IN THE MATTER OF The Resource Management Act 1991

AND

IN THE MATTER OF Review of resource consent conditions for groundwater takes within the Rakaia Selwyn Groundwater Allocation Zone.

Response to Matters Raised and Consent Conditions requested at the Hearing.

by

Jacqui Todd

Date of Hearing: 2 June – 13 August 2009

Report of Jacqui Todd

1. My name is Jacqui Todd. My experience and qualifications are described in my original Section 42A Report (15 May 2009). This report is supplementary to the following reports and memorandums which I have presented at this hearing:

   - Overview Section 42A Report (15 May 2009).
   - Addendum to the Overview Section 42A Report (21 May 2009).
   - Memorandum – Clarification of Matters in relation to the Overview Section 42A Report (8 June 2009).
   - Memorandum – Additional Information sought by the Hearing Commissioners (13 August 2009).

2. The hearing for the Rakaia Selwyn groundwater consent reviews began on 2 June 2009 and was adjourned on 13 August 2009. At that time all consent holders who were heard at the hearing were given until 28 August 2009 to provide final alternative consent condition wording for their consent/s to Environment Canterbury (ECan). The purpose of this report is to provide a response to the alternative conditions proposed by consent holders, and to clarify any matters raised during the hearing. The conclusions reached or recommendations made in this report are not binding on the Commissioners.

3. This report consists of three parts.

   - Part 1 provides clarification about matters raised at the hearing.
   - Part 2 provides a summary of the main conditions proposed during the hearing by myself, Mr Don Rule (Director of Resource Planning and Consents at ECan) and consent holders and their representatives.
   - Part 3 provides a response to the alternative consent conditions proposed by each of the consent holders who were heard at the hearing, listed in the order that they were presented at the hearing. Part 3 of this report was prepared by ECan Consents Investigating Officers Melanie Hollis, Geoff Deovoll, Laura Hull and Jason Froggatt.

PART 1

CLARIFICATION OF MATTERS RAISED AT THE HEARING

Introduction

4. I will provide comment on the following matters which have been raised at the hearing:

   - Legal matters – the review provisions and case law on viability of consents in relation to consent reviews.
   - Annual volume limits on consents.
   - Minimum flow restrictions.
   - Surface water management in the Rakaia Selwyn Groundwater Allocation Zone (RSGAZ).

5. This report is limited to clarifying matters raised at the hearing. It will not raise new information or repeat matters which have been discussed in my earlier reports and memorandums

Legal Matters

Review provisions under the RMA

6. Sections 128 to 133 of the RMA outline the provisions for the review of consent conditions and were discussed in my Overview Section 42A Report. Mr Simon Johnson discussed these provisions in his evidence presented on behalf of the Irricon group of consent holders. He outlined the provisions of section 128 and noted that there are number of statutory pathways for a consent authority seeking to change the conditions of existing consents. He discusses in detail section 128(1)(a)(i) which allows a consent authority to initiate a consent condition review to deal with any adverse effect on the environment arising from the exercise of the consent. He considers that the evidential burden for the consent authority to initiate reviews under section 128(1)(a)(i) is higher than for section 128(1)(b) where a review can be initiated to enable certain provisions in an operative regional plan to be complied with. He also states that it may not be appropriate at this time to add conditions to the consents under review, as these will '*most probably be changed again'* under a section 128(1)(b) review when the PNRRP becomes operative. He therefore considers that the condition proposed by ECan Officers, detailed in paragraph 63 of my Overview Section 42A Report, is unnecessary in relation to providing an opportunity for consent holders to seek an alternative annual volume limit at a later date, when the PNRRP becomes operative.

7. In response to Mr Johnson's evidence, I agree with his comments about the provisions of section 128 of the RMA as they relate to the ability to review consent conditions, and note that paragraphs 5 to 56 of his evidence largely reiterate the fact that these consent condition reviews were initiated under section 128 (1)(a)(i) of the RMA in order to deal with adverse effects on lowland stream flows and maintain a reliability of supply for existing water permit holders. As outlined in my Section 42A Overview Report, I consider that there is sufficient evidence to demonstrate that the relevant circumstances apply for a section 128(1)(a)(i) review, and that the evidential burden that Mr Johnson refers to in paragraphs 19 and 62 of his evidence has been met. While the evidential burden may be higher than for a review triggered by the provisions of an operative plan, the decision was made by ECan to initiate reviews prior to the PNRRP becoming operative as it was considered that the adverse effects need to be addressed as soon as possible, and that the effects may worsen if the reviews are delayed until the PNRRP becomes operative.

8. In relation to Mr Johnson's statement in paragraph 64 of his evidence regarding the annual volume condition recommended by ECan Officers, I note that this clause was

proposed for the benefit of consent holders. It gives them the flexibility to apply for a new annual volume in accordance with an operative NRRP method, should the method provide for a higher annual volume (as it is optional for the consent holder to invoke this provision, it is assumed that they will only apply if the operative methodology provides for a higher annual volume). I consider that this an easier and more cost effective process for consent holders to seek a new annual volume, rather than going through the consent review process that Mr Johnson refers to. Therefore I recommend that the provisions of this condition remain, giving consent holders the ability to apply for an alternative annual volume without having to go through another consent review process.

9. Ms Barnett also discussed the grounds for review in her evidence presented on behalf of the Ellesmere Irrigation Society Inc (3 July). She discussed Policy WQN8(3) of the PNRRP which provides for the review of water permits to add minimum flow conditions when the surface water body has been added to Schedule WQN1 or WQN3. As the surface waterbodies in the RSGAZ have not yet been added to these schedules, she considers that the consent reviews are contrary to this policy. I disagree with this interpretation. While Policy WQN8 does provide for consent reviews once a waterbody have been added to the relevant schedule, it does not preclude the review of resource consents in other situations, in accordance with other provisions of the RMA. This includes the ability to review these resource consents under section 128(1)(a)(i) of the RMA.

