:

- Consistency in the way permits are expressed within a catchment;
- Direction with regards the clarity, transparency and legal robustness with regards to the express nature of any permits granted under the regional plan;
- Rules governing ongoing management of the system which provide appropriate controls but which are administratively manageable;
- Design of the system to ensure that environmental goals are not compromise over time, and to ensure that existing use rights are recognised and protected;
- Rules to ensure the policy can be achieved in practise such as a rule to ensure that consents are all drafted consistently and that existing consent holders wishing to transfer have their consents drafted on the basis of an annualised volumetric entitlement, as well as daily and weekly limits.

While some of these matters may already be addressed in the amendments proposed in Appendix IV and the example of rules in Appendix V, many are not. Many of the points raised by Meridian are considered valid and important to address in order to develop a more enabling transfer policy that will be easy to implement and transparent and equitable in effect. These matters should be considered in more depth, before any policy change is recommended.

5 Summary

The following points provide a brief summary of the responses to the questions posed by the hearing committee:

Schedule WQN9

- A number of meetings between Dr John Bright (Aqualinc), Dr Tony Davoren (HydroServices) and David Scott (ECan) were held to examine the basis of the different estimates of irrigation requirements that were presented to the Stage 14 hearing. Available data (rainfall, irrigation use, drainage) for a location near Dunsandel was used.
- As a result of collaborative work between technical staff representing Irrigation New Zealand and Environment Canterbury to develop a better understanding of the comparative strengths and weaknesses of

the two methods of estimating seasonal irrigation requirements, the following points of agreement were reached:

- The data for the Donkers site reveals that irrigation events often result in drainage even when soil moisture is below field capacity. This also occurs, but less often and to a smaller extent, with rainfall events.
- Irrigation application efficiency is highly dependent on the type of irrigation system and soil properties.
- Many existing irrigation systems are likely to be unable to achieve an application efficiency of 80% on soils with low water holding capacity. This includes Rotorainer systems.
- Small to medium fixed centre pivot (or equivalent linear) systems could reasonably be expected to deliver an application efficiency of 80% on light soils.
- It would be desirable to have many more complete datasets on climate, irrigation application, drainage and soil moisture.
- While the collaborative work above resulted in a greater understanding of the two methods, the following points remain unresolved:
 - The extent to which nozzle adjustments may allow improved application efficiencies with Rotorainer systems.
 - The extent to which excess drainage (and hence low application efficiency) is a result of non-uniformity and/or high application rates.
 - Why the 80th percentile simulated irrigation demand is so much in excess of the measured demand at the Donkers site.
- The implications of the greater drainage means that the Schedule WQN9 values developed using the Davoren method are more likely to accommodate real irrigation requirements as the inferred total water use may have underestimated irrigation induced drainage.
- Interim results from the irrigation model provided by Dr Bright indicate that the calculated annual series was higher than the corresponding WQN9v3 allocation - +95 mm (PAW=60 mm), +118 mm (PAW = 80 mm) and +165 mm (PAW = 120 mm) using a rule-based approach with irrigation triggered when available water fell to 50% PAW, and this may not reliably represent typical practise for heavy soils. Further work is being undertaken by Dr Bright for Irrigation New Zealand which could be made available to the Hearing Committee.
- It is considered that the Davoren method is broadly applicable for the Canterbury Plains area particularly from Timaru to the Ashley River, while the applicability of the Aqualinc model is unknown as it has been evaluated for a single site.
- The general implications of having a reliability of supply based on 9 years out of 10 (versus 8 years out of 10) would be that the total seasonal irrigation demand standards would increase by a relatively small amount (as presented earlier – see Variation 2 s32 analysis).
- The implications for changing the numbers in Schedule WQN9 to meet a higher reliability level will be to allow a larger annual volume to individual existing and new users, so that they get a larger “slice”. A consequence of this is that it will result in fewer new users being accommodated within the allocation limit as there will be fewer but

- larger “slices” allocated. If the numbers are changed to provide for a lower reliability however, the converse will be true.
- If the seasonal irrigation demand standards are changed, the effective allocation percentage reduction may need to be reviewed.
 - Hearings like the Rakaia-Selwyn and Selwyn-Waimakariri Zones have generally submitted volumes based on Schedule WQN9 (Variation 2) and these have been accepted and consents issued on the basis of these.
 - The Restorative Streams program carrying out reviews of consents in the Rakaia-Selwyn Zone, are including a clause in the condition for the annual volume that will allow the consent holder to apply within two years of the NRRP becoming operative to replace the stated volume with an amount calculated using the final Schedule WQN9 in the operative NRRP. This provides a means of overcoming the current uncertainties with Schedule WQN9 and to adopt what is decided on finally.
 - An amendment to Policy WQN17(3) could be made to clarify that applications for the use of water for irrigation for land uses not currently covered by Schedule WQN9 are discretionary activities. The recommendation made in Officer Report No 14 regarding including an additional method for Policy WQN17 to undertake investigations to develop further standards for inclusion in Schedule WQN9 for land uses such as viticulture will help expand the activities covered by the permitted activity rule.
 - There appears to be little merit in having fewer land use categories included in Schedule WQN9, and having more than two would provide greater certainty to those carrying out such land uses by providing for a quantity of water for irrigation use as a permitted activity for which no resource consent will be required.

Status of irrigation schemes and the issue of “dual consents”

- Policy WQN17(3) and it’s explanation and principal reasons could be amended to:
 - refer to both principal water suppliers (such as RDRML) and component irrigation schemes to differentiate between these;
 - clearly indicate that the use of water for irrigation by either of these users is a discretionary activity;
 - to clarify that exceptions provided for by Policy WQN17(3)(b)(i) and (ii) (as amended in Officer Report No 14) apply to the use of water for irrigation (whether on an individual property, group of properties supplied by an irrigation scheme, or on groups of properties supplied by component irrigation schemes which are in turn supplied by a principal water supplier.
- Policy WQN17 methods could be amended to:
 - expand the new method “investigations” suggested in Officer Report No 14, to include undertaking investigations to review the seasonal irrigation demand standards in Schedule WQN9, using

analyses of water use data and also taking into consideration the effects of any restrictions arising from flow and level regimes, or other adaptive management mechanisms. Also to include more comprehensive monitoring of water budget components (notably to include measurement of drainage).

- to amend Method WQN17(a) Advocacy to include:
 - advocating for the use of monitor farms to encourage efficiency improvements; and
 - advocating to irrigation scheme operators for the development of protocols to be followed when processing the sales of irrigation company shares and/or resource consent applications for the use of water, and self-monitoring regimes to demonstrate water use efficiency in terms of conveyance and on-farm use.
- Rules WQN25 and WQN26 could be amended to:
 - amalgamate these into one rule as per earlier submissions to simplify the rules in NRRP generally;
 - to refer to both principal water suppliers (such as RDRML) and component irrigation schemes to differentiate these as separate discretionary activities;
 - to clarify that only where a principal water supplier does not have a resource consent to use water for irrigation is it a discretionary activity for a component irrigation scheme to use water for irrigation on a group of properties supplied by the component scheme.
- New Rule WQNXX – add a new rule for a discretionary activity to use water by a principal water supplier for supply to component irrigation schemes, hydro-electricity generators, community and stockwater supply and/or other users.
- These proposed amendments are intended to provide for the option of a principal water supplier obtaining all the necessary resource consents for the use of water for all the component uses , for example, for:
 - supply to component entities (in which case conveyance efficiencies will need to be demonstrated);
 - irrigation;
 - hydro-generation;
 - stockwater;
 - other.

