

# **Decisions on Submissions and Further Submissions**

## **PROPOSED VARIATION 5 to the CANTERBURY NATURAL RESOURCES REGIONAL PLAN**

### **Chapter 5: Water Quantity**

**Schedule WQN1 and related amendments for flow and allocation  
regimes for the Kaikoura Rivers; and Section 32 Report**

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**I hereby certify that this is a true and correct copy of the Council Decisions on Submissions and Further Submissions to the Proposed Variation 5 to Chapter 5 of the Canterbury Natural Resource Regional Plan prepared by the Canterbury Regional Council.**

**Proposed Variation 5 to Chapter 5 of the Canterbury Natural Resource Regional Plan is a statutory document prepared by the Canterbury Regional Council in accordance with the requirements of the Resource Management Act 1991.**

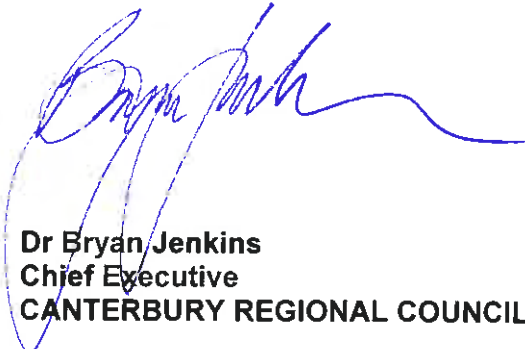
**A hearing panel heard and made recommendations to the Council on Submissions and Further Submissions to Proposed Variation 5 to Chapter 5 of the Canterbury Natural Resource Regional Plan and prepared a s32 evaluation.**

**Decisions on Submissions and Further Submissions to Proposed Variation 5 to Chapter 5 of the Canterbury Natural Resource Regional Plan were given at a meeting of the Canterbury Regional Council on 21 October 2010 when the recommendations were accepted in full.**

**The decisions were publicly notified on 23 October 2010.**

**The recommendations and s32 evaluation made by the hearing panel have become Council decisions in the form in which they are presented in this document.**

**The Common Seal of the Canterbury Regional Council was affixed in the presence of:**

  
**Dr Bryan Jenkins  
Chief Executive  
CANTERBURY REGIONAL COUNCIL**



PROPOSED VARIATION 5 TO CHAPTER 5 OF THE  
CANTERBURY NATURAL RESOURCES REGIONAL  
PLAN

**RECOMMENDATIONS OF THE HEARING  
COMMISSIONERS**





**IN THE MATTER OF** the Resource Management Act 1991

**AND**

**IN THE MATTER OF** Proposed Variation 5 to Chapter 5 of the  
Proposed Canterbury Natural Resources  
Regional Plan

**RECOMMENDATION OF THE HEARING COMMISSIONERS  
18<sup>th</sup> August 2010**

Heard on the 29<sup>th</sup> and 30<sup>th</sup> of April 2010 at 'The Encounter', 96 The Esplanade,  
Kaikoura.

**HEARING COMMISSIONERS**

Mr Robert Nixon (Chair)  
Ms Sharon McGarry

The hearing commenced at 9:30 AM on 29<sup>th</sup> April 2010, and concluded at  
approximately 6 PM. A site visit was undertaken on 30<sup>th</sup> April 2010.

**APPEARANCES**

**For the Canterbury Regional Council – CRC (Environment Canterbury)**

Ms. Lynda Weastell  
Ms. Anna Veltman (Senior Resource Management Planner - CRC)  
Ms. Luisa Magalhaes (Resource Management Planner - CRC)  
Mr. Ian Lloyd (Senior Water Resource Engineer - Golder Associates (NZ) Ltd)  
Mr. Greg Burrell (Senior Freshwater Scientist - Golder Associates (NZ) Ltd)

Prior to the hearing, a section 42A report ('S42A Report') was prepared by  
Ms. Anna Veltman and Ms Luisa Magalhaes circulated to all parties. In  
addition, Ms. Lynda Weastell presented a brief preliminary report explaining  
the implications of the Environment Canterbury (Temporary Commissioners  
and Improved Water Management) Act 2010.

**For Submitters**

Mr. Lionel Hume (Senior Policy Analyst - Federated Farmers of New Zealand)  
Mr. Ron Mackle (Kaikoura dairy farmer for Federated Farmers)  
Mr. Stephen Wynne-Jones (Community Relations Officer - Department of  
Conservation, Nelson Conservancy)  
Mr Vaughan Lynn (Field Officer - Fish and Game Council (Nelson –  
Marlborough))

## DESCRIPTION OF VARIATION 5

1. The origin of Variation 5 to the Proposed Canterbury Natural Resources Regional Plan (PNRRP) was a decision by CRC to initiate investigations and a community consultation programme for seven catchments in the Kaikoura area. This was to address minimum flow thresholds and allocations, such a process being provided for under Policy WQN 5 in Chapter 5 of the PNRRP. The results of this work were presented to the Regional Council for approval under Report U07/26 on 26 April 2007. The catchments are listed as follows:

- Hapuku River and its tributaries;
- Middle Creek (part of the Waimangarara Stream catchment);
- Luke Creek (a tributary of Middle Creek);
- Lyell Creek/Waikawau (including Left Branch, Right Branch, and Warrens Creek);
- Kowhai River and its tributaries;
- Ewelme Stream; and
- Kahutara River (upper catchment only).

2. These catchments are shown in **Appendix 1** to these recommendations. Such a process is provided for under Policy WQN 5 in Chapter 5 of the PNRRP. CRC has embarked on this variation recognising perceived stress on surface flow levels in some catchments in the area, noting that the existing flow regimes had been established 'by default' through resource consents. A technical analysis and consultation process (through a Community Advisory Group) was completed in early 2007, and a proposal for a variation to the PNRRP to incorporate water flow and allocation regimes for the seven affected catchments was accepted by the Regional Planning Committee in April 2007. Variation 5 does not cover all catchments in the Kaikoura area, as explained in paragraph 78 of the S42A Report –

*"...at the time the review was instigated, only those rivers that had existing minimum flows included in Appendix WQN2 (see Table WQN 11 - Kaikoura and Kahutara), and those where they were known to be resource consents with minimum flows, were included in the investigations and consultation".*

3. The flow regimes adopted for notification in Variation 5 are shown in **Appendix 2** to this recommendation, along with the text changes resulting from our recommendations.

### Application of Variation 5

4. Although the flow regimes were properly the subject of detailed consideration in the S42A Report and through discussions within the hearings process, the actual operation of the rules of the PNRRP themselves were not considered in any detail. Interpreting these rules is

a somewhat testing exercise, but our understanding of how they are intended to work is as follows<sup>1</sup>:

- Schedule WQN 1 sets quantum limits on water takes for various waterways in Canterbury. Subsequent rules refer specifically to Schedule WQN 1, although in reality the references are to "sub" schedules within it (e.g. Schedules WQN1.1 to 1.4). Variation 5 adds a new Schedule WQN1.6 for specified Kaikoura Rivers.
- Under each sub schedule is a table (e.g. WQN1.1 cross-referenced to Table WQN14.1, with allocation limits for the Ashburton River). Variation 5 adds a new Schedule WQN1.6 and Table WQN14.6, to be inserted after Schedule WQN1.5 for the specified Kaikoura Rivers.
- Rule WQN 6 applies to "A" allocation block takes, and Rule WQN 7 applies to "B" allocation block takes. Variation 5 adds proposed allocation limits under new Table WQN14.6 for the specified Kaikoura Rivers, which will be subject to these rules.

5. The implications of this appear to be as follows:

- (i) If a surface water take is within the "A" allocation, it will be a controlled activity under WQN 6.
- (ii) If a surface water take is a lawful existing take as of 1<sup>st</sup> January 2002, even if it does not comply with the "A" allocation, it is a controlled activity under Rule WQN 6.
- (iii) If a surface water take is within the "B" allocation, it is a restricted discretionary activity under Rule WQN 7.
- (iv) If a surface water take is within an "A" or "B" allocation, but does not comply with the relevant conditions of those rules, it is a noncomplying activity under Rule WQN 10.
- (v) If a surface water take is not within either an "A" or "B" allocation or is not an existing lawful take, it is a prohibited activity under Rule WQN12.

6. There may well be submissions on Rules WQN 6, WQN 7, WQN 11, and WQN 12, which are being dealt with quite separately under the substantive hearings on Chapter 5 of the PNRRP, and on Variation 1 to that chapter. This point was raised in paragraph 227 of the S42A Report. Evidence related to those matters is not of course before us, but decisions made on those matters may well have implications for the way the rules under Variation 5 are administered. Two matters which immediately come to mind, are firstly, the extent to which any changes to all or any the above rules under the substantive hearing of Chapter 5 have effect with respect to the allocation limits finally decided under proposed Schedule WQN1.6 and Table WQN14.6; and secondly,

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<sup>1</sup> The rules include all sorts of qualifications and exceptions which are irrelevant to the Kaikoura rivers, so for brevity we have excluded them from our summary.

whether the "exception" for existing "over allocated" takes under Rule WQN 6 is appropriate in the Kaikoura rivers context.

## THE 'ECAN ACT' AND THE CANTERBURY WATER MANAGEMENT STRATEGY (CWMS)

7. This legislation adds an important new requirement unique to regional planning in Canterbury, in addition to those considerations required under the Resource Management Act ('the RMA' or 'the Act'). It affects plan changes and variations falling under the jurisdiction of the Canterbury Regional Council. Under section 50 of the Environment Canterbury (Temporary Commissioner and Improved Water Management) Act 2010, we are required to have *particular regard* to the 'vision and principles' of the CWMS which are attached as Part 1, Schedule 1 to the above legislation, which can be abbreviated as the 'ECan Act'. The vision and principles are in turn appended as **Appendix 3** to this recommendation. This is in addition to our duty to assess the variation subject to the provisions of Part 2 of the RMA.
8. We are mindful of an additional responsibility that emerges from the ECan Act. Under section 61 of the Act, it appears quite clear that Variation 5 to the PNRRP falls within the definition of a 'proposed regional plan'. Therefore in addition to applying the vision and principles of the CWMS, under section 66 of the ECan Act, we note that any appeals are limited to the High Court on matters of law.

## BACKGROUND, INVESTIGATIONS, AND PUBLIC NOTIFICATION

9. Investigations and community consultation began in 2004. The purpose of the review process was described as being to "*assess the adequacy or otherwise existing flow regime originally established by resource consent processes*". It was noted there was perceived stress on surface water levels in various catchments.
10. A "Technical Panel" was established comprising Trevor Partridge (indigenous vegetation), Sue McManaway (landscape and amenity values), and Te Runanga o Kaikoura representatives (tangata whenua values).
11. Prior to public notification, consultation was undertaken with statutory consultees under Clause 3 of the First Schedule RMA, and a Community Advisory Group (CAG) was established.
12. The Hearings Panel noted in particular work undertaken by R.K. Maw in 2007 which informed the process with respect to river flows and water allocation, and more recent work undertaken by the Ian Lloyd and Greg Burrell (2010).
13. Variation 5 was publicly notified on 30<sup>th</sup> June 2007, with submissions closing on 2<sup>nd</sup> August 2007. The summary of decisions requested was notified on 13<sup>th</sup> October 2007, and further submissions closed on 14<sup>th</sup>

November 2007. We note a correction to the summary of submissions was subsequently publicly notified with submissions closing on 11<sup>th</sup> September 2009, and that no submissions were received.

### Submissions and further submissions

14. Submissions were received from the *Department of Conservation* ('DOC') and the *New Zealand Fish and Game Council, Nelson/Marlborough* ('Fish and Game'). A further submission in opposition to these submissions was received from *Federated Farmers*. A prehearing meeting was subsequently held in Kaikoura on 17<sup>th</sup> December 2009.
15. The Department of Conservation's submission stated that the environmental flows proposed may not be sufficient to adequately protect the ecological values of the Kaikoura Rivers, and their associated amenity, recreational and cultural values.
16. The Fish and Game submission stated that in general they promote the use of the seven day mean annual low flow (7d MALF) for the "A" allocation block minimum flow; setting the "A" allocation block limit equal to or less than the minimum flow to ensure no more than half the flow can be abstracted; and setting the "B" allocation block minimum flow to the "A" allocation minimum flow, plus two times the "A" allocation block limit, to provide for a 1:1 flow sharing regime. However, the relief sought in their submission was confined to the Middle Creek and Lyell Creek, including its Left and Right Branches, and Warrens Creek.
17. Our recommendations as to whether each of the submission points made under the two submissions, and the further submissions in opposition be accepted, accepted in part, or rejected, are contained in **Appendix 4** to our recommendations.

## THE HEARING

### *Evidence for the Canterbury Regional Council*

18. **Ms. Lynda Weastell** opened the presentation of evidence on behalf of CRC. Her evidence related to specific procedural points, and not the contents of Variation 5 as such. Shortly before the hearing, Ms. Weastell circulated a brief report which addressed the implications of the ECan Act with respect to this hearing. In addition to referring to the vision and principles, and other changes to the assessment of proposed plans including variations, (refer to preceding discussion above) she drew our attention to a number of potential difficulties created by the new legislation. She observed that the CWMS was written as "a conceptual document", not as a statute or regulation, and that accordingly it presented potential difficulties with the meaning and application of terms set out in the vision and principles of the CWMS. She commented

that all matters discussed at the hearing needed to be recorded to meet the evidentiary requirements of the High Court, should matters proceed to that venue, ensuring factual accuracy, and the ability of parties to respond to matters raised in evidence.

19. **Ms. Anna Veltman**, in collaboration with **Ms. Luisa Magalhaes** prepared and presented the S42A Report. **Messrs Ian Lloyd** and **Greg Burrell** were also present to answer questions with respect to their supporting technical reports. Because the section 42A report directly addressed the submissions, and of necessity went into considerable detail on the rather complex minimum flow regimes proposed (especially on the spring-fed streams), it is necessary to summarise this evidence in some detail.
20. The report noted that Variation 5 was complementary to the principles set out in the CWMS and in Chapter 5 of the PNRRP. Objective WQN1 in the PNRRP and its associated policies, set out a framework for the setting of water management regimes in Canterbury rivers, and are almost identical to Objective 1, Chapter 9 in the Canterbury Regional Policy Statement ('RPS'). Policy WQN 3 requires that flow regimes be set for all water bodies from which water is, or is likely to be taken. Policy WQN 5 commits the CRC to undertake a review of all current minimum flows within five years of the PNRRP becoming operative. These provisions form the basis of the rules framework which was described above under "Application of Variation 5".
21. The report went on to describe that the key elements of setting flow allocation regimes extend beyond simply applying minimum flows, and include flow variability, water quality, and duration of low flows among other factors. The report went on to say that allocation blocks and gaps were a means of ensuring flow variability, which in turn enable flushing of streambeds of sediment to reduce periphyton growth and reset the invertebrate population after periods of low flow. Flood flows enable sediment movement and the removal of encroaching vegetation, the functioning of the river mouth and coastal lagoons. A flow regime can also be manipulated to maintain beneficial ranges for ecological and instream recreational values. Given the submissions lodged, this latter issue was to assume considerable significance with respect to this variation.
22. Moving on to reliability of supply, it was noted that allocation blocks are useful tools for managing water demand, and that this is vital to managing irrigation with respect to forward planning, investment decisions, and economic viability.

### **Description of the affected waterways**

23. The hearing focused primarily on abstractions from the small spring-fed streams immediately north and west of Kaikoura, so accordingly a more detailed description of these is required to provide context for this decision.

24. The S42A Report described the hill-fed Hapuku, Kowhai and Kahutara Rivers as being characterised by broad gravel beds, low summer flows and frequent flood events. In contrast, Middle Creek, Lyell Creek and Ewelme Stream are spring-fed creeks characterised by minimal flood disturbance and incised channels, with adjoining agricultural land use comprising mainly grazing and dairy farming activities.
25. **Middle Creek** is predominantly spring-fed but also drains part of the eastern flanks of Mount Fyffe. Middle Creek has a flow recorder and the long-term natural seven day minimum annual low flow (7d MALF) at State Highway 1 (SH1) has recently been estimated at approximately 230 litres per second (L/s)  $\pm$ 40L/s.
26. Its tributary, Luke Creek, was described as a steep fast flowing waterway which regularly goes dry below Postmans Road, and resurfaces as springs which feed into Middle Creek.
27. Luke Creek is described as having dramatic scenic community values, but low aquatic habitat value. Its cultural values include wahi tapu, mahinga kai and mauri. It was described as having value to farming for abstraction purposes.
28. **Lyell Creek/Waikawau** comprises three tributary branches being the Left Branch, Right Branch and Warrens Creek. The permanent recorder on the lower reaches adjacent to Beach Road indicates a 7d MALF of 360 L/s  $\pm$ 120 L/s. It is characterised by moderate to high macrophyte cover and relatively high water temperatures on occasions in summer. It was described as having only moderate value in terms of natural character, but has a relatively high 'public profile', as it enters the sea in the centre of the Kaikoura Township. It has value to farming for abstraction purposes.
29. The S42A Report then went on to address the submission by Fish and Game in some detail. Fish and Game sought a significant increase in the proposed minimum flows for "A" and "B" allocation block takes, and sought that no take be provided for during winter (this was described as a 'generic' approach in the S42A Report). The officer's response was that rather than applying a generic formula for setting and justifying new flow allocation regimes under Policy WQN 5, a technical panel approach with stakeholder input and simplified habitat modelling was preferred, noting that there was a relative lack of long-term flow, water use and water quality data. The approach taken was seen as justified given the circumstances, and to otherwise avoid delay.
30. With respect to Middle Creek, it was noted that the PNRRP made some provision for recognising existing water permits issued prior to 1<sup>st</sup> January 2002, even where the allocation was calculated to be in excess of the "A" allocation block. It noted any issue of over allocation could be addressed whenever a water permit expired and was not taken up

again within six months of the expiry date. In defence of the approach taken, the S42A Report (paragraphs 133 in 134) stated that:

“Therefore while there may be some limitations to the methods used by Environment Canterbury to develop the proposed flow and allocation regimes for the Kaikoura rivers, it is considered that they are valid and appropriate in the circumstances. In future, when more information is available, it may be possible to employ more rigorous methods such as water quality modelling and other methods to assess flow and allocation regime requirements.