10. In addition, I note that Policy WQN14(8) of the PNRRP provides for the review of groundwater permits in order to assign minimum flow conditions, and there is no requirement under this policy to wait until the relevant waterway is included in Schedule WQN1 or WQN3. However, overall, irrespective of the PNRRP policies I note that section 128(1)(a)(i) of the RMA is the relevant legislation to consider in this case, as it provides for the review of resource consents at any time specified for that purpose in the consent *"to deal with any adverse effect on the environment which may arise from the exercise of the consent…."*. As has been stated earlier, the decision was made by ECan to initiate the reviews prior to the PNRRP becoming operative as it was considered necessary to deal with the adverse effects as soon as possible.

Case law and viability of consents

11. A number of consent holders and their representatives have discussed the review provisions of the RMA in relation to the viability of consents. In particular, this is discussed in detail in the evidence of Mr Ben Williams (presented on 8 June 2009), where he summarises case law which suggests that the power to change consent conditions is wide and flexible, but a section 128(1)(a)(i) review does not allow a consent to be terminated, or have the effect of preventing the consent from being exercised. Consent holders have suggested that the conditions recommended by ECan will make the consents unviable, although limited cost information was provided to consider this issue in detail.

12. I agree with Mr Williams and other consent holders who have stated that these reviews should not render the consents inoperative, and that a matter to consider is whether the consents will continue to be viable after the condition changes[1]. Based on my experience advising ECan in this review process, it is my view that there is no intention by ECan Officers to make the consents unviable as a result of the condition changes. In relation to the annual volume limits recommended by ECan Officers, the intention is to limit the amount of water that can be taken to what is reasonable and efficient for the

[1] Section 131 (a) of the RMA.

consented use of water. They are not seeking to reduce the amount of water that can be taken to the extent that the consent is no longer viable.

13. In relation to the water metering conditions recommended by ECan Officers, I do not consider that this condition will affect the viability of consents. While they impose additional costs on consent holders, I consider that they are necessary costs because the accurate measuring and recording of water use is essential for management of the groundwater resource. I do not consider that the water metering costs are significant enough to make the consents unviable.

14. Of particular concern to some consent holders is the impact that minimum flow conditions would have on consent holders. I do not consider that the addition of a minimum flow condition will make a water permit inoperable, as it does not take away the ability for the permit to be exercised, but does restrict the consent holder from taking water from certain wells at certain times. Therefore the consent holder may need to take water from deeper wells when minimum flow restrictions are in place to be able to continue to exercise the consent. This will impose additional costs on the consent holder (such as the costs of installing deeper wells, obtaining the necessary resource consents, and pumping from deeper wells). It is difficult to determine, with the information presented by consent holders, how significant these costs will be, and therefore how much impact they will have on the viability of the consent. Minimum flow conditions are only recommended by ECan Officers where it is predicted that the taking of water from a shallow well[2] is likely to have a direct depletion effect on the stream flows. One of the main purposes of these reviews is to help restore the flows in lowland streams in the RSGAZ. Therefore the issue of viability in relation to the minimum flow conditions does need to be considered. I consider that the costs that minimum flow restrictions will impose on consent holders (spread across the remaining duration of the consent) should be weighed against the benefits of reducing the direct depletion effects on the flows in lowland streams.

15. In summary, I agree with consent holders that the consent condition reviews should not make the consents unviable. Therefore I consider that annual volume limits should be placed on each consent which still provide for reasonable and efficient use of water, without making the consent unviable. I do not consider that water metering conditions will affect the viability of consents. Similarly I do not consider that minimum flow conditions will make consents inoperable, but I do acknowledge that they may impose additional financial costs on consent holders if they have to install and use deeper wells and apply for a change to the consent conditions to be able to continue to exercise their consents.

16. Mr Williams also discusses priority in relation to the right of consent holders in the RSGAZ to take water. Given that ECan Officers are not seeking to reduce the amount of water that can be taken by consent holders below what is reasonable and efficient, I do not consider that priority in terms of water allocation is a matter that needs to be considered for these consent condition reviews.

Annual Volume Limits

Alternative methodologies for calculating annual volumes

17. A large number of consent holders have expressed concern that the method used by ECan Officers to calculate annual volume limits[3] does not provide sufficient water for

[2] For the RSGAZ and these reviews, a well is classified as "shallow" if it is less than 30 metres deep.

[3] Schedule WQN9v3 as outlined in my Overview Section 42A report (15 May 2009)

the required use. Specific requests for alternative annual volumes for each consent are discussed in Part 3 of this report. An alternative method for calculating annual water requirements, which has been widely used by consent holders, is the Irricalc Model devised by Aqualinc Research Ltd. Evidence has been presented on this method by a number of consent holders and their representatives.

18. I have not commented on the differences between the Schedule WQN9v3 and Irricalc Model, as this is beyond my area of expertise as a planner and outside the scope of my role in this process. I understand that ECan Planning Officers are finalising a report back in response to evidence given on this issue to the Hearing Commissioners for the PNRRP. They have advised me that they did not recommend that the Irricalc Model be incorporated into the PNRRP, as they had not been provided with sufficient information to demonstrate that it meets the requirements of the relevant objectives and policies for water allocation.

Annual Volume limits and Objectives and Policies in the PNRRP

19. In their evidence a number of consent holders and their representatives have discussed Policies WQN14 and WQN17 of the PNRRP (Chapter 5), and their interpretation of how these policies apply to annual volume limits on consents. The focus of much of this evidence was on how the policies apply to existing users of the groundwater resource, with the general view that some of the provisions of Policies WQN14 and WQN17 do not apply to existing consents which are under review.

20. These policies were discussed in my Overview Section 42A Report, but will be discussed again in relation to how the policies apply to existing groundwater consent holders. My discussion below (and in my Overview Section 42A Report) is of the policies as they are set out in Variation 4 of the PNRRP, given that this variation is now at the same procedural stage as Variation 1 (which is the original version of Chapter 5).

21. Policies WQN14 and WQN17 cross-reference to each other, and the two policies should be considered together when interpreting how they apply to existing consent holders. I note that some consent holders in their evidence have considered Policies WQN14 and WQN17 in isolation (particularly Policy WQN17(4)), and have concluded that some aspects of the policies do not apply to existing groundwater users. I do not agree with that interpretation, as outlined below.