Alternatively, all of the component entities could obtain and hold resource consents for their respective uses, while the principal water supplier would only be required to obtain and hold a resource consent for the use of water for supply to those component entities (in which case, only conveyance efficiencies will need to be demonstrated).

Policy WQN18 Transfers of water permits

- There is considered to be some merit in the suggested amended Policy WQN18 provided by Mr Kyle, particularly in terms of providing for a cascading level of activities.

- However, the amendments are considered to be beyond the scope of the original submissions, and so any changes that may be considered as merited by the committee in response to this would need to be done as a plan variation or plan change.
- Many of the policy provisions suggested by Mr Kyle are considered to be more appropriate as conditions in rules, and a copy of an amended version of Policy WQN18 and an example of how the rules could cascade is provided (Appendix IV and Appendix V) to show how the ideas may be better “fitted” to the NRRP.

Appendix I: Copy of the Minute of the Hearing Committee re Hearing Stage 14

17 December 2007

In the matter of the Resource Management Act 1991

Westmere Estate Ltd*
186 Settlement Road
KUROU
OAMARU

and

In the matter of hearings on Variation 1 to the Canterbury Proposed Natural Resources Regional Plan.

Minute of the Hearing Committee re Hearing Stage 14

We have adjourned the hearing on Officer Report 14 “Reasonable and Efficient Use of Water” as of 12 November 2007. This is to allow the officers to provide further information on a number of matters as outlined below. Accordingly we request that the officers of or advising ECan report back to us in writing by Friday 29 February 2008 on the following matters:

1. What are the comparative strengths and weaknesses of the “Davoren” model used by ECan, versus those of the Aqualinc model? How broadly applicable are these models across the region?

This can be primarily in the form of an updated Table as already provided in Appendix 2 of the officer’s report.

2. Are there any policy amendments that could be made that would clarify the following matters:
 - The “dual consents” issue.
 - Other uses such as horticulture and viticulture presently not covered by Table WQN9.
 - The status of irrigation schemes under the policy.
3. What are the merits of more (or less) categories of land use being included in Table WQN9 versus the two current groupings?
4. Can any additional methods be proposed that may help resolve some of these issues over the life of the Plan?
5. Can more enabling provisions be provided in Policy WQN18 for s136 for

surface takes? What are the merits of the proposed amendment to the policy advocated by Mr Kyle? Which suggestions of his might be more appropriate as standards in rules?

6. Is it the intention that component schemes of larger irrigation schemes (such as the Ashburton-Lyndhurst as part of the RDR) acquire separate resource consents? If so, is this necessary and how could it be clarified in the policy?
7. What are the very general implications of having a reliability based on 9 years out of 10 versus 8 out of 10 for the existing numbers in Table WQN9 (recognising that this matter will be discussed much more when we look at Policy WQN14).
8. What are the differences between SMHC as used by Mr Macfarlane versus PAW used by ECan? What are the implications for the numbers provided us of these differences?
9. What are the implications for changing the numbers in the Table WQN 9 for the availability of groundwater for other existing and new users?
10. Did hearings like Rakaia-Selwyn use the Table WQN 9 numbers? If so did applicants accept those numbers?

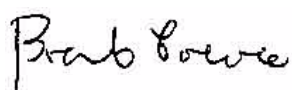
What Will Happen Next

Once we have received this information from the officers the hearing committee will discuss the next steps. In doing this we may:

- seek an independent peer review of the merits of the “Davoren” and “Aqualinc” models; and/or
- seek further comment from submitters on some or most of the matters listed above (recognising some of the early questions are very open but the latter ones are much more straightforward); and/or
- possibly reconvene the hearing.

All submitters will be provided with the further information sought and advised of our decisions regarding what will happen after that.

Dated this 17th day of December 2007



Dr Brent Cowie
Chair of the Hearing Committee

Appendix II: Mr Kyle's reworked Policy WQN18

- (1) To enable the transfer of the point of take of a water permit to another location within the same catchment or groundwater allocation zone in whole or in part. In particular:
- (a) To allow as a permitted activity the transfer of the point of take of surface water subject to the transfer occurring in the same allocation block within the appropriate zone for each river set out in Schedule WQN8 and Table 23 (*subject to these being identified in the Schedule/Table in a manner which is appropriate. Some indication of when this might occur from ECan would be helpful*)
 - (b) For such transfers to retain permitted activity status the transferor shall be required to demonstrate that the act of transferring the point of take will not derogate from the ability of existing consent holders to take either surface or groundwater or affect the reliability of supply of existing consent holders. (*Note – For the purpose of rule drafting determining the issue of non derogation will require some certainty. This could be termed within the associated rule such that the transferred take shall not have a discernible interference effect on any existing abstraction (or bore in the case of groundwater) within 2km of the new point of take*)
 - (d) All permitted transfers shall be subject to the same conditions of consent (as far as these are relevant) to those applying to take prior to the transfer.
 - (e) To provide as a controlled activity the transfer of the point of take of surface water in the same river catchment, either upstream or downstream, and not resulting in the minimum flow regimes for rivers set out within Tables WQN11 or WQN12, or Appendix WQN2 being exceeded having accounted for all consented takes. (*Note – for the purpose of rule drafting determining what is a consented take will need to be clarified. Suggest that a consented take is one that has obtained a resource consent at the time the application to transfer is deemed to be complete by the Council and does not include a consent that has lapsed*).
 - (f) To provide as a controlled activity for the transfer of the point of take of groundwater subject to the transfer occurring within the same groundwater allocation zone identified within Figure WQN11.
 - (g) For such transfers to retain controlled activity status the transferor shall be required to demonstrate that the act of transferring the point of take will not derogate from the ability of existing consent holders to take either surface or groundwater or affect the reliability of supply to existing consent holders (*Note attached to 1(b) applies*).
 - (h) For all controlled activities to reserve control over:
 - (i) Any adverse effects that might arise from the transfer on aquatic ecosystems, habitat and fishery values insofar as these effects are relevant;
 - (ii) Any adverse effects arising from the hydraulic connection between groundwater and surface water having considered the method of determining this in accordance with Policy WQN8.