It is concluded from this evaluation that all of the methods available – that proposed by Fish and Game in their submission, that included in the draft NES, and that included in NRRP Schedule WQN2 are “default” methods that do not require any fieldwork for validation for the specific catchment to which they are being applied. In contrast, the proposed flow and allocation regimes included in Variation 5 have been based on an approach using fieldwork and a number of scientific methodologies, and have taken into account the values identified in Objective WQN1”.

31. Turning to specific matters relating to the setting of minimum flow levels, the officers made the following comments with respect to Middle Creek:

- The variable flow regime would provide sufficient water for juvenile trout;
- The existing minimum flow of 150 L/s has been in place for a least 10 years;
- While Variation 5 provided for reduced minimum flows in the January/February period, this was compensated for by an increased minimum flow between March and December, which was a balanced approach consistent with the ‘status quo’ (the proposed January/February the minimum flow was set at 115 L/s, with the current allocation being estimated at 117 L/s);
- It was conceded that there was little water taken during the winter, and an increase in the minimum flow for “A” allocation block takes to 240 L/s would be justified in the period 1<sup>st</sup> June to 31<sup>st</sup> August; and
- A prohibition on winter takes was opposed as being unnecessary to maintain habitat values, but agreed that the minimum flow could be increased to 475 L/s.

32. With respect to the mainstem of Lyell Creek, the officers’ views were that:

- Flows in the lower part of Lyell Creek were better understood as there was a flow recorder present;
- Lyell Creek has high nutrient concentrations, high water temperatures on occasions, and reduced dissolved oxygen levels;
- The take regime proposed through Variation 5 was an attempt to balance instream values and out-of-stream use;
- The proposed minimum summer flow of 200 L/s for “A” allocation block takes would be offset by a required minimum flow for takes at other times of the year of 290 L/s;
- A flow of 290 L/s was adequate for trout fry;
- A prohibition on winter takes would not provide for the possibility of storage; and

- Additional protection would be required through linking takes from the tributary streams (Right and Left Branches, and Warrens Creek) to the minimum flow for the mainstem of Lyell Creek.
33. With respect to the Right and Left Branches of Lyell Creek the officers noted:
- Limited data was available on flows in these streams; and
  - Decreasing the minimum flow and size of the “A” allocation block limit would not accommodate all the existing abstractions currently authorised by resource consent.
34. With respect to Warrens Creek the officers noted;
- The situation with Warrens Creek was different to the mainstem of Lyell Creek and the other two tributaries;
  - The 7d MALF on Warrens Creek is estimated as approximately 150 L/s  $\pm$ 92 L/s. This estimate is consistent with the estimate by Facer of 180 L/s at the time of the notification of Variation 5;
  - Abstractions from Warrens Creek are also subject to minimum flow restrictions for the mainstem of Lyell Creek at the permanent recorder site;
  - The abstraction regime on Warrens Creek has been in place for 10 years; and
  - Provision for winter flows allowed for the possibility of storage.
35. The S42A Report noted that Mr. Burrell et al considered there was little justification for having a “B” allocation block on the spring-fed streams. It was also noted (S42A Report, paragraph 201) that the large allocation block provided for on the Right Branch of Lyell Creek could have adverse ecological effects.
36. A further point of some relevance was a provision under Rule WQN6 of the PNRRP, whereby consents for any expiring takes are to be processed as controlled activities, which complements the provisions under Policy WQN14. This has some relevance in terms of the matters we have to consider, and could be affected by decisions made in the substantive hearing on the PNRRP as a whole.
37. The S42A Report also addressed a number of matters relating to the submission from DOC. It was noted that there were two permanent automatic flow recorder sites; one on Middle Creek at SH 1, and one on Lyell Creek, with plans to install a further recorder at the Kowhai River Gorge. The S42A Report concluded that there was sufficient scope for ongoing future monitoring of river flows, bearing in mind the cost of installing and maintaining such equipment. The report also stated that the introduction of a rule requiring abstractions to be subject to 7d MALF estimates for minimum flows (verified by actual use) would be impracticable because of the large error estimates and flow rates, and would be legally uncertain in its application.

38. With regard to those waterways which were not the subject of submissions, the officers concluded that the proposed flow and allocation regimes for the Kahutara, Kowhai, and Hapuku Rivers were such that there was unlikely to be any major impacts on the hydrology and ecology of those water bodies. The exception was spring-fed Ewelme Stream which was highly allocated, and which could be adversely affected by extended low flows with associated effects on its ecology.
39. The S42A Report concluded with some comments on the relationship between surface and groundwater flows in the Kaikoura area. Messrs. Burrell and Lloyd concluded that the two groundwater allocation zones in the area (Mt. Fyffe and Kaikoura/Kowhai) were only 41% and 10% allocated respectively. However, it was noted that further allocation of groundwater could lead to a reduction in surface flows through direct stream depletion and reduced spring flows with respect to Middle Creek, Lyell Creek/Waikawau, Warrens Creek and Ewelme Stream. Accordingly, it was suggested that groundwater allocation regimes for these zones in Schedule WQN4 be reviewed.

#### *Evidence by submitters*

40. **Mr. Stephen Wynne-Jones** presented evidence of behalf of DOC. He began by stating that DOC acknowledged that there were conflicting interests for water and that conservation had to be considered in conjunction with sustainable use of water for abstractive purposes. However, he felt that the balance being struck in the S42A Report favoured existing abstractors. His primary concern related to the spring-fed waterways, although he commented that the proposed flow regimes for the braided rivers did not appear to take into account the requirements of nesting birds.
41. He said that the technical reports from Messers Burrell and Lloyd advised that a flow equivalent to the 7d MALF is required to sustain trout fisheries and to maintain the ecological quality of the spring-fed waterways. He considered there was inadequate monitoring of fish populations and how these responded to flow management.
42. He submitted that the proposed minimum flows for "A" allocation block takes, particularly for Middle and Lyell Creeks and their tributaries, were too low to sustainably manage the ecological values of those water bodies. He said it was apparent that the proposed minimum flows were below those that would be set using the proposed National Environmental Standard (NES), and the 7d MALF volume proposed by Fish and Game. He added that the Kaikoura rivers include fish species under review as being 'in decline nationally', such as red-fin bully, blue-gill bully, inanga, lamprey, and torrent fish.
43. He contended that mountain rivers such as the Kowhai and the Hapuku were better suited to water harvesting and storage than the spring-fed

streams, which have much more stable flows. In his view the proposed take regimes were inconsistent with the independent technical advice the CRC had received, and with further information that had come to light since 2007, when Variation 5 was publicly notified. In his opinion the proposed allocation regime would result in ongoing over allocation and confer excess weight on the existing security of supply for abstractors.

44. Evidence was tabled on behalf of **Mr. Vaughan Lynn** (Nelson - Marlborough Fish and Game Council). Mr. Lynn's submission covered three main points. His concerns were related solely to the catchments of Lyell and Middle Creeks and their tributaries.
45. The first matter he raised concerned the minimum flows proposed under Variation 5. He contended that the 7d MALF was generally recognised as providing an ecological basis for determining minimum flow levels to protect trout habitat and populations. His evidence was that in general terms, flow reductions below the 7d MALF would result in a proportional decrease in trout numbers - for example a 50% reduction in the 7d MALF would result in approximately a 50% reduction in trout habitat and numbers. Minimum flows proposed in Variation 5 represented an extreme natural low flow situation. Such a scenario would have a return frequency of less than once every 10 years, and unlike the situation with a natural low flow, would occur for a prolonged period of time. His evidence was that as a percentage of the 7d MALF, the proposed "A" allocation block minimum flows would be 50% for Middle Creek, 56% for the Lyell Creek mainstem. (Based on the corrected 180L/sec 7 day MALF, the comparable figure for Warrens Creek would be 42%). He argued that these abstraction rates were unacceptable, and did not safeguard the life supporting capacity for trout as required by Schedule WQN1.5, Kaikoura Rivers.
46. Turning to the issue of over allocation, Mr Lynn was of the opinion the spring-fed streams would be 'flat lined' at minimum flow levels (or even lower) for long periods of time. Acknowledging the CRC's concerns about the effects of reduced takes on abstractors, his evidence suggested that there be a delay to implementing minimum flows for a period of perhaps five years.
47. His submission then addressed the issue of storage. In his opinion, for current levels of allocation to be sustainable and reliable, some form of harvest and storage would be required. Fish and Game would support "B" allocation block takes on a year-round basis, but with a much higher threshold for minimum flows. However it was accepted that this was unlikely to provide sufficient reliability and that it might be preferable to consider a community storage scheme instead. In particular, his evidence drew attention to the importance of the trout spawning months of May to September.

48. The Fish and Game submission asserted that the *"reporting officer's report seems to be largely focused on protecting the status quo and ignoring any suggestions to the contrary"*. By way of example, Mr. Lynn's written submission questioned why the minimum flow in Middle Creek was proposed to be reduced to 115 L/s in January and February, when it was reported that the Community Advisory Group would accept 150 L/s, and added that Fish and Game had opposed a threshold of 115 L/sec all along.

### Minute of Hearing Commissioners

49. After the hearing and our site visit, we concluded that there was insufficient information relating to a number of matters which required clarification or additional information. Accordingly, we issued a Minute on 4<sup>th</sup> May 2010. This information was provided by 4<sup>th</sup> June 2010 as requested by us, and was then circulated to other parties on Friday, 18<sup>th</sup> June 2010.
50. Briefly summarised, the information we sought related to:
- A current list of existing water permits for both surface water and ground water takes, and details as to applicable conditions;
  - Additional supply reliability information:
  - Updated 7d MALF estimates;
  - More detailed information on the effects of winter "A" allocations;
  - More detailed information on the effects of "B" allocations;
  - Matters relating to river mouth closures and the effects;
  - Further clarification on the relative weighting of social/cultural, economic and ecological values taken into account as part of Variation 5;
  - The need for and priority of, further recorder sites in each catchment;
  - Clarification from Fish and Game as to which specific catchments their submission applied to;
  - Written comment from Fish and Game as to their involvement in the Variation 5 planning process.
51. In addition, on 4<sup>th</sup> May 2010 we received a letter from Federated Farmers. This was outside the hearings process and the scope of the Minute, and we have to be cautious in placing weight on it, although in practical terms it simply draws attention to the explanation in the CWMS which we and the other parties are aware of in any case. It is noted that Schedule 1 of the ECan Act not only contains the core vision statement of the CWMS, but also supplementary text. This includes statements that if the strategy is successful it would, among other things, achieve increased primary production, increase the net value of irrigation to the Canterbury economy, as well as increased community and rural viability.

## ASSESSMENT

### PRELIMINARY MATTERS

52. It became clear during the course of considering evidence and submissions on Variation 5, that it raised a number of challenges, some of which potentially called into question the validity of the variation in its present form, and our scope to make necessary improvements to it.
53. Firstly, there remains some uncertainty with the application of any minimum flow levels and allocation limits in terms of how the variation fits within the broader framework of the rules under WQN7 to WQN12 in Chapter 5 of the PNRRP. We are aware that this rules framework might change as a result of separate commissioner decisions on the PNRRP as a whole.
54. Secondly, there are considerable limitations on the discretion available to us to recommend beneficial changes to Variation 5 based on the scope of the submissions that were received. The Fish and Game submissions for example, were confined in application to Middle Creek, and Lyell Creek and its tributaries. The DOC submission, although broad in scope, was not particularly detailed in terms of the relief sought. In addition, during the course of the hearing it became clear that there was little or no technical justification for the retention of "B" allocation block in the case of the spring fed waterways which have little variation in flow, and have little or no capacity for further abstraction. Furthermore, in practical terms the reliability of supply of any "B" block water would be very low. There may be some potential for water harvesting from the 'larger' hill fed rivers, although there is little evidence of this practice in the Kaikoura area at present.
55. This brings us to the third issue, that of significant inaccuracies in some of the calculated minimum flow thresholds and "A" block allocations. These in turn influenced the minimum flow and allocation assumptions underlying some of the numerical standards incorporated in Variation 5, which became apparent during the course of the hearing. These are described in detail later in the following part of our assessment for each waterway. We note that Clause 16 (2) of the First Schedule to the Act states that:
- "(2) A local authority may make an amendment, without [using the process in this schedule] to its proposed policy statement or plan to alter any information, where such alteration is of minor effect, or make correct minor errors".*
56. Given the relatively 'fluid' nature of information made available immediately prior to and during the hearing, the exposure of some errors and inaccuracies was probably inevitable. We are conscious that Clause 16(2) is drafted in a manner which does not provide extensive scope for making amendments to a notified variation - at

least in the absence of specific submissions seeking such changes. On the other hand, we were faced with a dilemma in that it would be perverse to retain provisions which we knew to be erroneous. In our approach to amending the contents of Variation 5, we have been conscious of any implications for existing rights to take water, or on the level of protection offered to instream values.

57. A fourth issue arising, which was only partially addressed through additional information provided following our Minute of 4<sup>th</sup> May 2010, were remaining gaps in the information available. In particular, we have little or no information on any *actual* rate of take by water users on the Kaikoura Plain.
58. Finally, we note that Variation 5 is not a geographically integrated water management package for managing takes from the Kaikoura rivers, as it does not include the Waimangarara River or the lower Kahutara River.
59. Balanced against these factors, we acknowledge the considerable effort that has been invested in Variation 5 by officers of the Canterbury Regional Council, their technical advisers, and by the local community through the Community Advisory Group (CAG). In this context, we consider that even if we had scope to recommend that Variation 5 be withdrawn, we would be hesitant to take such a step. In addition, the Variation, despite its shortcomings, offers the prospect of providing a better framework for managing water takes from the Kaikoura rivers than that which could be expected under a continuing regime of "management by resource consent" under Schedule WQN2.
60. Our assessment of submission points raised through the submissions are set out in the following section of our recommendations. Changes to the text of the variation as notified are set out in **Appendix 2**, and our recommendations as to whether this submission points be accepted, accepted in part, or rejected, are contained in **Appendix 4**.

## DETAILED ASSESSMENT

61. We note surface water and groundwater in the Kaikoura area is known to be closely linked, and that the groundwater resource is relatively shallow with limited storage and short residence time. It is acknowledged that lower elevation waterways (Middle Creek, Lyell Creek, Warrens Creek and Ewelme Stream) are predominantly spring-fed and are directly linked to groundwater.<sup>2</sup>
62. For this reason we accept it is imperative that surface water abstractions are managed in conjunction with groundwater takes. While we note there appears to be available groundwater allocation in the Kaikoura-Mt Fyffe and Kaikoura-Kowhai groundwater zones (as

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<sup>2</sup>Burrell, G. and Lloyd, I. 2010: 'Ecological Flows for Rivers in the Kaikoura Area' Golder Associates.

defined in the PNRRP), we are acutely aware that further groundwater abstraction could lead to a reduction in flow in the spring-fed waterways, due to both direct stream depletion and reduced flow from any general lowering of surrounding groundwater levels. We therefore agree with the officer's comments that it would be prudent for CRC to undertake a review of the existing groundwater allocation regimes for the two groundwater allocation zones currently established in Schedule WQN4 of the PNRRP.

63. Similarly, we consider it is important that the Kaikoura rivers not included in this variation are reviewed and included in Schedule WQN1 as soon as possible, to ensure an integrated approach and to impose limits before the water resource is further allocated to any significant degree.
64. The proposed minimum flow levels and allocation limits for the Kaikoura rivers included in Variation 5 were set by a combination of review of available hydrological data (Facer, 2002)<sup>3</sup>, technical panel review (Maw, 2007)<sup>4</sup>, stakeholder input (CAG) and simple habitat modelling (Wilding *et al.*, 2004<sup>5</sup>). Table WQN14.6 (as notified) largely reflected the status quo in terms of existing consented allocation limits (as calculated at 2007) and any existing minimum flow levels imposed on existing consents.
65. Reliability of supply analyses have been undertaken for Middle and Lyell Creeks over a ten year period, but without actual use data it is not possible to accurately determine the frequency or duration of restrictions that have (or may have) been imposed. It is therefore not possible to accurately estimate how the proposed minimum flows would affect existing consent holder's reliability of supply. The additional information from Mr Lloyd regarding reliability of supply for Middle and Lyell Creeks highlights this difficulty and provides an indication of the potential effect on consent holders if minimum flows are increased.
66. When Variation 5 was notified on 30<sup>th</sup> June 2007, the primary guidance for setting environmental flows was the objectives and policies of the RPS and PNRRP. Since this time the most up to date guidance for setting environmental flow regimes in Canterbury is provided the Ministry for the Environment's 'Proposed National Environmental Standard (NES) on ecological flows and water levels' (2008) and the companion document by Beca 'Draft guidelines for the selection of methods to determine ecological flows and water levels' (2008).