22. Policy WQN14 sets out allocation regimes for surface and groundwater bodies, including provisions which relate to the setting of annual volume limits on water permits. For groundwater bodies (also referred to as zones), the policy refers to water quantity Schedules WQN3 and WQN4. Under this framework, when a final allocation regime has been established for a groundwater body, it is included in Schedule WQN3. When an allocation regime has been proposed for a groundwater body, it is included in Schedule WQN4. The proposed allocation limit for the RSGAZ in Schedule WQN4 is 215 million m^3/year.

23. Policy WQN14(7) sets out guidelines for establishing an allocation block for a waterbody to be included in Schedule WQN3. The RSGAZ does not have an allocation block established in Schedule WQN3, but I do consider that it is worth acknowledging the parameters under which it is expected an allocation block will be set for the RSGAZ in the future. Under WQN14(7), unless an alternative catchment specific approach is more appropriate, the size of the A allocation block is to be set so that all takes from the block have the level of reliability that will provide on average the full seasonal allocation in eight years out of ten. This has been incorporated into the Schedule WQN9 methodology for calculating annual water requirements.

24. No distinction is made between new and existing groundwater users in this policy, or in the explanation to this policy, and it is my interpretation that once an allocation block is set in Schedule WQN3, the PNRRP intends to provide the same reliability of supply to all groundwater users within the A allocation block, existing and new. While this policy is related to the setting of allocation blocks for the waterbody, it does refer to the expected reliability of supply for existing takes, and therefore I do consider that it is relevant to individual consents.

25. Policy WQN17 relates to reasonable and efficient use of water and was discussed more fully in my Section 42A Overview Report. Policy WQN17(2) sets out a reasonable use test for water permit applications, both for new and replacement takes. The reasonable use test requires consideration of on-site physical factors, and assumes that there is an irrigation efficiency of at least 80%.

26. Policy WQN17(4) states that for existing users, the water allocation specified on water permits should reflect the actual quantity needed to undertake the land use activity. This policy also states that where necessary existing water permits should be reviewed when an allocation regime becomes operative under Schedule WQN3 or where monitoring indicates that a consent has been allocated more water than is used.

27. Policy WQN14(8) and (11) provide for the review of consents within waterbodies included in Schedules WQN4 and Schedule WQN3 respectively. Policy WQN14(8) provides for the review of the conditions of groundwater consents included in Schedule WQN4 where the sum of the effective annual volume allocated exceeds the allocation block limit. Policy WQN14(8) states that ECan may review consent conditions in order to assign annual volumes in accordance with Policy WQN17.

28. In the explanation to Policy WQN14(8), the impact on reliability of supply for existing groundwater users is discussed. The explanation states that it is not intended to restrict groundwater takes "…..*unless the zone is fully allocated and there is evidence of actual or potential adverse environmental effects arising from the cumulative impacts of abstractions from the zone*." It is acknowledged in the explanation that until the zone is restricted and consent reviews are initiated, it will effectively mean that groundwater users will have 100% reliability of supply, limited only by the pumping capacity of the bore. However, in my view, this only applies until the allocation limit is exceeded. Once the allocation limit is exceeded, my interpretation of Policy WQN14 is that it requires limits on the amount of groundwater that can be abstracted by all consent holders each year. I do not consider that Policy WQN14 provides for a different reliability of supply for existing groundwater users.

29. Policy WQN14(11) provides for the review of water permits in a water body included in Schedule WQN3 in order to review the abstraction rate required for reasonable use and to assign annual volume limits and minimum flow conditions where appropriate.

30. The review provisions of Policy WQN14(8) and WQN14(11) cross-reference back to Policy WQN17. That is, together the policies provide for the review of consents in groundwater zones to implement the provisions of Policy WQN17. Therefore, it is my view that Policy WQN17 provides for existing groundwater users to take sufficient water for the required use, but it does not exempt them from the reasonable use test provisions of the policy when seeking replacement consents, or having their consent conditions reviewed by ECan.

31. It is acknowledged that Policies WQN10 and WQN14 give some priority to A water permits which existed prior to 1 January 2002. Policy WQN10 states that activities authorised prior to January 2002 shall retain priority for the full period of the permit and may be replaced with the same priority, subject to meeting the requirements of the plan, including the reasonable use test and verification of actual water use. Policy

WQN14(11)(a) and (b) provides for a similar priority to existing water permits if the allocation block is still over-allocated after the review of water permits to review abstraction rates, assign annual volumes, apply minimum flow conditions, and reduce the amount of water allocated where the actual and/or reasonable use is determined to be less than the amount allocated to the consent.

32. Therefore Policies WQN10 and WQN11 do provide some priority to existing water permit holders (existing prior to 1 January 2002) but this is in situations where ECan is seeking to reduce over-allocation in a zone (i.e. seeking further reductions after the reasonable use provisions of Policy WQN17 have been applied). It does not in my view exempt these existing permit holders from the reasonable use provisions of Policy WQN17.

33. In summary, Policies WQN14 and WQN17 of the PNRRP set out guidelines for the allocation of groundwater in Canterbury. They encourage the allocation of an annual volume of water to each consent that is reasonable and efficient for the consented water use. The provisions apply to both new and existing groundwater users, and therefore I consider that the following provisions are relevant when deciding on annual volume limits for existing groundwater permits through the review process:

- A level of reliability for all takes that will provide on average the full seasonal allocation in eight years out of ten; and

- An assumption of at least 80% irrigation application efficiency.

34. Having concluded that the above provisions of the policies are intended to apply to consents being reviewed, I do acknowledge that the NRRP is not yet operative, and therefore these objectives and policies can only be given limited weight at this stage of the process. The aspects of the policies discussed above, such as 80% efficiency requirements and reliability of supply are subject to submissions, and therefore may change through the planning process. The annual volume conditions recommended by ECan Officers provide flexibility for the annual volume limits to change in accordance with the provisions of an NRRP.

Minimum flow restrictions

35. Minimum flow conditions are recommended by ECan Officers for consents where it is predicted by ECan Staff that the taking of water from a shallow well will cause a stream depletion effect on a waterway of greater than 5 litres per second (L/s). This is explained more fully in my Overview Section 42A Report.