- (i) To provide as a limited discretionary activity for the transfer of the point of take of groundwater to another groundwater allocation zone subject to the allocation limits set out in Table WQN29 for the groundwater allocation zone to which the point of take would be transferred not being exceeded having accounted for all existing consented takes *(Note attached to (1)(e) applies)*
 - (j) To reserve discretion over:
 - (i) Any potential for the transfer to derogate from the ability of existing consent holders to take either surface or groundwater or affect the reliability of supply to existing consent holders;
 - (ii) Any adverse effects that might arise post transfer on aquatic ecosystems, habitat and fishery values insofar as these effects are relevant; and
 - (iii) Any adverse effects arising as a result of the hydraulic connection between groundwater and surface water having considered the method of determining this in accordance with Policy WQN8.
 - (k) To otherwise process transfers of the point of take in accordance with RMA Section 136(2)(b).
- (2) To enable the transfer of the use of water to another location or use. In particular:
- (a) To allow as a permitted activity the transfer of water to irrigation use, or the transfer of water for irrigation use to another location, where this occurs between water users who draw water from a community irrigation scheme, and do so in accordance with the conditions and limitations set out within the consent for that scheme.
 - (b) To allow as a permitted activity the transfer of water to irrigation use, or the transfer of water for irrigation use to another location, where the amount to be used is within the limits set out in Schedule WQN9 *(Note – at the time of drafting it has been assumed that Trustpower, the Irrigator Forum and RDRML is able to support a revised version of Schedule WQN9 based on work completed to date by Irrigation New Zealand)*, and the effects of the use of water on water quality is to be managed in accordance with Policies WQL4, WQL9 and WQL12.
- To otherwise process transfers of use in accordance with RMA section 136(2)(b).

Appendix III: Suggested amendments to:

- Policy WQN17, explanation and principle reasons and methods
- Rule WQN25
- New Rule WQNXX Using of water for supply to component irrigation schemes, hydro-electricity generators, community and stockwater supply and/or other users
- New definitions of terms – “principal water supplier” and “component irrigation scheme”

(Note: Recommended amendments are indicated in red underlining)

Policy WQN17 Reasonable and efficient use of water

(1) Ensure that:

(a) the instantaneous rate of abstraction, the return period, ~~return period~~ volume¹ and the annual volume of water permits for taking, using or diverting water are no more than reasonable for the intended end use; ~~and thereby~~

(b) ~~avoid~~ significant wastage of water ~~is avoided~~; and

(c) ~~avoid or limit the any~~ adverse effect on water quality ~~is avoided or limited to meet the requirements of~~ (See also to Policies WQL4, WQL9 and WQL12).²

(2) When assessing water permit applications for irrigation (new or replacement) in terms of (1) above:

(a) the instantaneous rate of abstraction, the return period, ~~the return period~~ volume³ and the seasonal volume of the proposal to take, divert or use water will be required to meet a reasonable use test, including:

(a) consideration of on-site physical factors such as soil water-holding capacity, climatic factors such as rainfall variability and potential evapotranspiration and land use activity; and

(b) ~~assuming~~ that there is an irrigation application efficiency of at least 80% even if the actual system being used has a lower application efficiency. Where the water permit application is for an irrigation system with a higher application efficiency, the higher figure will be used; and

(b) ~~the use of water is to be managed in accordance with Policies~~ WQL4, WQL9 and WQL12.⁴

(3) Further to Policy WQN17(2) above, provide for the use of water for irrigation to be:

(a) a permitted activity where:

- (i) the property is supplied entirely from private surface or groundwater takes and the seasonal irrigation demand standards in Schedule WQN9 for the intended land use are ~~met~~not exceeded

¹ WQN8.33

² WQN8.51

³ WQN8.33

⁴ WQN8.51

~~for seasonal irrigation use and where seasonal irrigation use is managed in accordance with Policies WQL4, WQL9 and WQL12;~~⁵ **or**

- (ii) the property is supplied entirely from an irrigation scheme, and either the principal water supplier or the component irrigation scheme has a water permit for the use of that water; and

(b) a discretionary activity:

(i) for a property where:

(1) the intended land use is not included in Schedule WQN9, provided that it can be demonstrated it will meet Policy WQN17(1) and (2) above; or

(2) water is supplied entirely from private surface or groundwater takes that supply the property, and

a) there is a discharge of a contaminant onto or into land from an industrial or trade process (excluding animal effluent produced on the property); or

b) the seasonal irrigation use is not managed in accordance with Policies WQL4, WQL9 and WQ12, provided that the water quality outcomes set in Objectives WQL1 and WQL2 will be achieved; or

(3) water is supplied either entirely from private surface or groundwater takes that do not meet Policy WQN17(3)(a)(i) above, or from both private surface or groundwater takes and an irrigation scheme, provided that where the seasonal irrigation demand standards in Schedule WQN9 for the intended land use are ~~not met~~ exceeded or where ~~the seasonal irrigation use is not managed in accordance with Policies WQL4, WQL9 and WQL12,~~ provided that exception shall only be made:

a) where it can be demonstrated that the demand conditions are different to those mapped on the Proposed NRRP Map Volume Part 1 Planning Maps, due to micro-climatic or other variations; or

b) for a lower efficiency level or a greater seasonal volume where mitigating circumstances are clearly demonstrated. These circumstances may include beneficial effects such as energy savings or

⁵ WQN8.99

⁶ WQN8.62, WQN8.65

⁷ WQN8.63

⁸ WQN8.72

⁹ WQN8.78

¹⁰ WQN8.81

¹¹ WQN8.26

¹² WQN8.90

¹³ WQN8.93

¹⁴ WQN8.95

prevention of wind erosion that would not be achieved otherwise, or recharge to groundwater, surface water or wetlands.

(ii) for a principal water supplier or a component irrigation scheme for any group of properties, and the matters to be considered when assessing the reasonableness of use of water should include:

- (1) soil types, demand conditions across the area supplied and overall design efficiency of the scheme. Where the application efficiency is lower than 80% or a greater seasonal volume is sought than would be estimated using Schedule WQN9 across the area to be irrigated, mitigating circumstances must be clearly demonstrated. These circumstances may include beneficial effects such as energy savings or prevention of wind erosion that would not be achieved otherwise, or recharge to groundwater, surface water or wetlands. There should be a demonstrable long-term community benefit from the proposal consistent with Objective WQN4(1). Where a long-term community benefit cannot be demonstrated, a programme of staged improvement may be considered as mitigation;
- (2) the effectiveness and efficiency of the method of conveyance and appropriateness of this; and
- (3) the effects of the use of the water across the area supplied on water quality. Where the seasonal irrigation is not managed in accordance with Policies WQL4, WQL9 and WQL12, the water quality outcomes set in Objectives WQL1 and WQL2) will need to be achieved.
- (4) For existing users, ensure that the water allocation specified on the water permit reflects the actual quantity needed to undertake the land use activity intended use that was specified at the time of granting the water permit⁶. Review the conditions of water permits where necessary when an allocation regime becomes operative under Schedule WQN1 or Schedule WQN3 as per Policy WQN14(11) and Policy WQN16(3),⁷ or where monitoring indicates that they have been allocated more than is needed and have actually used, taking into account variable factors such as climatic conditions.⁸
- (5) In addition to requiring the measuring and recording of water that is taken in accordance with Policy WQN16, encourage irrigators to monitor their water application rates, soil moisture, and production as a method for achieving more efficient use of irrigation water.
- (6) Develop guidelines in conjunction with water users, other agencies and the community for cost-effective improvements in water efficiency and conservation, and promote and encourage the use of⁹ these across the region.
- (7) Encourage, and where appropriate, require ~~Promote~~¹⁰ the use of water audits for agricultural, industrial, hydro electricity and community water supply activities to identify areas for improvements in water use efficiency.
- (X) Promote the capture and use of stormwater, and the re-use of water and greywater to improve water use efficiency.¹¹
- (8) Encourage and, where appropriate, require the progressive upgrade and piping of stock water races where there is an environmental or economic benefit for so doing, but recognise that some stockwater races may provide important habitats for indigenous species and provide additional

base flow to spring-fed streams and wetlands, and may justify strategic continuance or other management to protect these values¹². (Refer to Policy WQN14(9)(f)).