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<sup>3</sup> Facer, S. 2002: 'Seven day mean annual low flow mapping in the Kaikoura area' ECan Report U02/82

<sup>4</sup> Maw, R. 2007: 'Planning report on the review of the environmental minimum flow and water allocation for the Kaikoura rivers' ECan Report.

<sup>5</sup> Wilding, T., Jowett, I. G., Meleason, M. 2004: 'Minimum flows for selected North Canterbury Streams'. Report prepared for NIWA for ECan, Report No. U04/107.

67. The technical report by Burrell *et al.* (2010)<sup>6</sup> set out the following key ecological considerations to be taken into account when setting environmental flows:
- Ecological values present;
  - Magnitude, frequency and duration of low flows;
  - Magnitude, frequency and duration of high flows;
  - Magnitude, frequency and duration of channel forming flood flows;
  - Flow intermittency;
  - River mouth opening; and
  - Water demand.
68. In this situation we consider we have some information regarding the ecological values present, but only limited hydrological information and no information on actual rates of water abstraction (water demand).
69. The proposed NES includes interim minimum flow and allocation limits for rivers without existing limits. Interim limits are different for rivers with average flows greater than 5 m<sup>3</sup>/s, than for rivers with average flows less than 5 m<sup>3</sup>/s. As all rivers subject to Variation 5 have an average flow less than 5 m<sup>3</sup>/s, the proposed NES 'rule of thumb' for setting the interim minimum flows is 90% of the 7d MALF and a maximum allocation limit of 30% of the 7d MALF or the existing total allocation in the catchment, whichever the greatest. The NES considers that a total abstraction in a catchment exceeding 25-40% of the 7d MALF represents a high degree of hydrological alteration.
70. Burrell *et al.* (2010) stated that based on the proposed NES framework, the minimum flow assessment methods (a combination of technical panel, stakeholder input and simplified 1D habitat modelling) used in the Kaikoura rivers could be considered to be '*lacking scientific rigour*'.
71. Variation 5 includes minimum flows and allocation limits for months outside the irrigation season, to allow for future abstraction for water storage. Higher minimum flow levels have been proposed to enable this for Middle Creek, Lyell Creek (mainstem), Warrens Creek and the Kahutara River, and "B" allocation block limits and higher minimum flows have also been proposed.
72. While the proposed minimum flows generally reflect the status quo, split minimum flow regimes have been proposed for Middle Creek, Lyell Creek (mainstem) and Warrens Creek, with lower minimum flow levels for January and February and higher minimum flows outside the irrigation season.
73. Aquatic life can be adversely affected by increased water temperatures, low DO concentrations and turbidity. The report by Burrell *et al.* (2010) noted that salmonids (trout and salmon) are recognised as sensitive to temperature and that temperature standards

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<sup>6</sup> Burrell *et al.* (2010).

are based on their protection. It cited an Environment Canterbury Report (R09/16) titled 'Review of proposed NRRP water quality objectives and standards for rivers and lakes in the Canterbury region' by Hayward *et al.* (2009) that stated temperatures below 16 degrees Celsius (°C) are required for egg maturation, feeding ceased at temperatures above 19°C, migration ceased at 21°C and significant mortality occurred above 25°C. They stated that on this basis Hayward *et al.* (2009) recommended maximum daily water temperatures of 19°C between October and April, and 16°C between May and September (during the particularly sensitive spawning period).

74. It is recognised that in small rivers the lowest flow and the time spent at low flow directly limits fish habitat and abundance, and that providing adequate depth and velocity for adult brown trout will cater for other fish species present. It is also recognised that open river mouths are necessary for diadromous fish species to complete their life cycle, and that small flushes and freshes reduce periphyton growth and fine sediment deposition that adversely affects spawning habitat.
75. Due to concern regarding apparent inconsistencies between the estimates of existing surface water allocations in Maw (2007) and Lloyd (2010), and the time that had elapsed since the variation was notified, we requested all existing consents be individually reviewed. Maw (2007) assumed all groundwater takes from bores less than 31 m deep were connected to surface water. The officers provided us with details of each existing consent and Mr Lloyd, in conjunction with CRC staff, undertook individual stream depletion assessments of all groundwater takes with potential hydraulic connection to surface water.
76. We note the stream depletion assessment undertaken by Mr Lloyd are based in individual assessments and therefore accept the resulting estimated existing surface water allocation is more precise. We also found obvious errors (such as double counting in a situation where water can be abstracted from two different locations, but not concurrently) and consider it is prudent to correct the surface water allocation limit to that of the existing allocation, as intended. We are satisfied this is a correction based on the best available information and that this has no effect on existing abstractors.
77. We have summarised above the evidence presented at the hearing. While our assessment will generally focus on Middle Creek, Lyell Creek and Warrens Creek, we briefly consider all of the rivers included in Variation 5.
78. For the purpose of our assessment we will consider the rivers as two distinct groups - the predominantly spring-fed waterways of Middle Creek, Lyell Creek (mainstem, Left and Right Branches, and Warrens Creek) and Ewelme Stream; and then the predominantly hill-fed waterways of Luke Creek, Hapuku River, Kowhai River and Kahutara River.

## The Spring-fed waterways

79. The predominantly spring-fed waterways of Middle Creek, Lyell Creek/Waikawau (mainstem, Left and Right Branches, and Warrens Creek) and Ewelme Stream are characterised by minimal flood disturbance and incised channels.<sup>7</sup>
80. We note that overall the water quality monitoring results for the spring-fed streams in the Kaikoura area correlate with typical water quality results for spring-fed springs in Canterbury. Elevated nutrient concentrations, high faecal bacteria counts, temperature spikes, and occasional low DO concentrations in these waterways reflect the dominant agricultural land use and the modified riparian vegetation with pasture grass dominant and minimal shading of the waterway. These conditions can cause excessive macrophyte growth in times of low flow, which in turn can lower DO concentrations adversely affecting aquatic life. Suspended solid concentrations are generally low, in contrast to flash flood prone hill catchments, but can be elevated from bed and bank disturbance (particularly from stock access) and sediment runoff.

### Middle Creek

81. Middle Creek is a highly channelised stream whose upper reaches drain the lower flanks of Mt. Fyffe and whose lower reaches are predominantly spring-fed<sup>8</sup>. Water temperatures have been recorded at a maximum of 20.9°C. Water quality is generally typical of spring-fed streams, but low DO concentrations occur with high macrophyte cover and minimal turbulent mixing. Dissolved inorganic nitrogen (DIN) concentrations are elevated reflecting the agricultural land use.
82. CRC have operated a continuous water level recorder on the lower reaches of Middle Creek since May 1998, which is located downstream of the water takes and therefore measures residual flow. The long term naturalised 7d MALF for Middle Creek has been estimated at 230 L/s ± 40 L/s by Mr Lloyd<sup>9</sup>, and is based on the naturalised flow record from the recorder site from May 1998 to October 2009 with an estimated normalisation process, based on long term climate and flow data. In order to estimate natural flow, any upstream water takes are added to the measured flow. There is a moderate level of uncertainty regarding the 7d MALF, however we note the estimate by Lloyd (2010) is consistent with the estimate by Facer (2002).
83. Hydrograph plots of measured and naturalised flow data shown in Burrell *et al.* (2010), indicate low flows occur throughout the year, with January, February and March having the lowest average flows, and

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<sup>7</sup> *ibid.*

<sup>8</sup> *ibid.*

<sup>9</sup> Lloyd, I. 2010: 'Hydrological assessment and 7 day mean annual low flow estimates – Middle Creek, Lyell Creek and Kowhai River, Kaikoura, North Canterbury' Golder Associates.

July, August and September having the highest average flows with seasonal flood flows. The hydrograph indicates water abstraction is significant at flows less than 1,000 L/s, and that these flows dominate the flow record and occur for approximately 90% of the time.

84. The river provides habitat for native fish, and supports long-fin eel, and a locally valued brown trout fishery and trout spawning habitat. It is accepted that if Middle Creek is managed for trout values, the protection of these values will adequately provide for other aquatic life. Freshwater species present in Middle Creek include long-fin eel, short-fin eel, upland and common bullies, Canterbury galaxia, and brown trout. Maw (2007) described Middle Creek as having little natural character and few community values, but noted value to farming for water abstraction. The report noted cultural value, with Runanga noting mahinga kai (watercress and eels), mauri, and wahi tapu and wahi taonga values, but ranking the overall cultural values as moderate to low.<sup>10</sup>
85. There are three existing surface water takes and four groundwater takes hydraulically connected to Middle Creek. No additional water permits have been granted since the variation was notified.

#### *Proposed allocation regime*

86. The notified "A" allocation block limit was 117 L/s and this was based on the assessment undertaken by Maw (2007) of the existing consented surface water takes and an estimate of the stream depletion rates of groundwater takes with a moderate or high hydraulic connection to surface water. Based on the assumption that bores less than 31m deep are likely to have stream depletion effects, Maw (2007) included 45 L/s of groundwater abstraction in the estimated existing surface water allocation.
87. In reviewing the evidence, we were concerned that Maw's estimated "A" allocation block of 117 L/s was significantly different to the 78.21 L/s calculated in Lloyd (2010) and requested the existing allocation be reviewed. In the hearing, Mr Lloyd explained his assessment had been undertaken by reviewing each groundwater take and assessing the stream depletion effect, and that this was more detailed and therefore more accurate than the analysis undertaken by Maw based on well depth.
88. Mr Lloyd and the officers reviewed the stream depletion assessments and provided additional information showing the existing surface water allocation to be 94.3 L/s. We note the revised assessment is consistent with that in Lloyd (2010), but that the stream depletion effect for one of the groundwater takes had been increased as it was shown to have a high degree of hydraulic connection.

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<sup>10</sup> Maw (2007)

89. We accept the assessments undertaken by Mr Lloyd are more precise than the bore depth method used by Maw (2007) and note that the revised existing surface water allocation of 94.3 L/s does not reflect any actual change in allocation, but rather more accurate assessment.
90. It is clear that the intention of including a number (i.e. 117 L/s) in Table WQN14.6 was to limit the surface allocation block to the level of existing takes. We consider revising the allocation limit to 95 L/s (rounded up) is consistent with the intention and represents a correction based on the best available information. As discussed above, we are satisfied that correcting the "A" surface water allocation limit to reflect the most accurate calculation of the existing surface water allocation will have no actual effect and will not affect existing abstractors.
91. Facer (2007) estimated that the "A" allocation block for Middle Creek under Schedule WQN2 would be 22 L/s and under Policy WQN14(4) would be 16 L/s. We note this is considerably less than the calculated existing surface water allocation. The revised existing consented surface water allocation is calculated to be 95 L/s, which is 41% of the 7d MALF. This level of abstraction is high in comparison to the 7d MALF (based on the guidance of the NES) and is likely to be resulting in a high degree of hydrological alteration.
92. A winter "A" allocation block limit has been proposed for Middle Creek to enable future water storage options to be implemented and to cater for the possibility of the existing consents being exercised all year round. We note one of the three existing groundwater takes explicitly allow for year round abstraction, but that the other three groundwater takes and three existing surface water takes are currently limited to abstraction during the irrigation season (October – April inclusive). We therefore consider that the existing winter "A" surface water allocation is 3.5 L/s (rounded up to 4 L/s), which is the rate of stream depletion assessed for the authorised year round groundwater take. We consider that given the high level of allocation it is prudent to limit the block limit at the level of the existing allocation.
93. A "B" allocation block limit of 50 L/s has been proposed for October – April to enable abstraction for water storage. Fish and Game stated they would prefer no "B" allocation, as they question the availability of water, but would accept this on the basis these takes are subject to higher minimum flows. We note their formal submission did not specifically seek removal of the "B" allocation on any of the rivers, but rather an increase in the minimum flow under which it could be taken.
94. Burrell *et al.* (2010) stated the lack of flow data prevents detailed assessment of the potential for either winter "A" or summer "B" allocations, but that given the spring-fed creeks are dominated by standard baseflow and they do not experience significant flood events, there is limited potential for harvesting of higher flows. They stated ...*'there is little scientific justification for allocation of B Block water in*

*heavily-allocated spring-fed streams*’; and that ‘...based on the high proportion of hydrologic alteration in most catchments, further allocation of water via a B Block is likely to result in adverse effects on ecological values’.

95. The officer’s acknowledged that ‘*There was no specific technical information guiding the setting of the B allocation minimum flow and B Block size and that the basis for this component of the proposed flow and allocation regimes is relatively arbitrary in nature*’.

#### **Proposed minimum flows**

96. The three existing surface water takes and two of the four existing groundwater takes currently have consent conditions requiring abstraction to cease at minimum flow of 150 L/s.
97. As discussed above, it is difficult to accurately assess the current effect of the existing minimum flows, but Mr Lloyd provided us with an analysis of the reliability of supply for Middle Creek based water availability (based on 11 years of flow data) and extrapolated water demand that indicated the existing “A” allocation takes do not currently meet the criteria of Policy WQN14(4), which requires that supply reliability meet the full allocation rate 95% or more of the time in 6 years out of 10, and the full allocation rate 75% or more of the time in 9 years out of 10.
98. It appears that at a minimum flow of 150 L/s, the supply reliability for Middle Creek meets the full allocation rate 95% or more of the time in 6 years out of 10, but it does not meet full allocation rate 75% or more of the time in 9 years out of 10. This is because of one notable year (2002), when the full allocation rate was only met 72% of the time and not the required 75%. However, we also note that in the period shown (1997-2008) the full allocation is met for more than 95% of the time in 10 years out of 12 years. It appears that climatic conditions in 2002 stand out as a marked abnormality compared to the other 10 years.
99. The notified variation proposed a split minimum flow regime for the “A” allocation block of 165 L/s for March-December and 115 L/s for January and February based on the recommendation of Maw (2007). The officers considered this would provide adequate protection for the trout fishery, while improving the existing reliability of supply for abstractors, and that the higher flows for ten months of the year ‘...adequately compensated for the lower flows over January and February’.
100. The notified variation proposed a minimum flow of 330 L/s for the “B” allocation block, and the officers recommended this be amended to 475 L/s in the S42A Report in response to the submission by Fish and Game.

101. Fish and Game opposed lowering the minimum flow in January and February as this is the time when adult trout are most vulnerable, and that it would likely have a significant effect on the survival of larger fish. They considered reduced flows at this critical time would affect the number of fish able to be sustained in the river throughout the entire year. Mr Lynn stated that *'In general terms there is a sharp decline in habitat (and population numbers) below MALF that is generally directly proportional to flow i.e. a 50% reduction in effective MALF will result in approximately a 50% reduction in trout habitat and numbers'*. He considered the proposed minimum flow represented extreme natural low flow situations, with a return frequency estimated to be less than once in ten years.
102. Fish and Game requested increased minimum flows for "A" allocation block takes based on the 7d MALF and suggested delayed imposition until 1<sup>st</sup> October 2015, to allow time to develop upper catchment water storage. Mr Lloyd noted a minimum flow based on the 7d MALF would *'significantly increase potential restrictions and significantly reduce water supply reliability when compared to the current situation'*.
103. Officers noted the proposed minimum flow regime in the summer months provided for trout fry, and for yearling trout and trout spawning, but acknowledged it was not optimal for adult trout.

### ***Evaluation***

104. Middle Creek supports a locally significant brown trout fishery. While this is not the only ecological value, we note that both the RPS and PNRRP consider that providing adequate flow for salmonids (as indicators of aquatic life) will generally protect ecological and cultural values.
105. We consider the current level of abstraction is high compared to the 7d MALF and is likely to be currently causing significant hydrological alteration to the flows in Middle Creek over the irrigation season. We note Burrell *et al.* (2010) considered that given the high allocation and low minimum flow (relative to 7d MALF) the risk of adverse ecological effects is high.
106. Although we have no information on actual water use, we agree with Fish and Game that the current allocation has the potential to increase the frequency, severity and duration of low flows and may cause the river to 'flat-line' to minimum flow level (or less) for the entire irrigation season. We consider prolonged periods of low flow will adversely affect aquatic life by reducing habitat, raising water temperatures, increasing macrophyte growth (lowering DO levels), increasing sedimentation and closing the mouth.
107. We consider that capping the "A" allocation block to existing takes is critical in preventing any further alteration and given the high level of the existing allocation, we see no justification for any additional winter "A" allocation. In accommodating the status quo, we see no reason to

enable existing users to increase abstraction over and above existing authorisations. As one existing groundwater consent currently authorises abstraction over the entire year, we cannot set the winter "A" allocation limit to zero, as requested by Fish and Game.