36. Evidence was presented on behalf of the Ellesmere Irrigation Society Inc (2 and 3 July 2009) which included a discussion on Policy WQN19(2) of the PNRRP. Policy WQN19 deals with water restrictions during times of low water availability and WQN19(2) states that for groundwater takes that are to be subject to minimum flow restrictions (in accordance with Policy WQN8), the taking of water is to be restricted, as for surface water takes, except that requirements to cease or reduce pumping only apply above the rate of take that is calculated to be having a stream depletion effect above the cut-off (which for waterways in the RSGAZ is 5 L/s for takes with a moderate degree of hydraulic connection). That is, rather than ceasing abstraction completely when minimum flow levels are reached, consent holders with takes classified as having a moderate degree of hydraulic connection to the waterway would only be required to

reduce pumping to a rate that is predicted to have a stream depletion effect of less than 5 L/s[4].

37. The minimum flow conditions currently recommended by ECan Officers require the consent holder to cease abstraction completely when the minimum flow level is reached. This is because the minimum flow conditions recommended by ECan Officers have not been taken from the PNRRP, and are based on historical minimum flow conditions that have been applied by ECan Consents Staff in the past. This was at the request of consent holders early on in this review process, who requested that the 'status quo' remain for minimum flow conditions until the proposed new minimum flows in the PNRRP have been through the plan hearing process and are operative. As part of retaining this status quo, and applying the existing minimum flow conditions, ECan Officers retained the clause of the existing conditions which required full cessation of pumping when minimum flow levels are reached.

38. Having considered the evidence presented at the hearing, I agree with the Ellesmere Irrigation Society Inc representatives that this approach is inconsistent with Policy WQN19(2) for takes with a moderate degree of hydraulic connection to the waterway. Therefore I agree that it may be more reasonable to apply Policy WQN19(2) for these takes. Should the Commissioners decide to apply minimum flow conditions to any of the consents under review and incorporate the approach outlined in Policy WQN19(2), I have recommended the condition wording below. If the Commissioners request it, I understand that ECan Groundwater Scientists could provide reasonably quickly the recommended rate of abstraction for each consent to reduce to, in order to have a predicted stream depletion effect of less than 5 L/s. The proposed new condition wording is as follows:

"The taking of water in terms of this permit from bore [bore no] shall reduce to [rate in L/s] whenever the flow in [waterway], as estimated by the Canterbury Regional Council at [min flow site] (at or about [grid ref]) falls below [minimum flow] litres per second."

39. My Overview Section 42A Report (15 May 2009) includes details about the stream depletion assessments that were carried out by ECan Staff to determine which consents would be recommended for minimum flow conditions. Evidence was presented at the hearing by consent holders suggesting that the use of the Jenkins Method to assess stream depletion is too conservative as it overestimates stream depletion due to the assumption of a perfect connection of the aquifer to the stream (i.e., no streambed clogging). This issue was discussed in my Memorandum – Additional Information sought by the Hearing Commissioners (13 August 2009) where I have relied on information from Mr Matt Smith, ECan's Groundwater Hydrologist. As noted in that memorandum, Mr Smith discussed the parameters used in the assessments, and reasons why he considers that the assessments are not overly conservative, and may in fact have only captured the takes likely to be having a more significant depletion effect on the streams (i.e. not all the takes having a depletion effect have been captured).

40. In addition to the information presented in that memorandum, Mr Smith has provided me with further comments about the stream depletion assessments, in response to information presented at the hearing. In relation to the use of Transmissivity (T) estimates, he notes that if a flow boundary is present but not identified in an aquifer test, or considered when evaluating well performance, the resulting estimated T value

[4] As there is no cut-off for takes with a high degree of hydraulic connection, it is noted that this policy does not apply to these takes, which would still be required to cease taking when the minimum flow level is reached.

will increase. This is one reason why T values have been limited to 10,000 m^2/day. However he notes that the presence of a flow boundary indicates a high degree of interaction between surface water and groundwater.

41. As discussed in my Overview Section 42A Report (15 May 2009), an alternative method for assessing stream depletion is the Hunt Method (1999), which requires information on streambed conductance. Consent holders stated at the hearing that the method and parameters used overestimate the stream depletion effects. However, Mr Smith states that when the Jenkins and Hunt methods are compared, a Jenkins estimate with a storativity of 0.1 (as used in these reviews) may in fact be underestimating potential effects. Aquifer test analyses on shallow wells in the RSGAZ give a maximum storativity value of 0.05 and an arithmetic mean value of 0.008. If this average storativity value is used with the Hunt method, the lambda value required for this model to be less conservative than the Jenkins model is very low. Therefore Mr Smith concludes that the Jenkins stream depletion estimates, as calculated by the ECan staff, are not necessarily any more conservative than those that the Hunt method would return using inputs from aquifer tests and measured streambed conductance.

42. In their evidence EISI representatives contend that it is large groundwater takes further up the Canterbury Plains that are having an adverse effect on stream flows. While these takes are considered to be contributing to the cumulative effect on groundwater levels and consequently stream flows, this will be in addition to the direct stream depletion effects that shallow takes are having on stream flows in the RSGAZ. The proposed minimum flow conditions aim to address these direct depletion effects while the other proposed conditions aim to address the cumulative effects of all takes. Therefore, it is my view, and Mr Smith's view, that the shallow groundwater takes likely to be having direct stream depletion effects should be subject to minimum flow restrictions irrespective of the allocation in the RSGAZ and the other conditions imposed on the consents.

Surface Water Management

43. During the hearing I was asked by the Commissioners to provide information about ECan's management of surface waterways in Canterbury. I was unable to obtain all of the requested information before the hearing was adjourned, and it is therefore provided in this report, as Appendix 1.1. The information in Appendix 1.1 is taken from ECan's consents database and includes:

- A list of all consented surface water takes in the RSGAZ, with consented rates of take (in L/s) from the waterway; and

- A list of groundwater takes in the RSGAZ where it has been recorded in the database that a stream depletion assessment has been carried out. For some groundwater takes, the information includes the name of the waterbody considered in the assessment, the predicted depletion rate, and level of hydraulic connection.

44. As discussed at the hearing, at this time ECan Staff do not guarantee the reliability of this information in relation to determining surface water allocations, as much of this data is from old consent records and it has yet to be verified in terms of stream depletion assessments.