- (9) Encourage, and where appropriate, require territorial local authorities, and other suppliers of stockwater, and community and group drinking water¹³, to take all reasonable steps to progressively upgrade those reticulated supply systems where there is a significant amount of leakage.
- (10) Encourage, and where appropriate, require¹⁴ owners and managers of irrigation schemes to minimise water losses through the beds of irrigation canals.

Explanation and principal reasons

To meet the objective it will be necessary to improve the level of efficiency currently achieved by many activities that use water, and, in particular, irrigation use. The policy gives particular attention to improving the overall efficiency of water allocated and used for irrigation purposes because irrigation makes up over 80% of the total amount of water allocated in the region. Efficiency improvements achieved in this area would provide the greatest gains for the region in terms of making water available to more people, and getting the greatest benefits in terms of community, social and economic wellbeing.

Policy WQN17(1) seeks to ensure that only the amount of water needed for the efficient operation of each activity is taken. It is important that water that is taken is not wasted. Using water more efficiently means greater production from each unit of water used, allowing abstraction amounts to be reduced, redistribution of the surplus to occur, reliability of supply to improve or production to increase, or a combination of these benefits. Additionally, it can also lead to the avoidance or reduction of leaching and the degrading of groundwater quality and connected surface water, and the possible raising of the water tables. The use of water, particularly for irrigation, in combination with other land use practises such as the application of soluble fertilisers and cultivation, can contribute to an increase in leaching of nutrients into groundwater. Any degradation of water quality could affect existing domestic and community water supplies or other sensitive water uses and limit similar future uses. Where new community water supply uses are proposed, there will be a need for them to consider the effects of existing activities on the water quality. Chapter 4 Policies WQL4, WQL9 and WQL12 addresses the issues of preventing the leaching, run-off of nutrients and¹⁵ community supply zones.

Policy WQN17(2) requires that any take for irrigation use meets a reasonable use test and that the effect of that use of water on water quality is managed in such a way as to met the requirements of Policies WQL4, WQL9 and WQL12. It¹⁶ sets a target irrigation application efficiency level of 80% that is to be used when applying this test. The reasonable use test is a test of the technical efficiency of the water application and use. It requires an understanding of the use of the water, the water-holding capacity of the soils, the climate of the area, including the potential evapotranspiration, and the rainfall. Water allocation will be limited to what is reasonable as a peak rate of application, relative to the return period of the irrigation system and it will also be limited to what is a reasonable seasonal volume.

Irrigation application efficiency is to be calculated as the amount of applied water reaching that is stored in the crop root zone as a proportion of the total amount of water taken average depth of water applied to the crop.¹⁷ By taking this approach, Environment Canterbury is not saying that less efficient systems cannot be used, rather that if they are used, the amount of water given may be insufficient to irrigate all the area. The remedy to this problem is to install an irrigation system that achieves the 80% application efficiency.

¹⁵ WQN8.51

¹⁶ WQN8.51

¹⁷ WQN8.46, WQN8.98

Consideration must also be given to the potential adverse effect of the use of water for irrigation on water quality. Policies WQL4 and WQL9 require that the use of water for irrigation does not result in the maximum concentration of contaminants exceeding the values set out for surface water and groundwater in Objectives WQL1 and WQL2. Policy WQL12 limits the use of water for irrigation within specified areas in order to protect the quality of community drinking water supplies.¹⁸

Policy WQN17(3)(a)(i) identifies that Schedule WQN9 has determined amounts that are reasonable assuming the irrigation system is 80% efficient and given the use that the water is to be put to, the soils and the climatic conditions of the locality. Activities that are within this standard and which meet the water quality provisions set out in Policies WQL4, WQL9 and WQL12 in Chapter 4 are provided for as a permitted activity in Rule WQN25. Schedule WQN9 only applies to the activity of using water for irrigation purposes, and does not apply to wastes that are discharged to land under an authorised discharge permit. Such discharges will be subject to the relevant policy provisions and rules set out in Chapter 4. Where there is both the discharge of contaminants to land from an industrial or trade process (excluding animal effluent produced on the property) and the use of water, both occurring as irrigation, then the use of the water will be considered as a discretionary activity.¹⁹ In addition, Policy WQN17(3)(a)(ii) also identifies that when either a principal water supplier or a component irrigation scheme has a resource consent to use water across the scheme area, where that water is used on a property supplied entirely from the scheme, that use is also permitted.

Policy WQN17(3)(b) provides for ~~the situations~~ s not covered in Policy WQN17(3)a) and specifies that these will be discretionary activities subject to meeting a number of provisions. ~~where a greater amount of water is sought than is provided for in Schedule WQN9.~~

Policy WQN17(3)(b)(i) identifies situations where water which is used on a property for irrigation is a discretionary activity. This includes when it is for a land use not included in Schedule WQN9 for example. Also, where there will be the use of water for irrigation together with a discharge of a contaminant onto or into land from an industrial or trade process onto the same land area, or where seasonal irrigation use will not be managed in a way that will meet Policies WQL4, WQL9 and WQL12. Finally, where there is either only private sources of water being used, or both private and from an irrigation scheme, and the seasonal irrigation demand standards in Schedule WQN9 for the intended land use are exceeded.

Policy WQN17(3)(b)(i)(3) specifically sets out the circumstances when exceeding the seasonal irrigation demand standards in Schedule WQN9 for the intended land use on a property will be accepted. Firstly, where it can be demonstrated that demand conditions such as evapotranspiration, soil type or effective summer rainfall, for example, are sufficiently different to those used to determine the relevant seasonal irrigation demand standard in Schedule WQN9, a greater amount of water may be considered reasonable. Secondly, when the application efficiency is lower than the 80% assumed in estimating the seasonal irrigation demand standards and/or a greater seasonal volume is sought and there are mitigating circumstances such as the beneficial effects of energy savings, prevention of wind erosion that would not otherwise be achieved, or recharge to groundwater, surface water or wetlands, then a greater amount of water may also be considered reasonable.

Policy WQN17(3)(b)(ii) identifies the use of water on any group of properties that are supplied by either a principal water supplier or a component irrigation scheme to be a discretionary activity also.