108. We agree there is no scientific information to support any "B" allocation block, and consider that given the high level of allocation, it would be unwise and in fact unsustainable to increase abstraction. Furthermore, the evidence indicates that any "B" allocation block would have an extremely low reliability of supply, with flows less than 475 L/s occurring for more than 70% of the time. However, we accept Fish and Game did not specifically seek removal of the "B" allocation block, but rather seek higher minimum flow levels for these takes.
109. We consider the existing minimum flow of 150 L/s is low in comparison to the 7d MALF (65%) and consider that this, in combination with the high level of allocation, will be having adverse ecological effects. This makes the minimum flow even more critical as the river will be flat-lined to this level. Ideally, in the situation of high allocation, the river would only be flat-lined to the 7d MALF (or 90% of), preventing prolonged periods of unnatural extreme low flows.
110. We see no justification for reducing the minimum flow in January and February, when the river is subject to summer conditions and aquatic life is vulnerable (particularly to high water temperatures). It does not seem logical to us to set a minimum flow level adequate for juvenile trout and not adults. In addition to this, there are the potential ecological implications for other fish species, if flows are set at a level which cannot sustain adult trout. In this regard, we accept the submission of Fish and Game that the proposed minimum flow of 115 L/s during January and February is too low to protect the habitat of trout.
111. We consider a minimum flow of 165 L/s is consistent with the NES at 91% of the 7d MALF. Furthermore, we accept that relatively stable flows and velocities are beneficial to the trout fishery. We also note it is not within the scope of the submissions to leave the minimum flow at 150 L/s, which we may have been of a mind to do if we could.
112. While we acknowledge the increase in minimum flow from 150 L/s to 165 L/s may reduce the current level of supply, the evidence presented suggests the current weight towards out-of-stream use, needs to be better balanced with instream use.
113. We accept the submission of Fish and Game and the officers' recommendation that the minimum flow for "B" allocation takes should be 475 L/s.

### ***Conclusion and Recommendation on Middle Creek***

114. For Middle Creek, we have concluded that:

- (i) In respect of the "A" allocation block limit "117 (1 Oct – 30 Apr)" should be replaced with "95 (1 Oct – 30 Apr)" and "117 (1 May – 30 Sep)" should be replaced with "4 (1 May – 30 Sep)".
- (ii) In respect of the "A" allocation block minimum flows, the proposed "115 (1 Jan -28 Feb)" should be replaced with "165 (1 Sep – 31 May).
- (iii) In respect of the "B" allocation block minimum flows the proposed "330" should be replaced with "475".

### **Lyell Creek/Waikawau**

115. The Lyell Creek catchment (mainstem, Left and Right Branches, and Warrens Creek) is spring-fed and predominantly drains farmland. The lower reaches of the stream flow through the Kaikoura Township and the river mouth is periodically closed due to sea conditions depositing sediment at the outlet. During extreme flood events water from the Kowhai River can spill into Warrens Creek causing large high flows. The lower reaches were originally a wetland.<sup>11</sup>
116. CRC have operated a continuous water level recorder on the lower reaches of Lyell Creek since May 2003, but water levels at the site can be affected by mouth closures and therefore the flow series is not complete. Mouth closures occur predominantly in summer months during low flow conditions. The mouth was closed three times between 1<sup>st</sup> July 2008 and 30<sup>th</sup> June 2009, with the longest closure being for eight days.
117. Water quality in the lower reaches is poor and sediment flows in from Warrens Creek. A maximum water temperature of 21.7°C has been recorded in January. DO concentrations are low on occasions and high nutrient levels and stable flows lead to excessive macrophyte cover.<sup>12</sup>
118. Lamprey ('sparse national distribution'), red-fin bully, long-fin eel, short-fin eel, inanga, black flounder and koura (freshwater crayfish) have been recorded, and the river supports a locally valued brown trout fishery. Lyell Creek has suitable habitat for a range of native fish, but it is considered it should be managed for trout values and that protection of these values will adequately provide for other aquatic life<sup>13</sup>. It also provides habitat for birds.
119. Lyell Creek/Waikawau holds significant value to Runanga as they have a long historical cultural association with it related to mahinga kai, wahi tapu and wahi taonga. It is a valued source of watercress, tuna (eels)

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<sup>11</sup>Burrell *et al.* (2010)

<sup>12</sup> *ibid.*

<sup>13</sup> Maw (2007)

and ducks. Historically, the river was used to transport trees from the forest to build waka.

### Lyell Creek mainstem

120. The mainstem of Lyell Creek is a moderate sized stream with an entrenched channel, containing riffles and meanders. It has medium natural character and amenity value in the Township area, but these are reduced by exotic plants on the bank and excessive macrophyte growth.<sup>14</sup>
121. The long term naturalised 7d MALF for Lyell Creek has been estimated at 360 L/s  $\pm$  120 L/s by Mr Lloyd<sup>15</sup>, and is based on the naturalised flow record from the recorder site from May 2003 to October 2009 with an estimated normalisation process, based on long term climate and flow data. In order to estimate natural flow, any upstream water takes are added to the measured flow. We note the flow record is relatively short and there is a high level of uncertainty with the 7d MALF, however the estimate by Lloyd (2010) is consistent with the estimate by Facer (2002).
122. Hydrograph plots of measured and naturalised flow data show a distinctly seasonal pattern of low flows occur throughout the year, with January, February and March having the lowest average flows, and July, August and September having the highest average flows with seasonal flood flows. Like Middle Creek, the hydrograph indicates water abstraction is significant at flows less than 1,000 L/s, and that these flows dominate the flow record and occur for approximately 90% of the time.<sup>16</sup>
123. There is one surface water take of 58 L/s from the mainstem. No additional water permits have been granted since the variation was notified.

### *Proposed allocation regime*

124. The notified "A" allocation block limit was 58 L/s, based on the assessment undertaken in Maw (2007) and this has been shown to still be accurate based on the our requested review. Overall, the total "A" allocation is 178 L/s, including the takes from the upstream tributaries (Left and Right Branch and Warrens Creek). This is 58 L/s less than the 236 L/s total allocation calculated by the officers because the 58 L/s, which can be taken from either Warrens Creek or the mainstem, had been counted twice. We consider the take should only be counted once in the total allocation, as it is the maximum rate of take regardless of which part of the Lyell Creek system it is abstracted from.

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<sup>14</sup> *ibid.*

<sup>15</sup> Lloyd (2010)

<sup>16</sup> Burrell *et al.* (2010)

125. Burrell *et al.* (2010) considered the total allocation of 236 L/s to be high at 66% of the 7d MALF. We calculate the total allocation of 178 L/s to be 49% of the 7d MALF, and note this is still quite high.
126. Like Middle Creek, a winter “A” allocation block limit has been proposed of 58 L/s. We note there is one existing surface water take of 58 L/s that is currently limited to abstraction during the irrigation season (October – April inclusive).
127. A total “B” allocation block limit of 100 L/s has been proposed for October – April, with a maximum of 50 L/s from Warrens Creek and Lyell mainstem, and 25 L/s from the Left and Right Branch.
128. Burrell *et al.* (2010) stated the lack of flow data prevents detailed assessment of the potential for either winter “A” or summer “B” allocations, but that given the spring-fed creeks are dominated by standard baseflow and do not experience significant flood events, there is limited potential for harvesting of higher flows.

#### ***Proposed minimum flows***

129. The existing surface water take currently has a minimum flow of 300 L/s at the permanent recorder site, based on the technical panel review in Maw (2007) before the proposed split regime was considered by staff. As discussed above, it is difficult to accurately assess the current effect of the existing minimum flows, but Mr Lloyd provided us with a preliminary assessment of flow reliability for the proposed minimum flows for Lyell Creek based on 7 years of flow data.
130. The notified variation proposed a split minimum flow regime for the “A” allocation block of 290 L/s for March-April, 420 L/s for May-September, 290 L/s for October-December, and 200 L/s for January and February based on the recommendation of Maw (2007). It is proposed the takes from upstream tributaries be subject to the minimum flow at the recorder site on the mainstem as well as the minimum flow for the specific tributary.
131. The notified variation proposed a minimum flow of 725 L/s for “B” allocation takes, and the officers recommended that this be changed to 1095 L/s in the S42A Report, in response to the submission by Fish and Game. The officers considered this would provide adequate protection for the trout fishery and that the 200 L/s minimum flow had been in place for more than 10 years. Officers acknowledged the regime seeks to offset the lower January and February flows with higher flows in March-April and October-December, and that reliability of supply for abstractors was an important factor. They noted that although the lower minimum flows were not ‘optimal’ for aquatic ecology, they are considered to afford ‘adequate protection’.
132. As with Middle Creek, Fish and Game opposed lowering the minimum flow in January and February as this is the time when adult trout are

most vulnerable and it would likely have a significant effect on the survival of larger fish. They considered reduced flows at this critical time would affect the number of fish able to be sustained in the river throughout the entire year.

133. Fish and Game requested increased minimum flows for “A” allocation block takes based on the 7d MALF to protect the habitat of all sizes of trout. Burrell *et al.* (2010) noted the higher minimum flows were unlikely to result in an increase in fish population sizes, as they would still be limited by low flows in January and February.
134. Mr Lloyd noted a minimum flow based on the 7d MALF would significantly increase the number of potential days on full restriction when compared to the current situation.
135. We acknowledge that the Runanga were not a submitter, but note they had commented that the river was one system, and that the tributaries should not be managed in isolation to the mainstem. They considered cultural values of the river are currently degraded and suggested the minimum flow should be higher than 200 L/s.<sup>17</sup>

#### **Right (South) Branch of Lyell Creek**

136. The Right Branch of Lyell Creek flows from springs on the lower inland plains and is ‘drain’ like in appearance with steep banks, a box shaped bed and little riparian vegetation.<sup>18</sup> The long term naturalised 7d MALF for the Right Branch has been estimated at 25 L/s ± 25 by Facer (2002). There is a high level of uncertainty with the 7d MALF. Fish and Game submitted the Right Branch supports populations of brown trout, long-fin eel and native fish.
137. There is one surface water take (11.5 L/s), two surface water diversions (13.5 and 5 L/s) and one groundwater take (10.5 L/s) assessed as having a high hydraulic connection to the Right Branch. One diversion of 13.5 L/s is to enable a irrigation water take from Montagues Creek (a tributary of Warrens Creek). We note the other diversion is for non-consumptive use, but as the water is not returned to the Right Branch it is appropriate to include it as part of the total surface water allocation for the Right Branch

#### ***Proposed allocation regime***

138. The notified “A” allocation block limit was 34 L/s, based on the assessment undertaken in Maw (2007) and our requested review of all existing consents showed this should be 41 L/s (rounded up from 40.5).

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<sup>17</sup> Maw (2007)

<sup>18</sup> *ibid.*

Burrell *et al.* (2010) considered the total allocation was high at 34 L/s and we note at 41 L/s this is 164% of the 7d MALF.

139. A winter "A" allocation block limit has been proposed of 34 L/s. We note that one existing surface water take, one surface water diversion and the groundwater take (11.5, 13.5 and 10.5 L/s) are currently limited to abstraction during the irrigation season (October – April inclusive). A total "B" allocation block limit of 25 L/s has been proposed for October – April. Fish and Game seek removal of the winter "A" allocation block because of over allocation, and a reduction in the "A" allocation block if the minimum flow imposed is not 45 L/s.

### ***Proposed minimum flows***

140. The one existing surface water take currently has a minimum flow of 45 L/s, which was set in accordance with the provisions of the RPS, and one diversion (5 L/s) is currently subject to a condition requiring a flow of 20 L/s to remain immediately downstream of the intake. It is proposed that the "A" allocation block takes would be subject to a minimum flow of 25 L/s on the Right Branch. In addition, it is proposed that takes be subject to the minimum flow levels proposed for the mainstem of Lyell Creek to address cumulative effects. There is no information regarding flow reliability for the Right Branch.
141. It is proposed that "B" allocation block takes would be subject to a minimum flow of 1095 L/s at the recorder site on the mainstem of Lyell Creek, as requested by Fish and Game. Fish and Game also request an "A" allocation minimum flow of 45 L/s because of the high level of uncertainty with the 7d MALF and a high margin of error ( $\pm 25$  L/s). Officers noted the consent holder with an existing minimum flow of 45 L/s will benefit from the proposed lower minimum flow.

### **Left (North) Branch of Lyell Creek**

142. The Left Branch of Lyell Creek also flows from springs on the lower inland plains and its bed is entrenched with a gravel bottom<sup>19</sup>. A survey undertaken by DOC recorded koura in the Left Branch. The long term naturalised 7d MALF for the Left Branch has been estimated at 34 L/s by Facer (2002). It is recognised that the flow in the Left Branch in summer is consistently 25-35% higher than the flow in the Right Branch. There is a high level of uncertainty with the 7d MALF.
143. There is one surface water take (13.5 L/s) and one groundwater take (stream depletion rate of 5.82 L/s) assessed as having a moderate hydraulic connection to the Left Branch. There is also one surface water take and one groundwater take that are for non-consumptive land based aquaculture purposes, and these have not been included in the surface water allocation for the Left Branch.

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<sup>19</sup> *ibid.*

### ***Proposed allocation regime***

144. The notified "A" allocation block limit was 114 L/s, based on the assessment undertaken in Maw (2007) and our requested review of all existing consents showed this to be grossly inaccurate. Maw (2007) allowed for 100 L/s stream depletion from groundwater takes, whereas the assessment by Mr Lloyd indicated this to be only 5.82 L/s.
145. We accept the assessments undertaken by Mr Lloyd are more precise than the method used by Maw (2007), and note that the revised existing surface water allocation of 20 L/s (rounded up from 19.3 L/s) has not occurred by any actual change in allocation, but rather more accurate assessment.
146. Burrell *et al.* (2010) considered the total allocation was extremely high at 114 L/s (253% of the 7d MALF) and considered this posed a moderate risk of adverse ecological effects. However, we note the revised "A" allocation block of 20 L/s is 44% of the 7d MALF.
147. A winter "A" allocation block limit has been proposed of 114 L/s. We note that the surface water take (13.5 L/s) is currently limited to abstraction during the irrigation season (October – April inclusive), but that the groundwater take with a stream depletion rate assessed at 5.82 L/s (rounded to 6 L/s) can be taken for the entire year. A total "B" allocation block limit of 25 L/s has been proposed for October – April. Fish and Game seek removal of the winter "A" allocation block because of over allocation.

### ***Proposed minimum flows***

148. The one existing surface water take currently has a minimum flow of 45 L/s, which was imposed during the consent process following a stream survey by DOC. It is proposed that the "A" allocation block takes would be subject to a minimum flow of 45 L/s on the Right Branch. In addition, it is proposed that takes be subject to the minimum flow levels proposed for the mainstem of Lyell Creek to address cumulative effects.
149. In response to the submission from Fish and Game, the officers proposed that "B" allocation block takes would be subject to a minimum flow of 1095 L/s at the recorder site on the mainstem of Lyell Creek.
150. There is no information regarding flow reliability for the Left Branch. However, the officers noted the reliability of supply is unchanged as the proposed minimum flow is already imposed on the surface water take.

## Warrens Creek

151. Warrens Creek is a network of spring-fed drains fed largely by water seepage from the Kowhai River. It is a major tributary of Lyell Creek and becomes more deeply channelised before the confluence.<sup>20</sup> The long term naturalised 7d MALF for Warrens Creek has been estimated as 150 L/s  $\pm$  50 by Mr Lloyd. This estimate is significantly less than previous estimate of 280 L/s, due to a recently discovered error. We note the revised estimate is consistent with the estimate of 180 L/s by Facer (2002) and an expected relationship of 40% of the flow in Lyell Creek at the downstream recorder. There is a high level of uncertainty with the 7d MALF.
152. Warrens Creek contains a lot of watercress and supports long and short-fin eel and brown trout.
153. There are four existing surface water takes from Warrens Creek. We note one of these is a consent that authorises the abstraction of up to 58 L/s from either Warrens or Lyell Creek. This allocation has correctly been included in the surface water allocation for both Warrens Creek and the mainstem, as the entire rate could be abstracted from either waterway, or both, up to the maximum abstraction rate of 58 L/s.

### *Proposed allocation regime*

154. The notified "A" allocation block limit was 131 L/s (rounded from 130.5 L/s), based on the assessment undertaken in Maw (2007). Our requested review of all existing consents showed this should be 117 L/s, as 13.5 L/s is diverted from the Right Branch (that has been included in the Right Branch surface water allocation) and abstracted from Montagues Creek (a tributary of Warrens Creek). Burrell *et al.* (2010) considered the total allocation was high at 131 L/s, and we note at 117 L/s this is 78% of the 7d MALF.
155. A winter "A" allocation block limit has been proposed of 131 L/s. We note that three of the existing surface water takes (58, 30, and 15 L/s) are currently limited to abstraction during the irrigation season (October – April inclusive). A total "B" allocation block limit of 50 L/s has been proposed for October – April.
156. Fish and Game seek removal of the winter "A" allocation block because of over allocation and a reduction in the "A" allocation block if the minimum flow imposed is not 45 L/s.

### *Proposed minimum flows*

157. One existing surface water take currently has a minimum of 50 L/s in Warrens Creek and a requirement to leave a residual flow downstream of the intake of 25 L/s. One surface water take has a minimum flow of

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<sup>20</sup> Maw (2007)

100 L/s in Warrens Creek, as well as 300 L/s in the mainstem of Lyell Creek. Two surface water takes have minimum flows based on the proposed split flow regime for Warrens Creek, as well as 300 L/s in the mainstem of Lyell Creek.

158. Under Variation 5, it is proposed that the "A" allocation block takes would be subject to a minimum flow in Warrens Creek of 75 L/s in January and February, 110 L/s in October-December and March and April, and 180 L/s In May – September. In addition it is proposed that takes be subject to the minimum flow levels proposed for the mainstem of Lyell Creek to address cumulative effects.
159. It is proposed that "B" allocation block takes would be subject to a minimum flow of 1095 L/s at the recorder site on the mainstem of Lyell Creek.
160. There is no information regarding flow reliability for the Warrens Creek. Fish and Game requested the removal of the winter "A" allocation block.