Groundwater Consents in RSGAZ

WellNo	DEPTH	TOP_SCREEN_1	RecordNo	StreamName	StreamDist	DepletionRate	Connection	DepletionCalc	MinFlowSet	Q7	Q150
L36/0064	89		CRC054503	Waireka River	0	0	None	0	FALSE	71	37.19
M37/0082	12.8	9.9	CRC010778	Stream	619	20.5	moderate	150	TRUE	30	22.45
M37/0029	15.8		CRC011869.2	Tent Burn	0	0	None	0	FALSE	50	33.89
M37/0485	14.72	11.72	CRC010636.2	M37/0427	753	17.1	Moderate	150	FALSE	25	11.91
L36/1986	90		CRC054478	Selwyn River	0	0	None	0	FALSE		
L36/2170	42		CRC010038.1	Selwyn River	0	0	None	0	FALSE	17	15.89
L36/2171	42	39	CRC010038.1	Selwyn River	0	0	None	0	FALSE	17	15.89
L35/0204	127.4	121.3	CRC010228.2	Selwyn River	0	0	None	0	FALSE	20	20
L36/0732	8.2		CRC010831	Hawkins fork	475	21.6	moderate	150	TRUE	37.45	26.62
M37/0080	9	6.4	CRC011175	Creek	493	1.8	Low	150	TRUE	7.86	1.37
M37/0301	11.7		CRC940496.3	Parkin Drain	0	0	None	0	FALSE	6	4.35
L36/0490	7.5		CRC002100	Mill Creek	450	8.2	moderate	150	TRUE	17.25	10.35
L36/1848	12		CRC042040	Main stem	1100	6.7	Low	150	FALSE	30	22.47
M36/4350	12	7	CRC060672	Leeston Drain	340	4.1	moderate	150	FALSE	4.38	2.08
M36/4351	12	7	CRC060672	Leeston Drain	300	4.1	moderate	150	FALSE	4.38	2.08
L36/0094	39	29.9	CRC052034.1	Water Race	0	0	None	0	FALSE	7.51	7.51
L36/0308	50	41.8	CRC052034.1	Water Race	0	0	None	0	FALSE	11.01	11.01
L36/0389	46.25	39.7	CRC052034.1	Water Race	0	0	None	0	FALSE	6.48	6.48
L36/1756	65	54	CRC052034.1	Water Race	0	0	None	0	FALSE	17.27	17.27
L36/1941	65	54	CRC052034.1	Water Race	0	0	None	0	FALSE	25.9	25.9
L36/2084	167	120	CRC052034.1	Water Race	0	0	None	0	FALSE	11.66	11.66
M36/0491	10.1	5.8	CRC001221	Irwell River	0	4.9		30	FALSE	16.07	15.85
M36/1858	11.9	5.8	CRC991889.1	Irwell River	150	30.2	moderate	150	FALSE	32	24.38
M36/3250	10.6		CRC950437.4	Irwell River	170	0	None	7	FALSE	5	4.49
L36/1238	60	53.8	CRC981315.3	race	0	0	None	0	FALSE		
L36/2203	24.3	12	CRC960105.2	Race	0	0	None	0	FALSE	8.25	7.86
M36/2215	11.9	8.9	CRC001291	Harts Creek	430	21.9	moderate	150	TRUE	24.92	14.95
M36/0691	15.8		CRC990401.1	Harts Creek	170	17.1	Moderate	150	FALSE	23.96	16.84
M36/5332	11	9	CRC950440.4	Harts Creek	1605	3.6	Moderate	150	FALSE	5	4.73
L36/0392	11.5		CRC001136	Drain (south)	0	5.2	Moderate	0	TRUE	10.6	7.28
L36/0392	11.5		CRC001136	Drain (north)	0	5.9	Moderate	0	TRUE	10.6	7.28

M36/3289	12.2		CRC971914	Hanmer Drain	0	0	None	0	FALSE		
M36/0425	12		CRC010421.2	Doyleston Drain	0	22		30	TRUE	7.5	5.27
L37/0929	13.4		CRC020402.3	Cryers Creek	0	0	None	0	FALSE	5.42	3.15
M36/0361	18.3		CRC011914	Brookside Road	331	10	moderate	150	TRUE	12	10.06
M36/0334	12.2	7.4	CRC011914	Burnham Road	1089	8	moderate	150	TRUE	12	10.06
M36/1829	9.2		CRC001255	Boggy Creek	140	26.4	moderate	150	TRUE	10	10
M36/1876	17.1	5.1	CRC062610	Birrlings Brook	410	11.1	Moderate	150	TRUE	25.6	11.86
M36/2215	11.9	8.9	CRC001291	Birdlings Brook	470	21.6	moderate	150	TRUE	24.92	14.95
M36/7817	14.3	13.57	CRC052826	Birdlings Brook	450	0.55	None	150	FALSE	27.79	13.97
M36/1874	12.2	6.6	CRC062607	Birdlings Brook	420	10	Moderate	0	TRUE	20	6.25
M36/7194	11.3		CRC002120.2	Birdlings Brook	822	4.3	None	0	FALSE	22.5	11.8
L36/1425	54	48	CRC000018		234	2	Low	0	FALSE	25	16.45
M36/1372	35.4	21.3	CRC010801		0	0	None	0	FALSE		
M36/7426	63.95	53.95	CRC010801		0	0	Low	0	FALSE	12.5	5.81
L37/0881	54.5	48.5	CRC020692.1		0	0	None	0	FALSE	63.01	53.76
L37/0882	43.5	37.5	CRC020692.1		0	0	None	0	FALSE	67.31	57.43
L37/0883	44.5	38.5	CRC020692.1		0	0	None	0	FALSE	67.31	57.43
L37/0885	41	35	CRC020692.1		0	0	None	0	FALSE	67.51	57.6
L37/0886	41	32	CRC020692.1		0	0	None	0	FALSE	97.02	82.77
L37/0887	38.7	32.7	CRC020692.1		0	0	None	0	FALSE	37.61	32.09
M36/7831	90		CRC051500		0	0	None	0	FALSE	30	22.67
L36/1604	233	167	CRC051526		0	0	None	0	FALSE	90	65.31
M36/1372	35.4	21.3	CRC051759		0	0	None	0	FALSE		
M36/0656	9.1		CRC051760		0	0	None	0	FALSE	22.05	13.63
L36/1531	225		CRC052157		0	0	None	0	FALSE	60.67	43.72
L36/2028	5.8		CRC991397.1		250	12.54	Moderate	150	TRUE	19	18.78
L36/1987	90		CRC054478		0	0	None	0	FALSE		
L36/2034	88	84	CRC054847		0	0	None	0	FALSE	21	13.75
L36/1298	106.6		CRC982191.3		0	0	None	0	FALSE	51.16	36.91
M36/3479	13.5		CRC030502.2		0	0	None	0	FALSE	13.33	6.56
M36/7977	11.8	8.8	CRC030502.2		0	0	None	0	FALSE	13.33	6.56
M36/8026	11.55	8.55	CRC030502.2		0	0	None	0	FALSE	13.33	6.56
L36/0593	70		CRC061511		0	0	None	0	FALSE	10.5	9.94
L35/0249	125.9	53.6	CRC961416.2		0	0	None	0	FALSE	40.5	17.99
L35/0790	161.9	155.91	CRC961416.2		0	0	None	0	FALSE	40.5	17.99
M36/8161	58.32	52.32	CRC062695		0	0	None	0	FALSE	20.72	16.42