~~The p~~Policy WQN17(3)(b)(ii)(1) provides for considerations such as energy efficiency of the method and other beneficial consequences of the less efficient option. The policy asks that the benefits to the community of any alternative method that does not meet the standard determined from Schedule WQN9 be demonstrated, and it refers back to Objective WQN4. This aims to ensure that water is being used to maximise the communities wellbeing. If water is being taken and used in a relatively inefficient manner by one or more party, this may deprive others of access to the resource. This may be more so in the future with the setting of allocation limits. The justification for allowing this lesser efficiency should be that the community is better off for this approach over the long-term. The "community" will need to be determined in each situation, but it will generally be those who have an

¹⁸ WQN8.51

¹⁹ WQN8.171

interest in the same water resource or who are affected (beneficially or adversely) by the use of the water that is taken from this resource. Where it cannot be demonstrated that the amount of water sought, or being used, is in the long-term community benefit then a lesser amount that can be justified, will be allocated.

Where this is an existing activity, provision may be made for the transition where this requires changes to systems and schemes. If Environment Canterbury does not take this approach then it will be difficult to achieve full benefit of the region's available water resources. There is also a risk that other resources will be targeted, additional adverse environmental effects will be caused, and investment will be made in more expensive methods of water capture and distribution, when this same amount of water may be available through improvements in water use efficiency.

While the emphasis here is on irrigation use efficiency including irrigation application efficiency, Policy WQN17(3)(b)(ii)(2) requires a demonstration of a reasonable level of efficiency in conveyance of water to the component irrigation schemes and/or farms. Where water is conveyed via an open channel, Policy WQN17(10) is relevant.

In addition, Policy WQN17(3)(b)(ii)(3) requires that where the seasonal irrigation use will be not managed in accordance with Policies WQL4, WQL9 and WQ12, it should be demonstrated that the activity will still achieve the water quality outcomes set in Objectives WQL1 and WQL2.

To give full effect to Policy WQN17(3), whether water is to be used for irrigation of an individual property, or for a new or existing principal water supplier or component irrigation scheme for a group of properties, account must be taken of all sources of water being used to irrigate the land area. This must include any other sources of water being used as either a previously permitted activity or for which a resource consent is already held. Where a principal water supplier, or component irrigation scheme has a resource consent to use water, as long as there are no other sources of water being used on the same property, it is a permitted activity to use the scheme water for irrigation.

However, where an additional source of water (for example groundwater) is also to be used for irrigation on the same property, the use of the scheme water for irrigation that had up till now been a permitted activity, will no longer be so and a resource consent will be needed to use both the scheme water and the groundwater on the same property.

It is not intended that the resource consent held by a principal water supplier or component irrigation scheme would need to be varied via a change of conditions in such circumstances, only that the individual wishing to operate with two sources of water obtain a resource consent. In this way, any potential adverse effects can be addressed at the property level. Notwithstanding this, when a new resource consent is required for the use of water for irrigation for an existing irrigation scheme, any assessment of environmental effects will need to take account of any other existing resource consents for irrigation of any of the same land area. This will also help ensure fair and equitable access to the available resource by only allocating water that can be reasonably used.

Policy WQN17(4) reviews consents with excess "paper allocation" to free up water within an allocation block. Many existing consents currently do not have annual volumes as part of their consent conditions. Such consents will need to be reviewed to ensure the annual volume is clearly and unambiguously stated on the consent, and that the volume is based on the actual quantity needed for the intended use for which the consent was granted. Policies WQN14(11) and WQN16(3) set out when such reviews should be instigated, and include the need for the measuring and recording of water use.²⁰ Where the actual use is significantly different to that which was applied for in the consent application and supporting documents and for which the consent was granted, then it may be appropriate to review the consent to include an annual volume that more closely represents that actual use.²¹ It also means that restrictions are more effective and equitable during water shortages. Monitoring of takes will help verify actual use, and when this is taken into consideration with other variable factors such as climatic conditions, this will ~~and~~²² provide opportunity to better allocate the

²⁰ WQN8.63

²¹ WQN8.62

²² WQN8.72

resource. Where consents for the taking and using of water for stockwater, or community or group drinking water supplies are being reviewed, consideration also needs to be given to Policy WQN14(9)(e) to ensure provision is made to reserve water for future stockwater, and community and group drinking water supplies in an allocation block.²³

Policy WQN17(5) and (6) recognise that information on how to monitor takes and make efficiency improvements needs to be developed and disseminated. This can help provide individuals with the tools and the knowledge to improve their water-use efficiency.

Policy WQN17(7) ~~promotes~~ recognises the use of water audits to determine ways of increasing water-use efficiency. Having identified efficiency improvements, it is important that users are encouraged, and at times, required to implement them in order to achieve a high level of efficiency of use of water. Environment Canterbury sees merit in promoting and facilitating these initiatives, and when necessary, requiring the use of such a tool via resource consent conditions.²⁴

Policy WQN17(X) promotes the capture and use of stormwater, and the re-use of water and greywater (as defined in Rule WQL10). This has the potential to increase the efficiency of water use by reducing the demand for water if what is taken and used is re-used, or in the case of stormwater, if it is captured and used. This will help meet Objective WQN5, and will help meet the requirements of the Local Government Act to give consideration to the re-use of greywater during the process of carrying out water and sanitary services assessments for communities.²⁵

Policy WQN17(8), (9) and (10) recognise that significant water savings could be made by moving from inefficient open race systems to piped water supply schemes, or by reducing leakage from community and group drinking water, and stock water supply systems, and from the beds of irrigation canals.²⁶

In the Ashburton River/Hakatere catchment, over five cumecs of water is taken for stockwater when about 0.25 cumecs is required for actual stock drinking purposes. Evidence²⁷ presented to the Rangitata River Water Conservation Order hearings indicated that one cumec of water provides an increased farm gate income of \$4 million (in 2000/2001 dollars). This suggests that if four cumecs of water, taken but not used for stock drinking, was freed up for other irrigation use this would amount to additional farm gate earning of \$16 million per year. Losses can be exacerbated where water conveyance systems are poorly constructed and maintained. However, upgrading is expensive and may need to be done progressively. The adequacy of a system will be reviewed once a flow and allocation regime is included in Schedule WQN1. Necessary improvements will be required on a strategic basis at any water permit review or replacement stage but improvements will be encouraged throughout the duration of a water permit.

Some sections of stockwater races have important conservation values that may justify protection or offsetting habitat creation where a race is closed. For example, there are areas where Canterbury mudfish are established. There are other situations where the leakage from the stockwater races provides groundwater augmentation to the base flow of spring-fed streams and wetlands such as in the area of the Paparua Main Drain which discharges into the Heathcote River. When upgrading occurs it may be appropriate to supply these open race areas with water in order to protect these values, or alternately, create suitable sites for them elsewhere. It may also be possible to consider using alternative localised water sources such as groundwater from a bore to provide for strategic augmentation of stream flows or wetlands to ensure environmental values are protected.²⁸

Methods

The methods used or to be used to implement Policy WQN17 are:

²³ WQN8.96

²⁴ WQN8.81

²⁵ WQN8.26

²⁶ WQN8.93, WQN8.95

²⁷ B Englebrecht, 2001; Statement of evidence of Robert Lester Englebrecht, to the Rangitata River Water Conservation Order hearings.