### ***Evaluation***

161. Lyell Creek and its tributaries support a locally significant brown trout fishery. While it has other important ecological values, we consider that providing adequate flow for salmonids (as indicators of aquatic life) will generally protect ecological and cultural values. We are mindful that the waterway is currently degraded and that it is of immense cultural significance to tangata whenua<sup>21</sup>.
162. While the abstraction from the mainstem is only 16% of the 7d MALF, the overall abstraction (including the upstream tributaries) is 178 L/s which is 49% of the 7d MALF. We consider the current level of abstraction is high compared to the 7d MALF and is likely to be currently causing significant hydrological alteration of the flows in Lyell Creek over the irrigation season.
163. In **Table 1** below we have summarised the 7d MALF, the existing minimum flow and its relative percentage of 7d MALF, the proposed minimum flow (excluding winter periods) and its relative percentage of 7d MALF, the revised existing surface water allocation and its relative percentage of 7d MALF, and the risk of adverse ecological effects as assessed by Burrell *et al.* (2010).

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<sup>21</sup> *ibid* (p.21)

**Table 1.**

River	7d MALF (L/s)	Existing min flow L/s (% of 7d MALF)	Proposed min flow L/s (% of 7d MALF)	Updated existing consented allocation L/s (% of 7d MALF)	Risk of adverse ecological effects relative to 7d MALF
Lyell - mainstem	360 ±120	300 (83%)	290 (80%) 200 (55%)	58 (16%)-excl. tribs 178 (49%)-incl. tribs	High
Lyell - Right Branch	25 ±25	20 (80%) 45 (180%)	25 (100%)	41 (164%)	Moderate - High
Lyell - Left Branch	34	45 (132%)	45 (132%)	20 (59%)	Moderate
Warrens	150 ±50	50 (33%) 100 (66%)	110 (73%) 75 (50%)	117 (78%)	High

164. We note that in the Right and Left Branches the proposed minimum flow is at or above the 7d MALF and accept this is likely to mitigate any adverse ecological effects in these tributaries. However, the existing allocation in the Right Branch is very high, and there is a high degree of uncertainty regarding the 7d MALF and a large margin of error.
165. Although we have no information on actual water use, we agree with Fish and Game that the current allocation has the potential to increase the frequency, severity and duration of low flows and may cause the river to 'flat-line' to minimum flow level (or less) for the entire irrigation season. We consider prolonged periods of low flow will adversely affect aquatic life by reducing habitat, raising water temperatures, increasing macrophyte growth (lowering DO levels), increasing sedimentation and contributing to mouth closures.
166. Like Middle Creek, we consider that capping the "A" allocation block to existing takes is critical in preventing any further alteration and is consistent with the intent of Variation 5. We consider the allocation limit should be capped at the revised existing surface water allocation limit. Given the high level of existing allocation, we see no justification for any additional winter "A" allocation and we see no reason to enable existing users to increase abstraction over and above existing authorisations.
167. Like Middle Creek, we agree there is no scientific information to support any "B" allocation block, and we consider that given the high level of allocation it would be unwise to increase abstraction. Furthermore, the evidence indicates that any "B" allocation block would have an extremely low reliability of supply, with flows greater than 1095 L/s occurring for less than 4% of the time. However, as discussed above for Middle Creek, we consider it is not within the scope of the relief sought by Fish and Game in their original submission to remove the "B" allocation.

168. We consider the existing minimum flow in the mainstem of 300 L/s is low in comparison to the 7d MALF (83%) and consider that this, in combination with the high level of allocation, will be having adverse ecological effects.
169. We are mindful that Warrens Creek contributes approximately 40% of the flow of Lyell Creek at the recorder site, and consider its high allocation will be having a significant effect on the frequency and duration of low flows in the mainstem. We consider the proposed minimum flow of 75 L/s in January and February is too low, at only 50% of the 7d MALF, and suspect that 110 L/s for the rest of the irrigation season is also likely to be too low. However, we accept some mitigation will be provided by requiring all takes be subject to the minimum flow in the mainstem and therefore determine the minimum flow should be 110 L/s for the irrigation season.
170. We agree it is important that all upstream takes are subject to the minimum flow at the permanent recorder site in the mainstem, as it is the cumulative impact of a high level of abstraction in the tributaries that is of concern to us. For this reason, we view the minimum flow in the mainstem to be critical in mitigating adverse ecological effects.
171. We accept that the minimum flow of 280 L/s for 1 May – 30 Sep was an error and that this should be corrected to 180 L/s, as outlined by the officers.
172. The one existing surface water take in the mainstem is currently subject to minimum flow of 300 L/s, which is 83% of the 7d MALF. We consider this close to the NES 'rule of thumb' of 90% and see no scientific justification to lower it. As discussed above, we accept January and February are the limiting months for fish populations.
173. We are mindful the existing minimum flow of 300 L/s has been in place for 5 years and that this is a similar period of the existing flow record. Given the lack of information on water availability and water demand, we consider it would be prudent to maintain the status quo for a few more years to enable direct comparisons.
174. We accept the submission from Fish and Game and the officers' recommendation that the minimum flow for "B" allocation takes should be 1095 L/s.
175. It is apparent that more time is needed to have increased certainty regarding water availability and water demand. We accept that the existing permanent recorders and the new permanent recorder in the Kowhai Gorge will assist in providing more certainty and in understanding the relationships between sites and between groundwater and surface water. In this regard, we agree with Messers Lloyd and Burrell that there is time to gather better information.

### ***Conclusion and Recommendation on Lyell Creek/Waikawau***

176. For the **mainstem** of Lyell Creek, we have concluded that:

- (i) In respect of the "A" allocation block limit "58 (1 May – 30 Sep)" should be replaced with "0 (1 May – 30 Sep)".
- (ii) In respect of the "A" allocation block minimum flows the proposed "290 (1 Mar – 30 Apr)", "290 (1 Oct – 31 Dec)" and "200 (1 Jan – 28 Feb)" should be replaced with "300 (1 Oct - 30 Apr)".
- (iii) In respect of the "B" allocation block minimum flows the proposed "725" should be replaced with "1095".

177. For the **Right Branch** of Lyell Creek, we have concluded that in respect of the "A" allocation block limit "34 (1 Oct – 30 Apr)" should be replaced with "41 (1 Oct – 30 Apr)" and "34 (1 May – 30 Sep)" should be replaced with "5 (1 May – 30 Sep)".

178. For the **Left Branch** of Lyell Creek, we have concluded that in respect of the "A" allocation block limit "114 (1 Oct – 30 Apr)" should be replaced with "20 (1 Oct – 30 Apr)" and "114 (1 May – 30 Sep)" should be replaced with "6 (1 May – 30 Sep)".

179. For **Warrens Creek**, we have concluded that:

- (i) In respect of the "A" allocation block limit "131 (1 Oct – 30 Apr)" should be replaced with "117 (1 Oct – 30 Apr)" and "131(1 May – 30 Sep)" should be replaced with "14 (1 May – 30 Sep)".
- (ii) In respect of the "A" allocation block minimum flows the proposed "75 (1 Jan – 28 Feb)" should be replaced with "110 (1 Oct - 30 Apr)".

### **Ewelme Stream**

180. Ewelme Stream is a small predominantly spring-fed creek that drains a small coastal catchment between the Kowhai and Kahutara Rivers. The catchment contains Lake Rotoiti and flow in the creek is strongly influenced by flow in the Kowhai River to the north. Significant flow is lost from the Kowhai River when it emerges from the gorge and flows across the upper Kaikoura plains. It is recognised that much of this groundwater flows to the east and replenishes groundwater which resurfaces as springs, and feeds Middle, Lyell and Warrens Creeks. Some of the groundwater replenishes shallow groundwater to the south of the Kowhai River and resurfaces as springs which feed Ewelme Stream.<sup>22</sup>

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<sup>22</sup> Burrell *et al.* (2010)

181. Ewelme Stream is described as a picturesque creek with high natural character associated with water movement and channel pattern. It has clear water with lots of riffles and changes in depth and flow. While indigenous plant values are low, habitat is present and is ideal for restoration and enhancement.<sup>23</sup> Its upper reaches are well shaded and provide good habitat for pollution sensitive invertebrates. Its narrow channel suggests the stream experiences limited flow variability.<sup>24</sup>
182. Ewelme stream has high cultural significance and is adjacent to a registered Pa site and is in close proximity to other sites of local significance such as middens and umu.<sup>25</sup> Long-fin eel, short-fin eel, common bully, upland bully, torrent fish and inanga have been recorded in the stream.
183. The long term naturalised 7d MALF for Ewelme Stream has been estimated as 53 L/s  $\pm$  37 by Facer (2002) based on a regression relationship with Middle Creek. There is a high level of uncertainty with the 7d MALF. Mr Lloyd expects a strong correlation of the flow in Ewelme Stream with the flow in the Kowhai River and local groundwater levels, and over time this will allow for a more accurate estimate of 7d MALF.
184. There are two existing surface water takes (34 and 50 L/s) and three existing groundwater takes (7.67, 2.32 and 2.04 L/s) assessed as having a moderate hydraulic connection to Ewelme Stream.

### ***Proposed allocation regime***

185. The notified "A" allocation block limit was 126 L/s (rounded from 125.9 L/s), based on the assessment undertaken in Maw (2007). Our requested review of all existing consents showed this should be 96 L/s, as Maw (2007) allowed for a stream deplete rate of 41.9 L/s from the three groundwater takes.
186. The stream depletion assessment by Mr Lloyd showed the stream depletion rate to be significantly less at 12.04 L/s. As discussed above, we accept the assessments undertaken by Mr Lloyd are more precise than the method used by Maw (2007), and note that the revised existing surface water allocation of 96 L/s has not occurred by any actual change in allocation, but rather more accurate assessment.
187. A winter "A" allocation block limit has been proposed of 126 L/s. We note that one of the existing surface water takes (34 L/s) is currently limited to abstraction during the irrigation season (October – April inclusive). In 2003, an application was made to vary the conditions of

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<sup>23</sup> Maw (2007)

<sup>24</sup> Burrell *et al.* (2010)

<sup>25</sup> Maw (2007)

the other surface water take (50 L/s) to allow 30 L/s to be taken over the winter months to fill a water storage dam. A total "B" allocation block limit of 25 L/s has been proposed for October – April.

188. Burrell *et al.* (2010) noted the existing surface water allocation is very high and could significantly extend the duration of low flows and adversely effect aquatic biota.

#### ***Proposed minimum flows***

189. One existing groundwater take (stream depletion rate of 7.67 L/s) currently has a minimum condition limiting the take to 3 L/s when the minimum flow in Ewelme Stream falls below 55 L/s and a reduced maximum rate (21 L/s) when the flow is between 181 and 55 L/s. One surface water take (50 L/s) is currently subject to a minimum flow of 55 L/s in Ewelme Stream to protect the reliability of supply of the other surface water abstractor.
190. Under Variation 5, it is proposed that the "A" allocation block takes would be subject to a minimum flow in Ewelme Stream of 55 L/s. It is proposed that "B" allocation block takes would be subject to a minimum flow of 205 L/s in Ewelme Stream. There is no information regarding flow reliability for this stream.

#### ***Evaluation***

191. The revised surface water allocation of 96 L/s is 181% of the 7d MALF. Although this is less than the allocation assessed by Burrell *et al.* (2010), it is still very high and is likely to be significantly altering the hydrology of the stream over the irrigation season. The existing winter "A" allocation block of 96 L/s is also high and therefore the stream could potentially be flat-lined to a low flow of 55 L/s for the entire year.
192. Given the proposed minimum flow is slightly above the 7d MALF (108%), we accept this is consistent with the guidance of the NES and that it should mitigate adverse ecological and cultural effects. As discussed above, we consider it is appropriate to correct the existing surface water allocation limit to the revised 96 L/s, as this is consistent with the intention of the variation to cap the allocation at the existing level. We are satisfied that correcting the figure will not adversely affect any existing abstractors.
193. While we consider there is no justification for "B" allocation block on the highly allocated spring-fed streams, we accept there are no submissions requesting it be removed.

#### ***Conclusion and Recommendation on Ewelme Stream***

194. For Ewelme Steam, we have concluded that in respect of the "A" allocation block limit "126 (1 Oct – 30 Apr)" should be replaced with "96 (1 Oct – 30 Apr)" and "126 (1 May – 30 Sep)" should be replaced

with “96 (1 May – 30 Sep)”, on the basis that this reflects updated and accurate information.

## HILL-FED WATERWAYS

195. The predominantly hill-fed waterways of Luke Creek, Hapuku River, Kowhai River and Kahutara River drain the seaward Kaikoura Ranges and are characterised by broad gravel beds, low summer flows, and frequent flood flows that disturb the river bed.<sup>26</sup> We note that overall water quality in the hill-fed waterways in the Kaikoura area correlates with typical hill-fed waterways in Canterbury, characterised by high DO concentrations, typical of high turbulence and minimal macrophyte growth, relatively low nutrient concentrations, and high turbidity in flood flows.
196. The Hapuku River, Kowhai River and Kahutara River support a range of native fish and birds. The Kahutara supports a local population of black fronted terns. These rivers have significant cultural value to tangata whenua. We note the 7d MALFs are based on rough estimates completed by NIWA in Wilding *et al.* (2004) and accept there is a high level of uncertainty.

### *Evaluation*

197. We are mindful there are no submissions specific to the hill-fed rivers and accept there is no scope to amend the proposed variation in relation to these rivers. We accept the nature of hill-fed rivers may provide limited opportunity for future water storage options via a limited “B” block allocation.
198. As discussed above, we consider it is appropriate to correct the existing surface water allocation to the revised limit based on the best available information and that this will not adversely affect any existing abstractors.
199. There is no change to the surface water allocation for the Hapuku River, as notified.
200. For the Upper Kahutara River, an additional groundwater take has been assessed as having a stream depletion rate of 5 L/s. Therefore, the total existing “A” allocation block limit should be corrected to 15 L/s. For the un-named tributary of the Kahutara River, there are two existing surface water takes (30 and 22 L/s). Therefore, the total existing “A” allocation block limit should be corrected to 52 L/s.
201. For the Kowhai River, the proposed surface water limit was notified as 75 L/s based on Maw (2007). Our requested review showed this to be incorrect. We consider for clarity the Kowhai River section should be

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<sup>26</sup>ibid.

separated out into Kowhai River mainstem and Kowhai River tributaries.

202. Maw (2007) noted that staff considered an extra abstraction of 75 L/s could be allowed for on the mainstem of the Kowhai River, and on the basis of this statement a new consent was recently granted for 70 L/s. The revised assessment shows a significant number of groundwater takes were not included in the surface water allocation. We consider that had these been included there would have only been approximately 25 L/s available for abstraction from the mainstem. Nevertheless, we accept consent has been granted for 70 L/s and consider this should be included in the existing surface water allocation.
203. We consider the revised assessment shows the existing surface water allocation for the Kowhai River mainstem is 119 L/s and 124 L/s for the tributaries. As discussed above, we consider the limit should be corrected based on the best available information and to reflect the existing surface water allocation.

#### ***Conclusion and Recommendation on Hapuku River, Kahutara River and Kowhai River***

204. For the **Kahutara River**, we have concluded that in respect of the "A" allocation block limit "10 (1 Oct – 30 Apr)" should be replaced with "15 (1 Oct – 30 Apr)".
205. For the **Kowhai River**, we recommend the section be split into Kowhai River mainstem and Kowhai River tributaries. In respect of the Kowhai River mainstem the "A" allocation block limit "75 (1 Oct – 30 Apr)" should be replaced with "119 (1 Oct – 30 Apr)" and "75 (1 May – 30 Sep)" should be replaced with "119 (1 May – 30 Sep)". In respect of the Kowhai River tributaries the "A" allocation block limit should be "124 (1 Oct – 30 Apr)" and "124 (1 May – 30 Sep)".

#### ***Other matters raised by Fish and Game***

206. A specific component of the relief sought by Fish and Game was that the provision made in the Schedule for existing permits to be replaced on expiry, be deleted.
207. This issue is central to much of the preceding discussion with respect to minimum flow rates and allocation blocks - and specifically the appropriate balance to be struck between security of supply for abstractors, and the protection of the instream values of the affected waterways. We were conscious that a number of the existing consents granted had resulted in a regime of abstractions which by reference to the 7dMALF of some of the waterways concerned, were likely to

have adverse effects. Readers of these recommendations will now be aware that while supporting the setting of numerical standards through the variation, we are reluctant to contemplate minimum flows or allocations which would further undermine the instream values of waterways, especially with respect to the spring fed streams.

208. Balanced against this, we acknowledge the work undertaken by the CAG, and the need for abstractors to have a reasonable element of future certainty with respect to their economic and social welfare, and that of the wider community dependent on farming activities. Fish and Game made the helpful suggestion that a transitional regime could perhaps be implemented with respect to minimum flow rates, thus providing lead time to enable other alternatives such as storage to be explored and developed. However the practicality and economics of storage based on possible abstractions from the hill fed streams is unknown at this point.
209. We observed that the Regional Council has the power to review existing consents. We carefully considered the proposal forward by Fish and Game, but ultimately concluded that on balance the purpose of the Act would be better served by amending the minimum flow rates and allocations set out as part of the variation, to the extent that this was possible within the scope of submissions. Another factor which was significant in our considerations was that there was further work to be done with respect to the Kaikoura rivers, and that this provided a further opportunity to further review minimum flow rates and allocation limits, possibly in conjunction with setting minimum flow and allocation regimes for the other Kaikoura waterways such as the Waimangarara.