M36/8124	23.4	21.9	CRC950307.3		0	0	None	0	FALSE	5	3.69
M36/5226	28	24	CRC970443.1		0	0	None	0	FALSE	10	5.09
M36/5227	31	27	CRC970443.1		0	0	None	0	FALSE	10	5.09
M36/5228	59	53	CRC970443.1		0	0	None	0	FALSE	10	5.09
M36/8153	30		CRC062979		0	0	None	0	FALSE	3.62	1.55
M36/8154	30		CRC062979		0	0	None	0	FALSE	3.62	1.55
L36/0698	39	37	CRC021858.2		0	0	None	0	FALSE	2.67	2.67
L36/1886	49	44.5	CRC021858.2		0	0	None	0	FALSE	5.33	5.33
L35/0566	165	133	CRC990104.2		0	0	None	0	FALSE	50	28.27
L35/0566	165	133	CRC990104.2		0	0	None	0	FALSE	50	28.27
L36/0120	85	77.7	CRC000176.4		0	0	None	0	FALSE	55.33	44.83
L36/1388	89	77	CRC000176.4		0	0	None	0	FALSE	55.33	44.83
L36/1654	13.5		CRC070912		0	0	None	0	FALSE	37.5	7.39
L36/1185	41.2	35.2	CRC971665.1		0	0	None	0	FALSE	27.5	23.13
L36/1522	224.5	166	CRC022071.1		0	0	None	0	FALSE	73.71	36.42
L36/0995	72.8	69.8	CRC071221		0	0	None	0	FALSE	58	40.1
L36/1071	84.3	81	CRC982161.4		0	0	None	0	FALSE	90	65.43
L36/0995	72.8	69.8	CRC010572.3		0	0	None	0	FALSE	58	40.1
L36/2211	86.5	83	CRC012748.1		0	0	None	0	FALSE	13.8	10.86
L37/0501	7.2		CRC071611		0	10	Moderate	0	TRUE	23.96	12.84
L36/0828	9		CRC952393.3		0	0	None	0	FALSE	13.89	10.49
L37/0459	15.8		CRC961305.1		0	0	None	0	FALSE	9.38	6.01
L35/0957	10		CRC072272		20	77	High	150	FALSE	77.91	39.97
L36/0321	46	43	CRC011981.1		0	0	None	0	FALSE	40	19.6
L36/1069	48.7	43.8	CRC940297.3		0	0	None	0	FALSE	68	32.41
L36/0494	11.5	7	CRC010551.2		0	0	None	0	FALSE	20.24	13.22
L36/0125	43.7	36.2	CRC040665.1		0	0	None	0	FALSE	44.49	44.49
L36/1755	84	75.1	CRC040665.1		0	0	None	0	FALSE	37.96	37.96
L36/1373	78	64	CRC011264.3		0	0	None	0	FALSE	15	15
L36/1725	115	107	CRC040570.1		0	0	None	0	FALSE	60	47.58
M36/0646	48.8	45.7	CRC040570.1		0	0	None	0	FALSE	38	30.13
M36/7380	76.5	63.6	CRC031688.1		0	0	None	0	FALSE	35	26.09
L36/1528	90		CRC020221.1		0	0	None	0	FALSE		
L36/1529	96.1	90.1	CRC020221.1		0	0	None	0	FALSE	52.72	33.61
L36/1530	84.4	78.04	CRC020221.1		0	0	None	0	FALSE	52.72	33.61
L36/1559	90.44	84.44	CRC020221.1		0	0	Low	0	FALSE	52.72	33.61