²⁸ WQN8.90

"Method WQN17(X) Investigations

Environment Canterbury will:

- (a) ~~Environment Canterbury will~~ undertake investigations, and work with grower associations, Federated Farmers, and other agencies, to develop irrigation demand standards for land use activities that are not yet included in Schedule WQN9, with the intention of introducing any new standards into Schedule WQN9 by way of a plan change²⁹.
- (b) undertake investigations, including the use of analyses of water use data carried out in Methods WQN16(a)(b) and WQN16(d) and more comprehensive monitoring of water budget components (including measurement of drainage). This will be used to review the seasonal irrigation demand standards in Schedule WQN9 and the effects of applying these via the allocation regimes for groundwater zones and resource consent conditions, and where relevant, surface water allocation regimes. These investigations should also take into account the effects of any restrictions arising from water management regimes, and test options of carrying unused annual allocation forward into subsequent seasons.

Method WQN17(a) Advocacy

Environment Canterbury will:

- (a) advocate to district councils and private water supply scheme operators to progressively upgrade stockwater or irrigation schemes under their management, and for district councils, in Environment Canterbury's Community Plans, to provide for this for their own supply schemes; and
- (b) advocate to water permit holders in high water demand areas that they form water users groups to encourage water sharing and to foster measures to increase the efficiency of water allocation and use during times of restriction; and
- (c) advocate the use of monitor farms to apply and demonstrate best irrigation practises and so encourage efficiency improvements across the broad irrigation community, taking advantage also of water use metering and recording; and
- (d) advocate to irrigation scheme companies for the development of:
 - (i) protocols to be followed when processing both the sale of irrigation company shares and/or a resource consent application for the use of water on a property supplied from both private surface or groundwater takes and an irrigation scheme to help ensure water allocated for use for irrigation is fairly and equitably shared, and
 - (ii) self-monitoring regimes to demonstrate water use efficiency in terms of both conveyance and on-farm use, to demonstrate compliance with consent conditions and possible improvements over time.

Method WQN17(b) Information and promotion

Environment Canterbury will produce information brochures and, as appropriate, work with territorial authorities, landcare groups, Federated Farmers, growers associations,³⁰ industry, and other agencies to inform them of:

- (a) the conditions and standards and terms that apply to the use of water;
- (b) the availability of water within the allocation blocks;
- (c) methods for monitoring water use, monitoring soil water-holding capacity, and optimising water use;

²⁹ WQN8.144, WQN8.162, WQN8.174

³⁰ WQN8.104

- (d) methods for improving the efficiency of water use, including the capture and use of stormwater, and re-use of water and greywater,³¹
- (e) measures for transferring permits;
- (f) methods to minimise household use of water;
- (g) field days and workshops which are being run with industrial and commercial water users to demonstrate and promote measures to improve the efficient use of water;
- (h) good examples of water efficiency recognised through Resource Management awards; and
- (i) the value of Resource Care and rural community groups to disseminate information on best irrigation management practices.

Method WQN17(c) Economic instruments

Environment Canterbury will encourage district councils and water supply agencies to develop a charging system for water that promotes efficient use of water supplied within community supply schemes.

Method WQN17(d) Water audits

Environment Canterbury, in conjunction with relevant industry groups,³² will:

- (a) Identify areas of water use where auditing guidelines do not exist, and develop appropriate guidelines; and
- (b) promote audits of industrial, irrigation and community domestic and stock water schemes to assist in monitoring of compliance and to identify water losses, leakage, wastage and opportunities for increasing the efficient use of water.

Method WQN17(e) Regional rules

Environment Canterbury will apply regional rules WQN1–WQN3, WQN5–WQN11, WQN13–WQN16, WQN19–WQN23 and WQN25–WQN32 to better achieve the efficient use of water, and/or discourage inefficient use of water and its consequent effects. Water take rules are included here because this is an important opportunity to determine and allocate efficient amounts of water. Refer also to water quality Rule WQL3.

Method WQN17(f) Resource consents

Environment Canterbury, when processing applications for water permits, will consider the efficiency of water use of the proposed activity, and of the measures intended for maintaining efficient use of the water.

Method WQN17(g) Review of permits

- (a) Environment Canterbury will review consent conditions of water permits in accordance with s. 128, when flow and allocation regimes set under Schedules WQN1 or WQN3 become operative, or at such later time as specified in the Schedule, to ensure the permit holders are achieving efficient use of water.
- (b) Environment Canterbury may also review consent conditions in accordance with s. 128,³³ where:
 - (i) an interim groundwater allocation block has been determined in accordance with Schedule WQN4, in order to assign annual volumes based on water use efficiency; and
 - (ii) monitoring has shown that there is a large discrepancy between the allocated amounts and the actual amounts taken.

³¹ WQN8.26

³² WQN8.106

³³ WQN8.109

Where Environment Canterbury has determined to review water permits as above, notice will be served on holders of water permits affected.

Method WQN17(h) Compliance and enforcement

Environment Canterbury will:

- (a) monitor and enforce compliance with conditions of permitted activities and of any resource consent it has granted affecting water quantity. To achieve compliance, Environment Canterbury may apply for enforcement orders, issue abatement or infringement notices, or use any other enforcement mechanisms available to it in Part 12 of the RMA, to enforce the rules of Chapter 5, or a breach of resource consent conditions; and
- (b) maintain a database recording details of any complaints received about activities adversely affecting water quantity, reporting regularly on the response to complaints, including the results of any investigations and/or enforcement action.

Method WQN17(i) Response to complaints and enquiries.

Environment Canterbury will:

- (a) provide a 24-hour hotline to respond to any complaints about water use that is contrary to the rules or water permits;
- (b) maintain a database to record the details of any complaints received about water use;
- (c) undertake enforcement of the provisions of the Proposed NRRP where necessary.

Method WQN17(i) Territorial Authorities and other stock water supply scheme operators

Territorial local authorities and other groups who manage community stockwater supply schemes that involve open races, ~~should~~ will need to³⁴ progressively upgrade these to reduce the inefficiencies associated with these schemes. At the time of resource consent applications for replacement of expiring water permits, applicants should provide a strategic plan that demonstrates how these upgrades are to be staged.

New definitions of terms

“Principal water supplier is a publicly or privately owned supplier that is the sole abstractor of water which is subsequently conveyed and distributed to component irrigation, community and/or stockwater schemes, hydro-electricity generators and/or other users of the water.”

“Component irrigation scheme is either a stand-alone irrigation scheme that abstracts, conveys and distributes water to a group of properties for the purpose of using water for irrigation, or is one of a number of irrigation schemes that are being supplied water by a principal water supplier.”