#### **SUBMISSIONS BY DEPARTMENT OF CONSERVATION (DOC)**

210. Although much of the hearing centred on the specifics of minimum flow regimes and allocation blocks for the spring-fed streams, the DOC. submissions were of a more general nature, and as would be expected, had a broad focus on the effects of abstraction and flow rates on the ecological character of the affected waterways.
211. The first component of the DOC submissions sought that the proposed plan be subject to the addition of monitoring provisions, including an appropriate measurement of instantaneous flow rates at ecologically relevant parts of all rivers, and the monitoring of the health of aquatic and riverbed communities. Our understanding of the wording of the submission was that it would apply to all rivers subject to Chapter 5 of the PNRRP as a whole. The difficulty with the submission was not so

much the merits of the relief itself, but that it extended well beyond the scope of Variation 5. We do not know whether the DOC lodged the same or a similar submission to the PNRRP and Chapter 5 as a whole, but we consider that would be the appropriate process to achieve the relief sought.

212. The DOC submission also sought that abstractions from the listed Kaikoura waterways be subject to the 7dMALF estimates upon which minimum flows are based, and that this be verified by actual data. While this has merit in principle, such a measure would create uncertainty as to the application and administration of any applications for water takes. We agree with the officers suggested approach that the specification of minimum flow rates through the rules is to be preferred to what appears in the DOC submission to be more discretionary approach based on determining applications on a case-by-case basis.
213. The third component of the relief sought by the DOC was to amend the Schedule *"to safeguard the life supporting capacity for indigenous species including native fish and riverbed birds; and....."*.
214. We consider that the additional wording suggested by the DOC addresses the instream values of the Kaikoura rivers in a more holistic manner, and that for this reason the relief sought by DOC was appropriate.

#### SUMMARY OF ENVIRONMENTAL CONSIDERATIONS

215. With the exception of Luke Creek, it is accepted that the rivers included in Variation 5 have moderate to high ecological value. Many of the rivers also have significant cultural values to Runanga.
216. The evidence presented indicates that many of the rivers within Variation 5 have low existing and proposed minimum flows, and high existing allocation limits relative to natural low flows. We accept that the high allocation limits and low minimum flows have the potential to adversely affect ecological values by reducing habitat availability, reducing the high 'flushing' flows and increasing the likelihood of nuisance algal growth occurring, increasing water temperatures and deducing dissolved oxygen concentrations, reducing river mouth opening frequency and restricting opportunities for migratory fish to complete their life cycle and populate rivers.
217. We accept that based on the high proportion of hydrological alteration in the spring-fed catchments, further allocation via a "B" allocation block is likely to exacerbate any adverse effects on ecological values. We consider there is no justification to enable any increase in winter "A" allocations over and above that which is currently authorised.

218. We are of the opinion that in general there is a high level of uncertainty regarding water availability and water demand. We accept information regarding water availability will be greatly enhanced over the next few years with the use of three permanent recorders, and consider it may be appropriate in the future to impose minimum flows on all abstractions in relation to these recorder sites and potentially also to groundwater trigger levels.
219. In terms of water demand, we consider it is important that water metering be introduced as soon as possible and encourage consent holders to install meters as soon as possible, as the national requirements are pending.
220. We also consider more work needs to be undertaken on rivers with high ecological value to better understand the relationship between water quality and quantity, and the effects on fish and bird populations.
221. Overall, we have had great difficulty accepting the variation as proposed, as it appears to be trying to accommodate the status quo, in terms of allowing for the existing surface water allocation, while reducing some of the minimum flows from the status quo. We are uncomfortable with this approach, but we have been restricted in our recommendations by the limited scope of submissions.
222. We consider the evidence before us indicates there is a high risk of adverse ecological effects on all of the spring-fed rivers, and that this suggests there needs to be a re-balancing between out-of-stream use and instream use. In this regard, we view this determination as an interim step to prevent any further over allocation of water, and to signal to existing users that we consider some of minimum flows are too low to adequately protect ecological and cultural values. We also consider that the Kaikoura rivers not included in Variation 5 should be included in any future consideration to ensure there is an integrated approach to surface water management in the Kaikoura area.
223. We have included a number of changes to the schedule (refer to **Appendix 2**) that we consider are either to improve clarity, or are corrections. The officers removed the reference to '*no further surface water permits, or groundwater permits with SDE > 1 L/s*' at our request and included an additional provision to provide clarification. We consider the reference to '*No further water permits*' should remain and accept the additional provision (with a slight addition to the wording) provides sufficient clarity. We have also changed the wording of the location of the minimum flow site to the property's legal description to avoid using the property owner's name, which may change over time.

## STATUTORY CONSIDERATIONS

224. Section 63(1) of the RMA sets out the purpose of regional plans and a proposed plan is defined under section 43 to include a variation to a proposed plan.
225. Section 65 (1) provides that the Regional Council may prepare a regional plan for any part of its region. Section 65(3) provides that a Regional Council shall consider the desirability of preparing a regional plan whenever any of the following circumstances or considerations arise or are likely to arise:
- (a) *Any significant conflict between the use, development, or protection of natural and physical resources or the avoidance or mitigation of such conflict:*
  - (b) *Any significant need or demand for the protection of natural and physical resources or any site, feature, place, or area of regional significance:*
  - (d) *Any foreseeable demand for or on natural and physical resources:*
  - (f) *The restoration or enhancement of any natural and physical resources in a deteriorated state or the avoidance or mitigation of any such deterioration.*
226. Section 66 specifies the matters to be considered by the Regional Council under the RMA, which include its functions under section 30, the provisions of Part 2, and its duty under section 32. Under section 66 (2)(d) the Regional Council is also required to have regard to "*the extent to which the regional plan needs to be consistent with the regional policy statements and plans...*"
227. In determining the relevance of objective and policy provisions, we have focused on those matters specific to water quantity rather than water quality, and those provisions which address the setting of water quantity standards rather than matters that would be taken into account in processing resource consents. Within this context, we have reproduced those plan provisions which are of particular relevance to our assessment.
228. We note that neither Ngai Tahu, or the local runanga, elected to be parties to these proceedings, and we understand they were subject to separate consultation by the Regional Council. Notwithstanding that, we will briefly address this matter separately later, as there is clearly a degree of overlap between the protection of the natural character and instream values of waterways and their life supporting capacity, and matters of concern to Maori.

## THE CANTERBURY REGIONAL POLICY STATEMENT (RPS)

229. Although the Canterbury Regional Policy Statement ('RPS') has been operative for well over 10 years, **Chapter 9** still provides a relevant and quite specific framework for setting flow regimes, which is expanded on through the PNRRP.

230. The overarching provision is **Objective 1**, which states as follows:

*"Achieve sufficient quantities of water in the region's water bodies to enable present and future generations to gain cultural, social, recreational, economic and other benefits from those water bodies while:*

- (a) safeguarding their existing value for efficiently providing sources of drinking water for people;*
- (b) safeguarding the life supporting capacity of the water, including its associated: aquatics ecosystems, significant habitats of indigenous fauna and areas of significant indigenous vegetation;*
- (c) safeguarding their existing value for providing mahinga kai for Tangata Whenua;*
- (d) protecting wahi tapu and other wahi taonga of value to Tangata Whenua;*
- (e) preserving the natural character of lakes and rivers and protecting them from inappropriate use and development;*
- (f) protecting outstanding natural features and landscapes from inappropriate use and development;*
- (g) protecting significant habitat of trout and salmon; and*
- (h) maintaining, and where appropriate, enhancing amenity values."*

231. The principal reasons for this objective note that *"trout and salmon are an important part of the aquatic ecosystem for many Canterbury water bodies. They can provide a valuable indicator species for the health of the system. All of their life processes are relevant, including feeding, reproduction and fish passage"*.

232. This part of the explanation has been repeated under the "Explanation and principal reasons" for Objective WQN1 in the PNRRP, and strengthened through additional text which dates that "adequate flow conditions for trout or salmon habitat will also provide suitable habitat conditions for most indigenous fish species".

233. **Policy 1** goes on to state that water flow, level, or allocation regimes for water bodies should be managed to achieve all of the above clauses of Objective 1, although it may set levels which do not achieve subclauses (e) to (h) where an adverse effect will be remedied or mitigated. The policy notes that in setting the allocation regime regard should be had to a range of matters, including natural patterns of flow or water level change, and appropriate alternative minimum flow regimes including mean annual low flow (MALF).

234. **Policy 2** has a somewhat different emphasis and talks of setting water flow, level and allocation regimes with the aim of enabling people and communities to maximise the well-being to be obtained from Canterbury's water resources (both instream and out of stream) and where appropriate enhancing water availability through increased efficiency of use, augmentation or storage. The explanation to this policy states that the Regional Council may allocate water above the minimum flow as a trade-off at the expense of recreational values, or vice versa.

## THE PROPOSED NATURAL RESOURCES REGIONAL PLAN (PNRRP)

235. **Variation 1** containing Chapter 5 of the PNRRP (Water Quantity), was publicly notified on 3<sup>rd</sup> July 2004. Submissions on this Chapter have now been heard, but at the time of preparing this recommendation, the Hearings Commissioners tasked with hearing submissions on the PNRRP had not yet issued their decisions. Consequently, this document is still open to amendment, and unfortunately the timing of this will postdate this decision.
236. **Objective WQN1** of "Rivers and lakes" contains almost identical wording to Objective 1 in Chapter 9 of the RPS. The only differences are that subclause (a) also makes reference to "stockwater" and subclause (c) makes reference to "mauri".
237. The Hapuku, Kowhai, and Kahutara rivers were described in the officer's report as hill-fed waterways. The smaller streams were described as lowland waterways. **Policy WQN4** is entitled "Indicator instream values and matters to consider when setting flow and level regimes".
238. Subclause (1) specifies the "indicator values for each river type" including for rivers at medium flows of less than two cubic metres per second (cumecs) as being "mauri" and "native fish" for hill rivers, and "mauri" and "trout" for lowland rivers.
239. Subclause (2) sets out the range of matters to be considered when setting flow regimes as follows:  
*"(a) the impact of the flow regime on the size and frequency of flows and the effect of these on:*
- (i) processes needed to clear gravel riverbeds of invading exotic vegetation;*
  - (ii) processes needed to remove periphyton accumulation from the substrate;*
  - (iii) processes needed to remove the build up of fine sediment;*
  - (iv) processes needed to transport gravel and contribute to coastal sediment budgets;*
  - (v) natural functioning of the river mouth;*
  - (vi) mauri, mahinga kai values, wahi tapu sites in areas, and wahi taonga*
  - (vii) natural character*
  - (viii) habitats for indigenous birds and fish;*

- (ix) habitats, spawning areas and access for trout and salmon; and*
- (x) processes needed to assimilate any waste discharges.....*

- (b) the need for sharing between instream and abstractive uses;*
- (c) ...*
- (d) the need for an absolute cap on the rate or amount of water that can be abstracted”.*

240. Objective 1 in Chapter 9 of the RPS, and Objective WQN1 in the PNRRP are entirely complementary, and as such we consider considerable weight can be placed on these two provisions. The crux of the issue insofar as the objectives and policies are concerned is the relationship - or 'balance' - that needs to be struck between the protection of instream values on one hand, and the beneficial effects of enabling the community to enjoy the benefits of abstraction on the other.
241. Turning to the relevant subclauses in the two key objectives under the RPS and the PNRRP, the following conclusions can be drawn:
- (i) Subclause (b) - Middle Creek and Lyell Creek have significant instream values for aquatic fauna. All waterways, except Luke Creek and possibly the upper Kahutara, contain long-fin eels. Lyell Creek in particular is an important eel fishery and contains the highest diversity of indigenous species.
  - (ii) Subclause (c) - all the waterways have some value to Maori for mahinga kai, with Lyell Creek being the most significant.
  - (iii) Subclause (d) - all of the waterways have significance in terms of wahi tapu and wahi taonga, especially the Hapuku and Kowhai Rivers and Ewelme Stream.
  - (iv) Subclauses - (e) (f) and (h) - Luke Creek, Lyell Creek, the Hapuku River, the upper Kahutara River, and Ewelme Stream were assessed in the officer's report as having moderate to high amenity values, while Middle Creek and the lower Kowhai River was seen as having low to moderate values.
  - (v) Subclause (g) - Middle Creek and Lyell Creek have locally significant trout fisheries.
242. In order to achieve this balance between the protection of instream values and the benefits of abstraction, the PNRRP has adopted a somewhat different approach through Policy WQN4 than that under Policies 1 and 2 in Chapter 9 of the RPS.
243. The policy framework in both plans cite trout habitat as a sustainability indicator for lowland streams, and hence has some application to Variation 5 insofar as Middle Stream and Lyell Creek are concerned.

The flow regime proposed for these two waterways would provide for spawning and juvenile fish, but not for the movements of adult trout.

244. Major flood events which would clear periphyton growth and arrest sediment build up are less likely to occur in the small lowland streams because of their spring-fed nature and relatively small variations in flow. Consequently these waterways can be expected to be more adversely affected by any prolonged low flow events, particularly where these are below the 7d MALF. Prolonged low flow events are also likely to be contrary to natural values of these waterways. The hill-fed rivers such as the Hapuku River for example, can be expected to be much more resilient in this respect.
245. The flow regimes proposed establish a maximum flow "cap" as envisaged by Policy WQN4; similarly, it provides for flow "sharing" between instream and abstractive uses.
246. We consider that there is an element of conflict between objective and policy provisions in the RPS and the PNRRP on one hand, and the rules framework proposed through Variation 5 on the other. We accept that there needs to be a balancing exercise undertaken to provide for abstractions, particularly in a scenario where existing resource consents have been granted, and the expectations of users reliant on those consents. However, we have misgivings about a balance that has been struck providing for summer flows well below the 7d MALF for the spring-fed waterways. We also have significant reservations about the appropriateness of having "B" allocation block takes on these waterways because of their very limited flows, the lack of reliability for users, and lack of evident demand.
247. A variation cannot be assessed in the same manner as a resource consent, notably in terms of whether an activity is "contrary" to the objectives and policies. We also have an element of uncertainty with respect to the ultimate wording of Objective WQN 1 and Policy WQN4 in the PNRRP. Nevertheless, it is clear that the plan provisions relating to the Kaikoura Rivers cannot stand alone - they are clearly intended to be incorporated as an integral component of the PNRRP.
248. It is important then, that our decision ensures that the content of the variation ensures that the PNRRP remains a coherent document when Variation 5 is incorporated into it. For these reasons, we have concluded that modifications to the variation (at least to the extent that this is within scope) are required to improve consistency with the relevant objectives and policies of the RPS and the PNRRP, and thereby maintain the necessary level of coherence.

## VISION AND PRINCIPLES OF THE CANTERBURY WATER MANAGEMENT STRATEGY – STRATEGIC FRAMEWORK, NOVEMBER 2009 (CWMS)

249. Under Section 63 of the Environment Canterbury (Temporary Commissioners and Improved Water Management) Act 2010, the Regional Council is obliged to have particular regard to the vision and principles of the Canterbury Water Management Strategy (CWMS). This adds an entirely new and additional statutory consideration to the assessment of this variation. The vision and principles are set out In **Appendix 3**.
250. It is apparent that the principles of the CWMS give a high priority to maintaining or enhancing the instream natural values of waterways, and in particular their indigenous biodiversity. In terms of the wording of the strategy itself, instream values are afforded a higher order priority than either irrigation or recreational use. It is apparent that the weight to be given to the natural values of waterways has (at least subtly) increased between the provisions of the RPS and the PNRRP, and further still under the CWMS. However we acknowledge that under Part 2 of the Act, and in particular under Section 5, there is a balancing required between protection and use.
251. The supporting principles in the CWMS include the maintenance of natural flow regimes, and their enhancement where possible; setting environmental flow regimes for waterways where abstraction occurs; and an emphasis on protecting biodiversity in lowland streams and catchments. Attention must be paid to the adverse effects of land use intensification on surface water. It is also noted that the efficient use of water, and a consistent approach throughout the region, is sought through the vision and principles.
252. In our assessment, and in acknowledging the position put forward by Federated Farmers, it is quite clear that the principles contained in CWMS do not sit comfortably with a flow regime that would permit abstraction rates resulting in flows well below the MALF in a waterway. Such a scenario implies that abstraction has a priority over instream values, rather than being balanced between the two. This conclusion is reinforced by the way in which the related provisions under both the RPS and the PNRRP use salmon and trout as indicator species for determining the ecological health of a waterway. In other words, it is not a matter that the protection of the habitat of trout under section 7 (h) should have priority over abstractive uses and the social and economic benefits of irrigation that are required to be taken into account under Section 5(2) of the Act. Rather it is a case that the ecological value of the waterway as a whole has to be considered in the balance.

253. We consider that there are serious doubts that the allocation regime contained in Variation 5 as notified can be seen as consistent with a number of the principles in the CWMS. To a large extent, the allocation regime chosen for the smaller lowland Kaikoura waterways is heavily influenced by security of supply for abstractors and the protection of existing takes established by way of resource consents.
254. We consider that there is at least a tension between the allocation regime proposed through Variation 5 and with CWMS Principle 2, bullet points 1, 5, 6, 7, 8 and 9; Principle 4, bullet points 1 and 4; Principle 5, bullet point 1; and Principle 8, bullet point 3. There is little information available as to the efficiency of the current use of water with respect to Principle 9, bullet point 1, and overall consistency with Principle 1.
255. In addition, we note that under bullet point 6, it is stated that "*a cautious approach is taken where information is uncertain, unreliable or inadequate*".
256. We are mindful of the need to acknowledge the work of the Community Advisory Group as part of the process of setting allocation limits, although we note that this predated the legislation and the CWMS that we are now required to have regard to.
257. We have not lost sight of the importance of security of supply for abstractors. We have however been strongly influenced by the weight given to the protection of instream values at an objective and policy level. The PNRRP, although open to challenge, is entirely consistent with the RPS, and the CWMS in its emphasis on the protection of instream values. This does not mean abstraction, and economic and social benefits to the community are to be ignored, but they do not take precedence.