L36/1030	42	36	CRC951750.2		0	0	None	0	FALSE	23	20.96
M36/7064	69	63	CRC020615.3		0	0	None	0	FALSE	41	24.81
L36/0448	30	28.5	CRC081366		0	0	None	0	FALSE	10	6
L35/0666	34.6	27.6	CRC010440.3		0	0	None	0	FALSE	28.5	22.5
L36/0982	72.6	52.8	CRC950340.5		0	0	None	0	FALSE	28.13	23.05
L36/1634	51	45	CRC021649.3		0	0	None	0	FALSE	40.25	32.88
L36/2189	54.04	48.05	CRC072201.2		0	0	None	0	FALSE	23.15	14.47
L36/0207	57		CRC040591.3		0	0	None	0	FALSE	32	20.97
L36/1929	77.8	62	CRC071922.4		0	0	None	0	FALSE	32.5	22.94
L36/1929	77.8	62	CRC071922.4		0	0	None	0	FALSE	32.5	22.94
L36/1929	77.8	62	CRC071922.4		0	0	None	0	FALSE	32.5	22.94
L36/1929	77.8	62	CRC071922.4		0	0	None	0	FALSE	32.5	22.94
L36/2187	72	69	CRC981476.4		0	0	None	0	FALSE	14.75	12.67
L36/0581	18	15	CRC084086		0	0	None	0	FALSE		
M36/8647	18.9	13.2	CRC012824.2		0	0	None	0	FALSE	19.05	12.54
L36/0276	13.1	6.7	CRC084478		0	0	None	0	FALSE	26.5	15.46
L36/1776	208	144	CRC992019.3		0	0	None	0	FALSE	75	36.24
M37/0111	12		CRC020402.3		0	0	None	0	FALSE		
M37/0112	12.1		CRC020402.3		0	0	None	0	FALSE	5.42	3.15
M37/0113	12		CRC020402.3		0	0	None	0	FALSE		
M37/0125	9.144	6.744	CRC020402.3		0	0	None	0	FALSE		
M37/0340	15.4		CRC020402.3		0	0	None	0	FALSE	5.42	3.15
M36/0771	58.6	52.6	CRC090285		0	0	None	0	FALSE	24.97	17.12
M36/2650	30		CRC090285		0	0	None	0	FALSE	2.5	1.71
M36/4041	63.6	57.6	CRC090285		0	0	None	0	FALSE	37.45	25.68
M36/4988	63	60	CRC090285		0	0	None	0	FALSE	6.82	4.67
M36/7071	63.9	60.9	CRC090285		0	0	None	0	FALSE	61.42	42.11
M36/7072	65.8	59.8	CRC090285		0	0	None	0	FALSE	61.42	42.11
M36/7073	68.35	60.85	CRC090285		0	0	None	0	FALSE	61.42	42.11
L36/1587	260		CRC020671.7		0	0	None	0	FALSE		
L36/2238	228.94	161.64	CRC010822.4		0	0	None	0	FALSE	47.35	32.02
L36/2239	227.55	158.89	CRC010822.4		0	0	None	0	FALSE	47.35	32.02
L36/2240	222.6	157	CRC010822.4		0	0	None	0	FALSE	52.08	35.23
L36/2165	85		CRC010821.3		0	0	None	0	FALSE		
L36/2166	89.2	80.2	CRC010821.3		0	0	None	0	FALSE	22.75	17.46
L36/1080	100.5	97.5	CRC021618.4		0	0	None	0	FALSE	39.38	33.54

L36/1081	116	113	CRC021618.4		0	0	None	0	FALSE	39.38	33.54
M37/0049	41.6		CRC010549.4		0	0	None	0	FALSE	16.22	11.32
M37/0238	36.6		CRC010549.4		0	0	None	0	FALSE	16.22	11.32
M37/0496	43.7		CRC010549.4		0	0	None	0	FALSE		
L36/1726	111.56	99.56	CRC060536.1		0	0	Not Asse	0	FALSE	100	65.43
L36/2260	105.83	99.83	CRC060536.1		0	0	Not Asse	0	FALSE	80	34.57
L36/2238	228.94	161.64	CRC051400.1		0	0	Not Asse	0	FALSE	47.35	32.02
L36/2239	227.55	158.89	CRC051400.1		0	0	Not Asse	0	FALSE	47.35	32.02
L36/2240	222.6	157	CRC051400.1		0	0	Not Asse	0	FALSE	52.08	35.23
L36/2274	223.53	156.85	CRC051400.1		0	0	Not Asse	0	FALSE	80.49	54.44
L36/2275	233.7	160	CRC051400.1		0	0	Not Asse	0	FALSE	80.49	54.44
L36/1408	126	111.26	CRC011148.8		0	0	None	0	FALSE	62.34	19.34
L36/1050	36	34.5	CRC031238.3		0	0	None	0	FALSE	4.42	1.11
L36/0053	15.2		CRC010538.2		0	0	None	0	FALSE	14.69	13.78
L36/0054	15.1		CRC010538.2		0	0	None	0	FALSE	14.69	13.78
L36/0055	31.7		CRC010538.2		0	0	None	0	FALSE	14.69	13.78
L36/0495	11.5		CRC010538.2		0	0	None	0	FALSE	4.93	3.77
L36/2324	60		CRC050782.2		0	0	None	0	FALSE	8.75	3.89
L36/2324	60		CRC050782.2		0	0	None	0	FALSE	8.75	3.89
M36/2252	24		CRC010950.4		0	0	Not Asse	0	FALSE	18.8	18.8
M36/2253	24		CRC010950.4		0	0	Not Asse	0	FALSE	18.8	18.8
M36/20254	73		CRC961653.2		0	0	None	0	FALSE	25	14.57
L36/1533	77.08	71.08	CRC012487.9		0	0	None	0	FALSE	35.07	27.56
L36/1533	77.08	71.08	CRC012487.9		0	0	None	0	FALSE	35.07	27.56
L36/2015	77.11	71.11	CRC012487.9		0	0	None	0	FALSE	35.07	30.3
L36/2015	77.11	71.11	CRC012487.9		0	0	None	0	FALSE	35.07	30.3
L36/1533	77.08	71.08	CRC012487.9		0	0	None	0	FALSE	35.07	27.56
L36/1533	77.08	71.08	CRC012487.9		0	0	None	0	FALSE	35.07	27.56
L36/2015	77.11	71.11	CRC012487.9		0	0	None	0	FALSE	35.07	30.3
L36/2015	77.11	71.11	CRC012487.9		0	0	None	0	FALSE	35.07	30.3
L36/1712	96	89.15	CRC031286.3		0	0	None	0	FALSE	57.87	34.3
L36/1713	95.7	89.7	CRC031286.3		0	0	None	0	FALSE	57.87	34.3
L36/1532	220		CRC093125		0	0	None	0	FALSE		
L36/1726	111.56	99.56	CRC042874.1		0	0	None	0	FALSE	100	65.43
L36/1532	220		CRC054301.1		0	0	None	0	FALSE		
M36/8174	61	58	CRC093558		0	0	Not Asse	0	FALSE	17.5	8.12