³⁴ WQN8.112

Rule WQN25 Using of water for irrigation –permitted activity

Activity	Conditions	Restriction of discretion	Cross ref.
<p>1. The using of water for irrigation that is not permitted by rules WQN21 or WQN13, and is not authorised via a resource consent under rules WQN3 or WQN14:</p> <p>(a) on a property supplied entirely from private surface or groundwater takes that only supply that property, <u>where there is no discharge of a contaminant onto or into land from an industrial or trade process (excluding animal effluent produced on the property);</u> or</p> <p>(b) on a property supplied entirely from an irrigation scheme where the <u>either the principal water supplier or the</u> irrigation scheme company <u>itself</u> has a water permit for the use of the water that is supplied by the scheme, <u>where there is no discharge of a contaminant onto or into land from an industrial or trade process (excluding animal effluent produced on the property),</u></p> <p>is a permitted activity provided the activity complies with the <u>relevant</u> conditions in this rule.</p> <p>2. <u>Where any of conditions 1 - 4 are not complied with, the activity is a discretionary activity</u></p> <p>3. Where condition 5 is not complied with, the activity is a non-complying activity under Rule WQN32.</p> <p>4. <u>The using of water for irrigation that is not permitted by rules WQN21, WQN13, and is not authorised via a resource consent under rules WQN3 or WQN14:</u></p> <p>(a) <u>on a property where the intended land use is not included in Schedule WQN9; or</u></p> <p>(b) <u>on a property supplied entirely from private surface or groundwater takes that only supply that property, where there is a discharge of a contaminant onto or into land from an industrial or trade process (excluding animal effluent produced on the property);</u></p> <p>(c) <u>on a property supplied from both private surface or groundwater takes and an irrigation scheme; or</u></p> <p>(d) <u>which is supplied by a principal water supplier to component irrigation schemes which then each supply to groups of properties; or</u></p> <p>(e) <u>on any property or group of properties that are supplied from an irrigation scheme where there is not already a resource consent for the same activity under Activity 4(d) above;</u></p> <p><u>is a discretionary activity.</u></p>	<p>1. For irrigation use provided for in activity 1(a) of this rule, the amount of water allocated for use shall not exceed the annual volume set out in Schedule WQN9 for the intended use.</p> <p>2. The irrigation water application rate shall not exceed that required to return the soil to field capacity.</p> <p>3. There shall be no surface run-off of irrigation water from the property.</p> <p>4. The irrigation of unproductive areas such as impermeable surfaces or roads shall be avoided.</p> <p>5. The use shall not be within the Christchurch Groundwater Recharge Zone (refer Map Volume – Part 1 Planning Maps).</p> <p>For the purposes of Condition 2, in the case of border dyke irrigation that was established prior to the date of notification, field capacity is the soil moisture content after the soil has been fully saturated and allowed to drain freely under gravity for 24 hours.</p>	<p>The discretion of Environment Canterbury will include, but is not limited to the following matters:</p> <ol style="list-style-type: none"> 1. The rate of take, and volume and the rates of use reasonably required for the intended use(s), <u>including any other sources of water being used to irrigate any of the same land area.</u> 2. The effectiveness and efficiency of the methods of conveyance and application of the water. 3. The effects of irrigation on groundwater and downstream water bodies and drains, <u>including any cumulative effects arising from the irrigation of the combination of properties supplied by an irrigation scheme.</u> 4. The effects of any discharge of contaminants onto or into land from an industrial or trade process. 	<p>Policies WQN14 and WQN17.</p>

<p>Resource consent information requirements <u>Any application for resource consent under this rule must meet the information requirements set out in 5.7.2, 5.7.3.1 and 5.7.3.2.</u></p>		
<p>Where rule applies This rule applies everywhere in the Canterbury Region excluding the Coastal Marine Area.</p>		

Rule WQNXX Using of water for supply to component irrigation schemes, hydro-electricity generators, community and stockwater supply and/or other users by a principal water supplier– discretionary activity

<u>Activity</u>	<u>Conditions</u>	<u>Discretion</u>	<u>Cross ref.</u>
<p>1. <u>The using of water for supply to component irrigation schemes, hydro-electricity generators, community and stockwater supply and/or other users that is not permitted by rules WQN2, WQN13, WQN25 or WQN29, or authorised via a resource consent under rules WQN3, WQN14, WQN26, WQN27, WQN28 or WQN30, is a discretionary activity.</u></p>		<p><u>The discretion of Environment Canterbury will include, but is not limited to the following matters:</u></p> <ol style="list-style-type: none"> <u>The number and capacity of component irrigation, community and stockwater supply, and hydro-electricity generation schemes.</u> <u>Potential growth in demand for water.</u> <u>The effectiveness and efficiency of the method of conveyance to the respective component schemes and the appropriateness of this.</u> <u>Provisions for ensuring efficient conveyance and use.</u> <u>Assesst management strategies and water management strategies during times of restriction.</u> <u>Alternative sources of water.</u> 	<p><u>Policies WQN17 and WQN19.</u></p>
<p><u>Resource consent information requirements</u> <u>Any application for resource consent under this rule must meet the information requirements set out in 5.7.2, 5.7.3.1 and 5.7.3.2.</u></p>			
<p><u>Where rule applies</u> <u>This rule applies everywhere in the Canterbury Region excluding the Coastal Marine Area.</u></p>			

Appendix IV An example of how Policy WQN18 could be amended to better provide for the enabling of transfers of water permits in a way that may meet both the submitters requirements (cascading activities), while also meeting the functions of the regional council as required by the RMA (Note: this is not complete)

Policy WQN18 Transfer of the point of take or the use of water.

- (1) To enable the temporary or permanent transfer of the point of take of surface water or of groundwater where the groundwater take is classified as having a direct degree of hydraulic connection in Policy WQN8(1)(a) permit to another location within the same catchment or aquifer, in whole or part, where this is consistent with the provisions of this plan, including being subject to flow, level and allocation regimes, and water metering. In particular:
- (a) to allow as a permitted activity the transfer of the point of take of ~~surface a water permit or of groundwater where the groundwater take is classified as having a direct degree of hydraulic connection in Policy WQN8(1)(a), and~~ where it is within the same allocation block³⁵ within the appropriate zone for each river set out in Schedule WQN8; and
 - (b) to provide as a restricted discretionary activity for the transfer of the point of take where there is to be more than one point as a result of the transfer; and
 - (c) to provide as a discretionary activity for the transfer of the point of take where the new point of take is in a different zone for each river set out in Schedule WQN8 to that which the original take is in.
- (2) To enable the temporary or permanent transfer of the point of take of a water permit to another location within the same groundwater allocation zone, in whole or part , where this is consistent with the provisions of this plan, including being subject to flow, level and allocation regimes, and water metering. In particular:
- (a) to provide as a restricted discretionary activity for the transfer of the point of take of groundwater occurring within the same groundwater allocation zone identified within Schedule WQN3 and Figure WQN11.
 - ~~(i) to otherwise process transfers of the point of take in accordance with RMA s.136(2)(b).~~
- (3) To enable the temporary or permanent transfer of the use of water to another location ~~or use~~. In particular:
- (a) to allow as a permitted activity the transfer of water ~~to irrigation use, or the transfer of water~~ for irrigation use to another location where the amount to be used is within the limits set out in Schedule WQN9, and the effects of the use of water on water quality is to be managed in accordance with Policies WQL4, WQL9 and WQL12³⁶; and
 - (b) to provide as a restricted discretionary activity for the transfer of water for irrigation use to a location on a property that is already

³⁵ WQN8.116

³⁶ WQN8.115, WQN8.117, WQN8.124

being supplied water for irrigation from another alternative source.