## **PART 2 MATTERS**

### **Tangata Whenua**

258. Matters of significance to Tangata Whenua are provided for under Sections 6 (e), 6 (g), 7(a) and 8 of the Act. As noted before, Ngai Tahu was not a party to these proceedings, and we cannot assume that they have any specific concerns about the proposals contained in Variation 5. The minimum flow regimes set for the Kaikoura rivers have some significance in terms of wahi tapu, wahi taonga, and on the mauri of the waterways. Most of these waterways also have significance as being traditional sources of mahinga kai and in the case of the Kowhai River and Ewelme Stream, are in close proximity to historic sites of significance to the local iwi. We have taken the view

that if the minimum flow regime is consistent with maintaining the natural values for waterways as envisaged under the RPS and the PNRRP, then tangata whenua values have been adequately addressed.

### Purpose of the Act (Section 5)

259. Section 5(2) of the Act provides for the use of natural and physical resources to enable people and communities to provide for their social, economic and cultural well-being, which can be taken to include the abstraction of water for irrigation purposes for individual farmers and the wider farming community. It is subject to all three subclauses under section 5(2) that this be achieved while sustaining the potential of the water resources to meet the reasonably foreseeable needs of future generations, safeguarding the life supporting capacity of water and soil, and avoiding, remedying or mitigating any adverse effects of activities on the environment.
260. Part 2 of the Act, and Section 5, require a broad overall judgement to be made in achieving the purpose of the Act in a situation where there is a balance to be struck between the use of resources and their protection. In making this judgement, and in addition to those matters of significance to Tangata Whenua as described above, the following matters of national importance under section 6 are relevant –
- (a) *The preservation of the natural character of...rivers...and their margins, and the protection of them from inappropriate...use and development:*
  - (c) *The protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna.*
261. We are also required to have particular regard under section 7 to –
- (b) *The efficient use and development of natural and physical resources:*
  - (c) *The maintenance and enhancement of amenity values:*
  - (d) *The intrinsic values of ecosystems:*
  - (f) *Maintenance and enhancement of the quality of the environment:*
  - (g) *Any finite characteristics of natural and physical resources:*
  - (h) *The protection of the habitat of trout and salmon.*
262. We entertain some reservations as to whether Variation 5 as notified is consistent with section 5(2)(b) and (c), and with sections 6(a), 7(f) and 7(h) of the RMA with respect to Middle Creek, Lyell Creek and its tributaries, and Ewelme Stream. The minimum flow regimes for summer also raised questions with respect to sections 6(c) and 7(d) of the Act. We also question whether the adoption of "B" allocation block takes for the spring-fed waterways at least, and arguably the hill waterways, represents an efficient use of resources under section 7 (b) of the RMA.

## SECTION 32 RMA

263. A very brief section 32 report formed part of Report U07/26. As Variation 5 was seen as forming an integral part of Chapter 5 of the PNRRP, which in turn was accompanied by a separate section 32 report (R04/16/5) which evaluated the objectives and policies rules and other methods in that chapter, no detailed report was prepared in this case. The community consultation process, and the new minimum flow regimes was described as better meeting the requirements of Objective WQN 1 of the PNRRP.
264. Variation 5 does not add to or change the objectives or policies, so that section 32 (3) is not relevant in this case. However subsection (b) requires that the proposed rules be evaluated as being the most appropriate means for achieving the objectives - which in this case are (indirectly) RPS Chapter 9, Objective 1, and specifically the PNRRP, Chapter 5, Objective WQN1.
265. Section 32 (4) requires that an evaluation must take into account –
- (a) *the benefits and costs of policies, rules, or other methods; and*
  - (b) *the risk of acting or not acting if there is uncertain or insufficient information about the subject matter of the policies, rules, or other methods.*
266. There is only limited information available about flow levels in the affected waterways, and with respect to at least some of these waterways, the **actual** surface water takes in contrast to the **consented** takes. Not all rivers in the area (for example the Waimangarara and lower Kahutara River) have not been included in Variation 5, when this would be desirable having regard to the need for integrated management under section 30 of the RMA.
267. We are well aware that the flow regimes proposed under Variation 5 are to a large extent informed by a pattern of consents that have been granted, and consequent expectations of security of supply by members of the farming community, further reinforced through community consultation. Most of the recent resource consents have been granted for 35 year periods, and will not expire for a considerable number of years, albeit that they could be reviewed under section 128 of the RMA. Other methods, such as on-farm storage do not appear to have been developed in the Kaikoura area on any significant scale, and are only indirectly addressed through Variation 5.
268. The Regional Council is presented with a difficult situation in having to decide whether it should act or not act in these circumstances, when there is an element of a *fait accompli* created by the consents already granted. However, in the absence of Variation 5 and the minimum flow provisions therein, there is the possibility of further resource consent applications in the absence of any policy or rules framework. On this

basis, a failure to act could result in a worse environmental outcome for the Kaikoura rivers.

269. The result is that the variation as notified contains rules which enable abstraction from waterways which could result in potentially prolonged summer flows well below the 7d MALF, and for "B" allocation block takes in a situation where the need for these is arguable. Despite these difficulties, we have concluded that it was appropriate for the Regional Council to act to provide some framework for managing future takes, rather than reacting to further resource consents on an ad hoc basis.
270. As stated earlier, the contents of the variation form part of the wider Chapter 5 to the PNRRP dealing with water resources in the region as a whole. We consider however that a number of amendments to the rules within the scope of submissions will increase the benefits of the objectives, policies and rules.

#### **Explanation of Amendments and Responses to Submissions (Appendix 4)**

271. **Appendix 4** to these recommendations sets out whether the submissions from the two submitters on Variation 5 (DOC and Fish and Game) and the further submissions in opposition from Federated Farmers have been accepted, accepted in part, or rejected.
272. Fish and Game have sought specific volumetric relief in a number of their submission points, which have been opposed by Federated Farmers. In circumstances (for example) where a minimum flow or take allocation has been reduced, but not to full the extent sought by Fish and Game, we have stated that both the submission and further submission have been **accepted in part**.

Dated this 18<sup>th</sup> day of August 2010



Robert Nixon (Chair)  
Hearing Commissioner



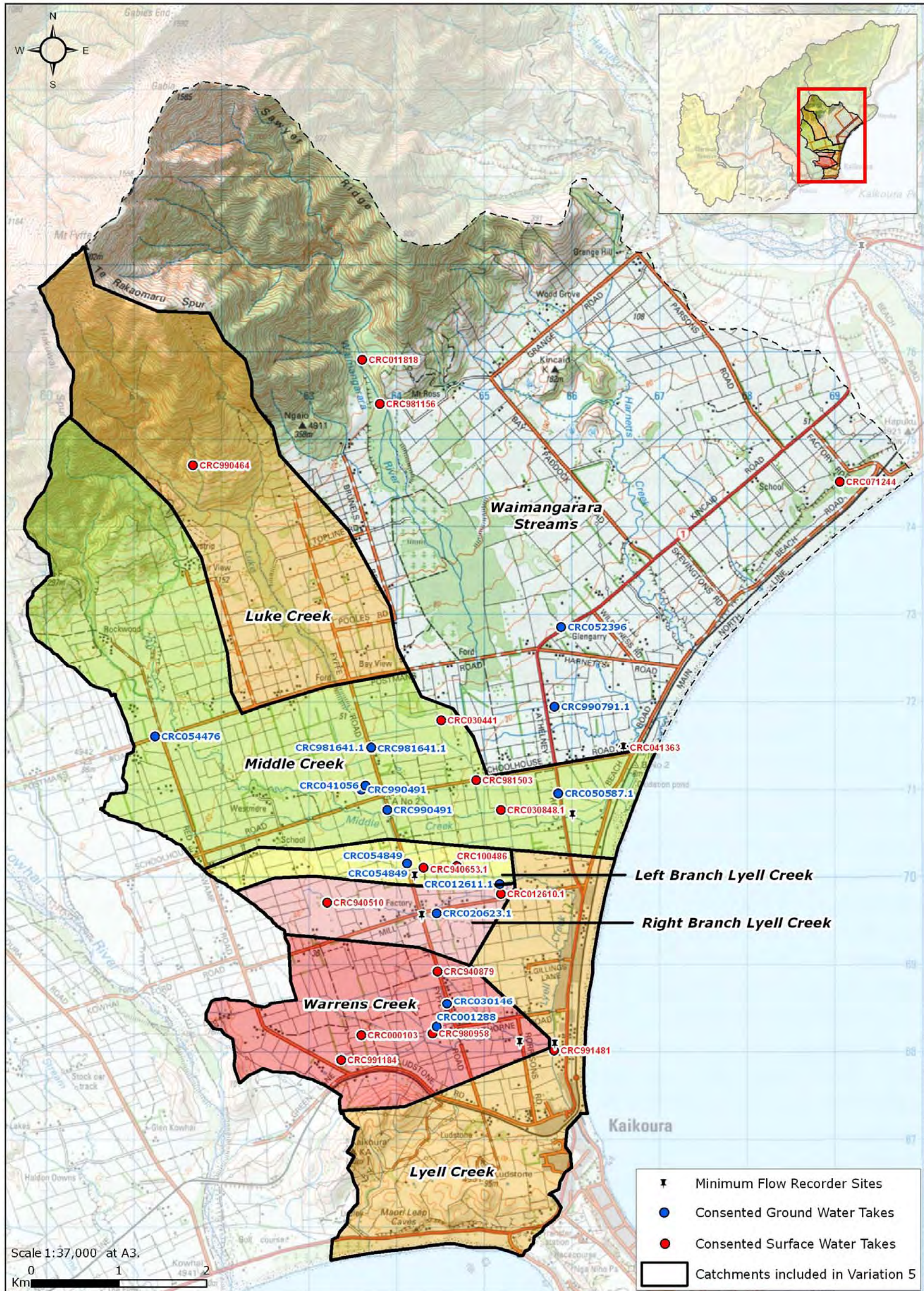
Sharon McGarry  
Hearing Commissioner



# Appendix 1

## River Catchments subject to Variation 5





## Appendix 2

### Variation 5 as amended by recommendations of Hearings Panel

## Part 1: NRRP Variation 5 Changes to Schedule WQN1

### 2.1 Amend Schedule WQN1 (commencing Chapter 5, page 5 – 234) to read as follows:

#### **Schedule WQN1.56 Kaikoura rivers**

Purpose of management for the Kaikoura rivers (Hapuka River, Luke Stream, Middle Creek, Lyell Creek/Waikawau, Left Branch of Lyell Creek, Right Branch of Lyell Creek, Warrens Creek, Kowhai River, Ewelme Stream (Stoney Creek), Upper Kahutara River and an unnamed tributary of the upper Kahutara):

- (i) to safeguard the mauri of the rivers;
- (ii) to protect wāhi tapu and other wāhi taonga of value to Ngāi Tahu;
- (iii) to maintain the natural character and amenity of the rivers;
- (iv) to safeguard the life-supporting capacity for trout;
- (v) to safeguard the life-supporting capacity for indigenous species including native fish and river-bed birds; and
- (vi) to provide for the taking of water for out-of-stream use providing sufficient water is retained instream to satisfy purposes (i) to (v).

Purposes (i)-(vi) will be achieved through the setting of an environmental minimum flow and an allocation regime for the water above the minimum flow. Abstractions for irrigation shall cease at the minimum flow. Takes servicing domestic, stockwater and firefighting uses will be restricted in according to Policy WQN19. There shall be no water permits to take water above the B allocation block.

Table WQN14.6 Minimum flow and allocation conditions for the Kaikoura rivers

Catchment	River or stream	Location of the site where flow is measured	Map reference of site <sup>27</sup>	Minimum flow for A permits (litres/sec)	Reduction in takes	Allocation limit for A permits (litres/ sec)	Minimum flow for B permits (litres /sec)	Allocation limit for B permits (litres / sec)
1. Hapuku	Hapuku River	State Highway 1	O31 695-772	670	All takes share the available flow within the allocation block.	178 (1 Oct – 30 Apr) No further <u>water</u> permits. Existing permits can be replaced upon expiry. <del>178 (1 May – 30 Sep)</del>	950	100 (1 Oct – 30 Apr)
2. Luke	Luke Stream	At the <del>Bolton's</del> property <u>with the legal description Section 329 Kaikoura Suburban DIST immediately downstream of the pump intake</u>	O31 620-741	15	All takes share the available flow within the allocation block.	68 (1 Oct – 30 Apr) <del>No further surface water permits, or ground water permits with SDE &gt; 1 L/s.</del> No further <u>water</u> permits. Existing permits can be replaced upon expiry. <del>68 (1 May – 30 Sep)</del>	110	25 (1 Oct – 30 Apr)
3. Middle	Middle Creek	State Highway 1	O31 658-706	165 (1 <u>Sep – 31 May</u> ) 240 (1 <u>Jun – 31 Aug</u> ) <del>Mar – 31 Dec</del> 115 (1 <u>Jan – 28 Feb</u> )	All takes share the available flow within the allocation block.	<del>95447 (1 Oct – 30 Apr)</del> No further <u>surface water</u> permits, or <u>ground water</u> permits with SDE > 1 L/s. Existing permits can be replaced upon expiry. <del>4447 (1 May – 30 Sep)</del> No further <u>water</u> permits. Existing permits can be replaced upon expiry.	<del>475330</del>	50 (1 Oct . - 30 Apr)

<sup>27</sup> NZMS 260 Series 1:50,000

Table WQN14.6 cont.

Catchment	River or stream	Location of the site where flow is measured	Map reference of site <sup>28</sup>	Minimum flow for A permits (litres/sec)	Reduction in takes	Allocation limit for A permits (litres/ sec)	Minimum flow for B permits (litres /sec)	Allocation limit for B permits (litres / sec)
4. Lyell	Lyell Creek/ Waikawau mainstem	Recorder site downstream of the confluence with Warrens Creek	O31 658-680	<del>300</del> 290 (1 Oct – 30 Apr), 420 (1 May – 30 Sep), <del>290 (1 Oct – 31 Dec),</del> <del>200 (1 Jan – 28 Feb)</del>	All takes share the available flow within the allocation block.	58 (1 Oct – 30 Apr) <del>No further surface water permits, or ground water permits with SDE &gt; 1 L/s. Existing permit can be replaced on expiry.</del>  058 (1 May – 30 Sep) <del>No further water permits. Existing permits can be replaced on expiry.</del>	<del>10957</del> 25	100 (Maximum of 50 from Warrens Creek/Lyell mainstem, 25 from Left Branch and 25 from Right Branch) for the period 1 Oct – 30 Apr)
	Right Branch	At the Mt Fyffe Road Bridge	O31 641-696	25 L/s on the Right Branch. In addition, abstractions from the Right Branch shall be subject to restrictions relating to the Lyell Creek mainstem at the recorder.	All takes share the available flow within the allocation block.	4134 (1 Oct – 30 Apr) <del>No further surface water permits, or ground water permits with SDE &gt; 1 L/s, for this period. Existing permits can be replaced on expiry.</del>  534 (1 May – 30 Sep) <del>No further water permits. Existing permits can be replaced on expiry.</del>	See Lyell Creek mainstem	See Lyell Creek mainstem
	Left Branch	At the <del>Mackie</del> <u>Mackie property with the legal description Lot 2 DP 377996</u>	O31 649-700	45 L/s on the Left Branch. In addition, abstractions from the <del>Left</del> <u>Right</u> Branch shall be subject to restrictions relating to the Lyell Creek mainstem at the recorder.	All takes share the available flow within the allocation block.	<del>20</del> 444 (1 Oct – 30 Apr) <del>No further surface water permits, or ground water permits with SDE &gt; 1 L/s, for this period. Existing permits can be replaced on expiry.</del>  6444 (1 May – 30 Sep) <del>No further water permits. Existing water permits can be replaced on expiry.</del>	See Lyell Creek mainstem	See Lyell Creek mainstem

<sup>28</sup> NZMS 260 Series 1:50,000

Table WQN14.6 cont.