L36/2341	160		CRC010171.3		0	0	None	0	FALSE	38	22.11
L36/1033	100		CRC001917.2		0	0	None	0	FALSE	72.34	55.43
L36/1711	6.5		CRC040301.3		300	7.16	Moderate	150	TRUE	12.5	8.26
M36/7390	38.8	32.8	CRC001750.3		0	0	Not Asse	0	FALSE	19.29	16.48
M37/0099	18		CRC010877.2		0	0	Not Asse	0	FALSE	30	27.66
M37/0038	16		CRC100269		0	0	Not Asse	0	FALSE	15	15

Consented Surface Water Takes RSGAZ

Consent no.	GridRefere	CatchmentName	Source	SWAllocZoneName	MaxRate
CRC000872	M37:522-075	Lee River	River	Lee River	22.7
CRC010454	M36:5118-2251	Hanmer Road Drain	River	Boggy Creek	20
CRC011478.1	M36:5720-1190	Harts Creek	River	Harts Creek	15
CRC011883.1	M36:5332-1151	Rakaia II Water Race	River	Rakaia II Water Race	18.6
CRC012003	L35:243-463	Selwyn River	River	Selwyn River	250
CRC012171.1	M36:5465-1282	Birdlings Brook	River	Birdlings Brook	35
CRC012693	K35:084-504	Selwyn River	River	Selwyn River	5.32
CRC020397	M37:57517-05134	Taumutu Creek	River	Taumutu Creek	30
CRC021661.1	M37:50605-03474	Jollies Brook	River	Jollies Brook	38.28
CRC041993	L36:27934-38629	Hororata River	River	Hororata River	20
CRC042529.1	L36:1520-3130	Rakaia River	Water Race/Di	Rakaia River	192
CRC042844	M36:5001-2165	Boggy Creek	River	Boggy Creek	30
CRC050198	L36:1870-2860	Rakaia River	Water Race/Di	Rakaia River	38
CRC051231.1	L36:184-282	Rakaia River	Water Race/Di	Rakaia River	40
CRC051415.1	L36:13721-32865	Rakaia River	Water Race/Di	Rakaia River	200
CRC051802.3	L36:153-314	Rakaia River	Gallery	Rakaia River	560
CRC051803.2	L36:119-346	Rakaia River	River	Rakaia River	1400
CRC072619.4	L36:36740-16117	Rakaia River	River	Rakaia River	70
CRC073867	L36:1520-3130	Rakaia River	River	Rakaia River	380
CRC080383	L36:39215-13940	Rakaia River	River	Rakaia River	3560
CRC083834	L36:2156-2720	Rakaia River	River	Rakaia River	50
CRC084036.1	L36:322-191	Rakaia River	River	Rakaia River	2000
CRC084752	M37:50398-04417	Jollies Brook	River	Jollies Brook	7.12
CRC890642	M36:513-213	Boggy Creek	River	Boggy Creek	12
CRC930620.1	M36:567-256	Waimakariri Water Rac	River	Waimakariri Water Race	15
CRC930958B.1	L36:39240-13926	Rakaia River	Water Race/Di	Rakaia River	320
CRC940052	L36:438-109	Rakaia River	River	Rakaia River	340
CRC940163	L36:373-163	Rakaia River	River	Rakaia River	450
CRC940169.1	L36:407-134	Rakaia River	Water Race/Di	Rakaia River	450
CRC940486.1	L36:338-178	Rakaia River	River	Rakaia River	450
CRC941161.2	L36:438-109	Rakaia River	River	Rakaia River	450
CRC941177.6	L36:36740-16117	Rakaia River	River	Rakaia River	450
CRC941219.1	L36:407-134	Rakaia River	River	Rakaia River	450
CRC950693	L37:49882-05110	Jollies Brook	River	Jollies Brook	30

CRC950942	M36:544-210	Hanmer Road Drain	River	Hanmer Road Drain	30
CRC952433.2	L36:43824-10890	Rakaia River	River	Rakaia River	450
CRC960326.1	M36:621-195	Lake Ellesmere	River	Lake Ellesmere	26
CRC961328.1	M36:526-150	Birdlings Brook	River	Birdlings Brook	30
CRC961452.4	M36:6432-2030	Coes Drain	River	Coes Drain	250
CRC961460.3	M36:6467-2104	Coes Drain	River	Coes Drain	113
CRC961485	M36:645-218	Selwyn River	River	Selwyn River	27
CRC961939.1	M36:540-137	Birdlings Brook	River	Birdlings Brook	21
CRC962103	M36:536-115	Harts Creek	River	Harts Creek	30
CRC962108	M36:526-124	Harts Creek	River	Harts Creek	35
CRC962109	M36:551-120	Birdlings Brook	River	Birdlings Brook	19
CRC970354	M36:546-112	Harts Creek	River	Harts Creek	35
CRC970542	M36:5738-2003	Irwell River	River	Irwell River	11
CRC971705	L36:26412-39073	Hororata River	River	Hororata River	53
CRC980347	L36:341-350	Hororata River	River	Hororata River	23
CRC980976.2	L36:184-282	Rakaia River	Storage Dam	Rakaia River	30
CRC990223.1	M36:642-221	Selwyn River	River	Selwyn River	15
CRC990621.2	L36:367-167	Rakaia River	River	Rakaia River	850
CRC990832.4	L36:1699-2991	Rakaia River	River	Rakaia River	350
CRC990851.2	L36:325-188	Rakaia River		Rakaia River	550
CRC990901.2	L36:1870-2860	Rakaia River	Water Race/Di	Rakaia River	38
CRC990979.3	L36:153-314	Rakaia River	Water Race/Di	Rakaia River	113
CRC990980.2	L36:13721-32865	Rakaia River	River	Rakaia River	140
CRC990983.1	L36:322-191	Rakaia River	River	Rakaia River	2000
CRC991035.1	L36:337-177	Rakaia River	River	Rakaia River	1577
CRC991075.1	K35:014-457	Boundary Stream	River	Boundary Stream	7.3
CRC991102.3	L36:31882-19213	Rakaia River	River	Rakaia River	450
NCY720284	L36:2950-3711	Hororata River	River	Hororata River	283
NCY720286	L36:367-167	Rakaia River	River	Rakaia River	566
NCY860218B	L36:13721-32865	Rakaia River	Water Race/Di	Rakaia River	1130
NCY870171	L35:2093-5060	Selwyn River	River	Selwyn River	16.6