~~(i) to otherwise process transfers of use in accordance with RMA s.136(2)(b).~~

Notwithstanding (a) and (b) above, where the transfer of use is from a take within a catchment listed in Schedule WQN1, and the existing use is considered inefficient under Policy WQN17,³⁷ the amount able to be transferred shall be reduced by the proportion specified in Schedule WQN1 for that catchment and that portion shall be surrendered.

~~(4) Notwithstanding (1) and (2) above, where the transfer of use is from a take within a catchment listed in Schedule WQN1, and the existing use is considered inefficient under Policy WQN17,³⁸ the amount able to be transferred shall be reduced by the proportion specified in Schedule WQN1 for that catchment and that portion shall be surrendered.~~

Method WQN18(a) Investigations

Environment Canterbury will undertake investigations to identify water bodies or parts of water bodies within which transfer of permits may occur and include them in Schedule WQN5. This work will be carried out in conjunction with the Method WQN5(a) Investigations which will be undertaken when reviewing existing minimum flows set via water permits under Policy WQN5.

³⁷ WQN8.127

³⁸ WQN8.127

Appendix V: The cascading level of activities that could be provided for by amending Policy WQN18 and examples of the types of associated conditions and/or matters for control or discretion

Activity	Activity Description	Conditions	Matters for Control or Discretion
Site to site transfers of the point of take			
To provide for the temporary or permanent site to site transfer of a water permit for the taking of surface water and groundwater where the groundwater take is classified as having a direct degree of hydraulic connection in Policy WQN8(1)(a) in whole or in part.			
Permitted	Where the two new permits will be exercised concurrently where the sum of the combined maximum instantaneous rate of take of both is less than or equal to the original consented maximum instantaneous rate of take.	<ul style="list-style-type: none"> • Both point of take to be transferred and new point of take are within the same the same allocation block within the appropriate zone for each river set out in Schedule WQN8. • The sum of any new quantities authorised as a result of the transfer does not exceed the original amount authorised to be taken. • The transfer must be downstream of the original take. • Where the water that is to be transferred is to be used for irrigation purposes, the amount transferred shall be within the annual irrigation demand standards set out in Schedule WQN9. • The transfer must be registered with Environment Canterbury. • The permit shall retain the same conditions (excluding location) and priority for water restrictions as the original permit. • Monitoring of the water take shall be carried out as set out in Schedule WQN13. 	
Restricted Discretionary	Where there is to be more than one point of take as a result of the transfer.	Same or similar to those for a permitted activity (see above).	<ul style="list-style-type: none"> • The rate and timing of abstraction - the volume of water allocated, including daily and seasonal requirements (and its reasonableness given the intended end use) and the duration and timing of peak daily take rate. • The impact of the transfer of the point of take on river flows and the reliability of supply of existing users. • The location of the new point of take and the effect on the immediate vicinity and the need for and provision of any additional restriction to prevent that flow from reducing to zero. • The method of preventing fish from entering the water intake. • The effect on water quality • The effect on any wetland. • The effect on values of significance to Ngai Tahu. • Location and method of water-measuring and recording devices(s) to be used.
Discretionary	Where the new point of take will be in a different zone included in Schedule WQN8 to that which the original take is in.	<ul style="list-style-type: none"> • The sum of any new quantities authorised as a result of the transfer does not exceed the original amount authorised to be taken. • The transfer must be registered with Environment Canterbury. • Monitoring of the water take shall be carried out as set out in Schedule WQN13. 	<p>In addition to those matter listed above:</p> <ul style="list-style-type: none"> • The need or the appropriateness for the transfer. • Other water supply options for the water users in the affected area. • The effect of the transfer on the allocation regime that applies to the area of surface water body where the point of take will now occur. • The effect of the transfer on the exercise of any other consent to take, use, dam or divert water. • Whether water has been reserved for specific purposes in the area. • Any relevant conditions on the original permit.
To provide for the temporary or permanent site to site transfer of a water permit for the taking of groundwater in whole or in part			
Restricted discretionary	Where the new point of take is within the same groundwater allocation zone identified within Schedule WQN3 and Figure WQN11.	<ul style="list-style-type: none"> • The sum of any new quantities authorised as a result of the transfer does not exceed the original amount authorised to be taken. • The effect of pumping on any neighbouring bores shall be such that the provisions set out in Policy WQN20 are met. • Where the water that is to be transferred is to be used for irrigation purposes, the amount transferred shall be within the annual irrigation demand standards set out in Schedule WQN9. • The transfer must be registered with Environment Canterbury. • The permit shall retain the same conditions (excluding location) and priority for water restrictions as the original permit. • The transfer must be registered with Environment Canterbury. • Monitoring of the water take shall be carried out as set out in Schedule WQN13. 	<ul style="list-style-type: none"> • The rate and timing of abstraction - the volume of water allocated, including daily and seasonal requirements (and its reasonableness given the intended end use) and the duration and timing of peak daily take rate. • The impact of the transfer of the point of take on any river flows and the reliability of supply of existing surface water abstractors. • The effect on any wetland. • The effect on values of significance to Ngai Tahu. • The effect on water quality • Location and method of water-measuring and recording devices(s) to be used. • The need or the appropriateness for the transfer. • Other water supply options for the water users in the affected area. • The effect of the transfer on the allocation regime that applies to any surface water body that may be impacted by the abstraction. • Whether water has been reserved for specific purposes in the area. • Any relevant conditions on the original permit.
Site to site transfers of the use of water			
To provide for the temporary or permanent site to site transfer of a water permit for the use of water in whole or in part			
Permitted	Where the transfer of water for irrigation use is to another location.	<ul style="list-style-type: none"> • The amount transferred shall be within the seasonal irrigation demand standards set out in Schedule WQN9. • The irrigation water application rate shall not exceed that required to return the soil to field capacity. • There shall be no surface run-off of irrigation water from the property. • The irrigation of unproductive areas such as impermeable surfaces or roads shall be avoided. • The use shall not be within the Christchurch Groundwater Recharge Zone (refer Map Volume – Part 1 Planning Maps). 	
Restricted discretionary	Where the transfer of water for irrigation use is to another location on a property that is already being supplied water for irrigation from another alternative source.	<ul style="list-style-type: none"> • The irrigation water application rate shall not exceed that required to return the soil to field capacity. • There shall be no surface run-off of irrigation water from the property. • The irrigation of unproductive areas such as impermeable surfaces or roads shall be avoided. • The use shall not be within the Christchurch Groundwater Recharge Zone (refer Map Volume – Part 1 Planning Maps). 	<ul style="list-style-type: none"> • The rate of take, and volume and the rates of use reasonably required for the intended use(s), including when considered in combination with any water permitted to be used or with any other existing resource consents for the use of water for irrigation. • The effect on water quality • The effectiveness and efficiency of the methods of conveyance and application of the water. • The effects of irrigation on groundwater and downstream water bodies and drains, including any cumulative effects arising from the irrigation of the combination of properties supplied by an irrigation scheme. • The effects of any discharge of contaminants onto or into land from an industrial or trade process.