Catchment	River or stream	Location of the site where flow is measured	Map reference of site <sup>29</sup>	Minimum flow for A permits (litres/sec)	Reduction in takes	Allocation limit for A permits (litres/ sec)	Minimum flow for B permits (litres /sec)	Allocation limit for B permits (litres / sec)
Lyell cont.	Warrens Creek	Rorrisons Road Bridge	O31 654-681	<del>Either</del> 180 (1 May – 30 Sep), 110 (1 Oct – <del>30 Apr</del> 4 Dec), 75 (1 Jan – 28 Feb), 110 (1 Mar – 30 Apr). In addition, abstractions from Warrens Creek shall be subject to restrictions relating to the Lyell Creek mainstem at the recorder.	All takes share the available flow within the allocation block. When available flow is less than the size of the allocation block takes shall be reduced on a pro rata basis in order to maintain the minimum flow	<del>117</del> 134 (1 Oct – 30 Apr) <del>No further surface water permits, or ground water permits with SDE &gt; 1 L/s. Existing permits can be replaced on expiry.</del> 14434 (1 May 30 -Sep) <u>No further water permits. Existing permits can be replaced on expiry.</u>	See Lyell Creek mainstem	See Lyell Creek mainstem
<u>54.</u> Kowhai	<u>Kowhai River mainstem</u>	At the gorge	O31 558-732	690	All takes share the available flow within the allocation block.	<del>119</del> 75 (1 Oct – 30 Apr)  119 (1 May – 30 Sep) <u>No further water permits. Existing permits can be replaced on expiry.</u>	-	-
	<u>Kowhai River tributaries</u> Note: Tributary minimum flows remain as per individual consent conditions.	<u>Tributary minimum flows remain as per individual consent conditions.</u>				<del>75</del> (1 May – 30 Sep) 124 (1 Oct – 30 Apr)  124 (1 May – 30 Sep) <u>No further water permits. Existing permits can be replaced on expiry.</u>	-	-

<sup>29</sup> NZMS 260 Series 1:50,000

Table WQN14.6 cont.

Catchment	River or stream	Location of the site where flow is measured	Map reference of site <sup>30</sup>	Minimum flow for A permits (litres/sec)	Reduction in takes	Allocation limit for A permits (litres/ sec)	Minimum flow for B permits (litres /sec)	Allocation limit for B permits (litres / sec)
65. Ewelme	Ewelme Stream (Stoney Creek)	Quarry Road	O31 584-691	55	All takes share the available flow within the allocation block.	<del>96426</del> (1 Oct – 30 Apr) No further <del>surface-water permits, or ground-water permits with SDE &gt; 1 L/s.</del> Existing permits can be replaced on expiry.	205	25 (1 Oct – 30 Apr)
						126 (1 May – 30 Sep)		
76. Kahutara	Upper Kahutara River	Blunts Road	O31 508-674	80 (1 Oct – 30 Apr), 370 (1 May – 30 Sep)	All takes share the available flow within the allocation block.	<del>1540</del> (1 Oct – 30 Apr) No further <del>surface-water permits.</del> Existing permits can be replaced on expiry.	370	50 (1 Oct – 30 Apr)
	Un-named tributary of the Kahutara	<u>At the property with the legal description Lot 4 DP426919 Mahunga Farm (property of R Acton-Adams)</u>	O31 477-678	40	-	<del>5230</del> (1 Oct – 30 Apr) No further <del>surface-water permits.</del> Existing permit can be replaced.		
						30 (1 May – 30 Sep) No further water permits. Existing permits can be replaced.		
<p>87. Additional provisions:</p> <p>(a) When available flow is less than the size of the allocation block, takes shall be reduced on a pro rata basis, or via the formation of water users groups, so that individuals can get some water for longer during periods of restrictions.</p> <p>(b) <u>The cut-off limit (i.e. the stream depletion effect to which a groundwater take must be reduced to be exempt any minimum flow restrictions or be counted within an allocation block) for groundwater takes with a high or moderate degree of hydraulic connection (refer to Schedule WQN7) on Luke, Middle, Lyell and Ewelme catchments listed in Table WQN14.6 above, shall be as follows:</u></p> <p>— <u>high degree of hydraulic connection - one litre per second stream depletion effect</u></p> <p>— <u>moderate degree of hydraulic connection - one litre per second stream depletion effect</u></p> <p>(c) <u>Except for the Upper Kahutara catchment A block (1 May – 30 Sep), no new water permits, or increases in the maximum rate of take or annual volume for existing permits, for the taking or diversion of:</u></p> <p>(i) <u>surface water;</u></p> <p>(ii)</p>								

<sup>30</sup> NZMS 260 Series 1:50,000

- (ii) groundwater that is determined as having a direct degree of hydraulic connection, as per Schedule WQN7; or
- (iii) groundwater that is determined as having a high or moderate degree of hydraulic connection (as per Schedule WQN7), where the stream depletion effect is:
  - i. greater than 1 L/s in the case of Luke, Middle, Lyell and Ewelme catchments listed in Table WQN14.6; or
  - ii. greater than 5 L/s in the case of Hapuku, Kowhai and Kahutara catchments;listed in Table WQN14.6 shall be granted, unless use of the water is non-consumptive and the water that is taken or diverted, is discharged back into the river near to the point of take.

## **2.2 Amend the section entitled “Explanation and reasons for flow, level and allocation regimes set in Schedule WQN1” by adding the following to page 5-240**

### **Rivers in the Kaikoura area**

Purpose of management for rivers in the Kaikoura area (Hapuku River, Luke Stream, Middle Creek, Lyell Creek/Waikawau, Right Branch of Lyell Creek, Left Branch of Lyell Creek, Warrens Creek, Kowhai River, Ewelme Stream (Stoney Creek), the upper Kahutara River and an un-named tributary of the upper Kahutara):

- (i) to safeguard the mauri of the rivers;
- (ii) to protect wāhi tapu and other taonga of value to Ngāi Tahu;
- (iii) to maintain the natural character and amenity of the rivers;
- (iv) to safeguard the life-supporting capacity for trout;
- (v) to safeguard the life-supporting capacity for indigenous species; and
- (vi) to provide for the taking of water for out-of-stream use providing sufficient water is retained instream to satisfy purposes (i) to (v).

Existing minimum flows have been established by way of a condition of a consent. Consents authorised prior to 1991 were determined under the Water and Soil Conservation Act 1967, while post-1991 consents have been subject to the Resource Management Act 1991. Further consideration of the minimum flows has been undertaken to establish their consistency with the requirements of NRRP Chapter 5, Objective WQN1.

In 2004, Environment Canterbury initiated and facilitated a community consultation process to assist in aligning the minimum flows to Objective WQN1. An initial public meeting was held in February 2004 and participants agreed to the establishment of a Community Advisory Group. In addition, Environment Canterbury commissioned the National Institute of Water and Atmospheric Research (NIWA) and a panel of scientists and others with expertise in the various values set out in Objective WQN1 to rank the relative importance of those values and provide advice on the flow requirements necessary for their protection. The findings of NIWA are documented in Report No. U04/107 (Minimum flows for selected North Canterbury streams) while the panel findings are contained in the Planning Report (Report No. U07/26).

The Community Advisory Group met on seven occasions between March 2004 and April 2007. It provided local knowledge and assisted the panel with local site inspections. ~~Feedback from the Group was considered in arriving at the recommended minimum flows, the sites at which the flows are to be measured, and allocation regimes for each catchment. The feedback was documented in a Community Advisory Group Report for the Minimum Flow Process (April 2007) and the Council resolved to notify a variation on 26 April 2007.~~

~~Council agreed with the report's conclusions, and at the Council meeting of 26 April 2007 resolved to notify a variation accordingly.~~

## Appendix 3

# Canterbury Water Management Strategy - Vision and principles

## **APPENDIX 3 – VISION AND PRINCIPLES OF THE CANTERBURY WATER MANAGEMENT STRATEGY**

### ***Part 1***

#### ***Vision and principles***

##### ***Vision***

*To enable present and future generations to gain the greatest social, economic, recreational and cultural benefits from our water resources within an environmentally sustainable framework.*

##### ***Fundamental principles***

##### ***Primary principles***

##### ***1 Sustainable management***

*Water is a public resource which must be managed in accordance with sustainability principles and be consistent with the Resource Management and Local Government Acts.*

##### ***2 Regional approach***

- *The planning of natural water use is guided by the following:*
  - *first order priority considerations: the environment, customary uses, community supplies and stock water*
  - *second order priority considerations: irrigation, renewable electricity generation, recreation, tourism and amenity*
- *A consistent regulatory approach to water is applied throughout the Canterbury region, recognising these principles*
- *Both surface and groundwater are given equal importance*
- *Further development of scientific knowledge of the region's water resources and the impacts of climate change are given priority*
- *The actual or potential cumulative effects the taking and using water can have on waterways are recognised and managed within defined standards*
- *A cautious approach is taken when information is uncertain, unreliable, or inadequate*
- *The need for efficient use of water in existing and new infrastructure is recognised*
- *There is strong emphasis on the integration of water and land management including protection of indigenous biodiversity and enhancement of water quality*
- *Current and potential effects of land use intensification is an integral part of decision-making on water takes. This may mean amending regional and district plans.*

### **3 Kaitiakitanga**

- *The exercise of kaitiakitanga by Ngai Tahu applies to all water and lakes, rivers, hapua, waterways and wetlands, and shall be carried out in accordance with tikanga Maori.*

#### **Supporting principles**

### **4 Natural character**

*The natural character (mauri<sup>1</sup>) of Canterbury's rivers, streams, lakes, groundwater and wetlands is preserved and enhanced:*

- *natural flow regimes of rivers are maintained and, where they have been adversely affected by takes, enhanced where possible*
- *the dynamic processes of Canterbury's braided rivers define their character and are protected*
- *environmental flow regimes are established for every waterway where abstraction occurs*
- *that restoration of natural character and biodiversity, is a priority for degraded waterways, particularly lowland streams and lowland catchments*
- *the interdependence of waterways and coastal ecosystems is recognised.*

### **5 Indigenous biodiversity**

- *Indigenous flora and fauna and their habitats in rivers, streams, lakes, groundwater and wetlands are protected and valued.*
- *The aims of the Canterbury Biodiversity Strategy are recognised and supported.*

### **6 Access**

- *Public access to and along rivers, lakes, waterways and wetlands is maintained and, where appropriate, enhanced. Access may need to be limited in situations including where environmental risk, public safety, security of assets, cultural values, biodiversity and farm management require.*

### **7 Quality drinking water**

- *All those living in Canterbury have access to high quality drinking water:*
- *The region's high quality aquifer-sourced drinking water is protected.*
- *Where Canterbury's drinking water is currently untreated and safe for drinking, it is maintained at that high standard.*

### **8 Recreational and amenity opportunities**

- *Rivers, lakes, groundwater and wetlands provide opportunities for enjoyment, recreation and tourism:*
- *High quality water ensures contact recreation such as swimming, fishing, boating and other water sports are able to be enjoyed throughout Canterbury.*
- *Adequate environmental flows should ensure that recreational users and tourists can enjoy Canterbury rivers.*
- *Eco-tourism opportunities are recognised and encouraged.*

## **9 Community and commercial use**

*Water resources are used sustainably to enhance quality of life:*

- *where water is abstracted, it is used effectively and efficiently:*
- *land use, industry, and business practices to not adversely impact on natural water quality:*
- *discharges to waterways are minimised and do not compromise quality:*
- *land use practices are monitored and best practice approaches are required:*
- *agricultural stock is excluded from all waterways in catchments where irrigated farming is practised and all lowland streams:*
- *where acclimatised wildlife in lowland streams cause contamination, they are appropriately managed:*
- *degraded waahi taonga are enhanced to restore tangata whenua cultural wellbeing.*

## Appendix 4

# Recommendations on Submissions and Further Submissions

## Variation 5 as amended by recommendations of Hearings Panel

### 5-0-0 General

5-0-0	1.3	Department of Conservation (V5)	Add to the monitoring provisions of the Proposed Plan the following: " <u>An appropriate system of instaneous flow measuring at ecologically relevant points for all rivers is established.</u> <u>Monitoring of aquatic communities, including fish and river bed birds, is undertaken to confirm that any existing or proposed flows are providing adequate levels of protection.</u> "	Reject
	F101.1	Federated Farmers of New Zealand (Inc) Canterbury Province (V5)	<i>Oppose</i>	Accept
5-0-0	2.13	Fish and Game Nelson/Marlborough Council (V5)	Delete the text " <i>Existing permits can be replaced upon expiry.</i> " where it appears in the Allocation limit for A permits (litres/sec) column throughout Variation 5.	Reject
	F101.2	Federated Farmers of New Zealand (Inc) Canterbury Province (V5)	<i>Oppose</i>	Accept

### 5-2-4 Schedule WQN1.5 Kaikoura Rivers

5-2-4	1.2	Department of Conservation (V5)	Add the following to 2.1 Schedule WQN1.5: " <u>Applications to abstract water from the water bodies listed are subject to the MALF estimates upon which the minimum flows are based being verified by actual data.</u> "	Reject
	F101.3	Federated Farmers of New Zealand (Inc) Canterbury Province (V5)	<i>Oppose</i>	Accept
5-2-13	1.1	Department of Conservation (V5)	Amend 2.1 Schedule WQN1.5 (v) as follows: " <i>to safeguard the life supporting capacity</i> "	Accept

			<i>for indigenous species, including native fish and river-bed birds."</i>	
	F101.4	Federated Farmers of New Zealand (Inc) Canterbury Province (V5)	<i>Oppose</i>	Reject

### 5-3-1 Table WQN14.6 Minimum flow and allocation conditions for the Kaikoura rivers

#### 5-3-5E1 Middle Creek

5-3-5E1	2.1	Fish and Game Nelson/Marlborough Council (V5)	Replace all the text in the Minimum flow for A permits in Middle Creek with " <u>240</u> ".	Reject
	F101.5	Federated Farmers of New Zealand (Inc) Canterbury Province (V5)	<i>Oppose</i>	Accept in part
5-3-5G7	2.2	Fish and Game Nelson/Marlborough Council (V5)	Replace " <i>117(1 May - 30 Sep)</i> " in the Allocation limit for A permits for Middle Creek with " <u>Q</u> (1 May 30 Sept)".	Accept in Part
	F101.6	Federated Farmers of New Zealand (Inc) Canterbury Province (V5)	<i>Oppose</i>	Accept in Part
5-3-5H1	2.3	Fish and Game Nelson/Marlborough Council (V5)	Replace " <i>330</i> " in Minimum flow for B permits for Middle Creek with " <u>475</u> ".	Accept
	F101.7	Federated Farmers of New Zealand (Inc) Canterbury Province (V5)	<i>Oppose</i>	Reject

#### 5-4-3E1 Lyell Creek/Waikawau mainstem

5-4-3E1	2.4	Fish and Game Nelson/Marlborough Council (V5)	Replace all the text in the Minimum flow for A permits for Lyell Creek/Waikawau mainstem with " <u>420</u> ".	Accept in Part
	F101.8	Federated Farmers of New Zealand (Inc) Canterbury Province (V5)	<i>Oppose</i>	Accept in Part
5-4-3G7	2.5	Fish and Game Nelson/Marlborough Council (V5)	Replace " <i>58 (1 May - 30 Sep)</i> " in the Allocation limit for A permits for Lyell Creek/Waikawau mainstem with " <u>Q</u> (1 May	Accept

			<i>30 Sept</i> ".	
	F101.9	Federated Farmers of New Zealand (Inc) Canterbury Province (V5)	<i>Oppose</i>	Reject
5-4-3H1	2.6	Fish and Game Nelson/Marlborough Council (V5)	Replace "725" with " <u>1095</u> " under Minimum flow for B permits for Lyell Creek/Waikawau mainstem.	Accept
	F101.10	Federated Farmers of New Zealand (Inc) Canterbury Province (V5)	<i>Oppose</i>	Reject

#### 5-4-4E1 Right Branch

5-4-4E1	2.7	Fish and Game Nelson/Marlborough Council (V5)	Replace all the text in the Minimum flow for A permits for the Right Branch with " <u>45</u> ".	Reject
	F101.11	Federated Farmers of New Zealand (Inc) Canterbury Province (V5)	<i>Oppose</i>	Accept
5-4-4G1	2.8	Fish and Game Nelson/Marlborough Council (V5)	Replace "34 (1 Oct - 30 Apr)" in the Allocation limit for A permits in the Right Branch with " <u>25</u> (1 Oct 30 Apr)".	Reject
	F101.12	Federated Farmers of New Zealand (Inc) Canterbury Province (V5)	<i>Oppose</i>	Accept
5-4-4G7	2.14	Fish and Game Nelson/Marlborough Council (V5)	Replace "34 (1 May - 30 Sep)" in the Allocation limit for A permits for Lyell Creek Right Branch with " <u>0</u> (1 May 30 Sept)".	Accept in Part

#### 5-4-5G1 Left Branch

5-4-5G1	2.9	Fish and Game Nelson/Marlborough Council (V5)	Replace "114 (1 Oct - 30 Apr)" in the Allocation limit for A permits in the Left Branch with " <u>45</u> (1 Oct 30 Apr)".	Accept
	F101.13	Federated Farmers of New Zealand (Inc)	<i>Oppose</i>	Accept in

		Canterbury Province (V5)		part
5-4-5G8	2.10	Fish and Game Nelson/Marlborough Council (V5)	Replace "114 (1 May - 30 Sep)" in the Allocation limit for A permits in the Left Branch with " <u>0</u> (1 May 30 Sept)".	Accept in Part
	F101.14	Federated Farmers of New Zealand (Inc) Canterbury Province (V5)	<i>Oppose</i>	Accept in Part

#### 5-5-2G7 Warrens Creek

5-5-2G7	2.11	Fish and Game Nelson/Marlborough Council (V5)	Replace all the text in the Minimum flow for A permits in Warrens Creek with " <u>180</u> ".	Accept
	F101.15	Federated Farmers of New Zealand (Inc) Canterbury Province (V5)	<i>Oppose</i>	Accept in part
5-5-2G7	2.12	Fish and Game Nelson/Marlborough Council (V5)	Replace "131 (1 May - 30 Sep)" in the Allocation limit for A permits for Warrens Creek with " <u>0</u> (1 May 30 Sept)".	Reject
	F101.16	Federated Farmers of New Zealand (Inc) Canterbury Province (V5)	<i>Oppose</i>	Accept in part