

IN THE MATTER Of the Resource Management Act 1991

AND

IN THE MATTER Of applications for Water Permits to take and use water in the Ashburton-Lyndhurst Groundwater Allocation Zone by:

S G & M G Watson (CRC054424)

K R & B R Grice (CRC061526)

L R & J M Hanrahan (CRC061554)

G F Biggs & R C Moriarty (CRC060398)

P A Farms Limited (formerly N C & D A MacDonald)
(CRC062197)

Ag Research Limited (CRC062717)

Nico (No 30) Limited (CRC063647)

A J & N J Doig (CRC063622)

L K & M R Cooney & G S Cantrell (CRC063645)

R M & G C R Kingsbury (CRC064166)

Letham Farms Limited (CRC070080)

D J Mitchell (CRC073805)

Talleys Frozen Foods Limited (CRC073728)

Chequers Stud Limited (CRC092417)

O A Gould (CRC103498)

**JOINT DECISION OF HEARING COMMISSIONERS
RACHEL DUNNINGHAM, EMMA CHRISTMAS, AND EDWARD ELLISON
28 March 2011**

The Applications

- The applications, by the 15 applicants, are all for resource consents to take and use ground water in the Ashburton-Lyndhurst Groundwater Allocation Zone. The rates and volumes sought by each application are as listed below:

Applicant	Application No	Rate of take	Annual Volume
S G & M G Watson	CRC054424	131 litres/sec	951,180 m ³ ¹
G F Biggs & R C Moriarty	CRC060398	112 litres/sec	972,630 m ³
K R & B R Grice	CRC061526	87 litres/sec	879,692 m ³
L R & J M Hanrahan	CRC061544	25 litres/sec	206,000 m ³
P A Farms Ltd (formerly N C & D A MacDonald)	CRC062197	36.5 litres/sec	287,988 m ³
Ag Research Limited	CRC062717	60 litres/sec	561,200 m ³
A J & N J Doig	CRC063622	60.5 litres/sec and 75.5 litres/sec	1,327,500 m ³
L K & M R Cooney & G S Cantrell	CRC063645	48.5 litres/sec	392,000 m ³
Nico (No 30) Limited	CRC063647	58.4 litres/sec	392,000 m ³
R M & G C R Kingsbury	CRC064166	60 litres/sec	362,750 m ³
Letham Farms Limited	CRC070080	75 litres/sec	628,560 m ³
Talleys Frozen Foods Limited	CRC073728	115 litres/sec	850,850 m ³
D J Mitchell	CRC073805	79 litres/sec	646,838 m ³
Chequers Stud Limited	CRC092417	25 litres/sec	250,856 m ³
O A Gould	CRC103498	60 litres/sec and 75 litres/sec	1,195,000 m ³

Decision

- Under our delegated authority from the Canterbury Regional Council to hear and decide these applications, we have decided that, except for application CRC 061554 by L.R. & J.M.Hanrahan, all the applications should be granted subject to conditions, in the form **attached** to this decision.

¹ Of which only 2,239m³ was for water which was additional to water the Watsons already had consent to take.

3. In respect of application CRC 061554, we were presented with no evidence in support of the application. The reporting officer advised us that the applicants had subsequently sold the property which they had proposed to irrigate, and had intended to withdraw the application. However despite a number of enquiries of the applicants, the application was neither formally withdrawn, nor was it transferred into the name of new owners of the property. Without being able to satisfy ourselves that the water would be used productively now the applicants no longer owned the relevant property, we did not consider it would meet the sustainable management purpose of Part 2 of the Resource Management Act 1991 ("the RMA") to allocate water to these applicants. This application is therefore declined and is not discussed further in the decision which follows.

The hearing

4. These applications were heard at a joint hearing held on 16 – 18 November 2010 in the Council Chambers at the offices of the Canterbury Regional Council, Kilmore Street, Christchurch.
5. The following appearances were recorded:

Applicants:

- (a) Ms Erin Blair – Environmental Consultant for Moriarty and Biggs, Grice, P A Farms and Chequers Stud;
- (b) Dr Antony (Tony) Davoren – Groundwater Consultant for Watson;
- (c) Mr Matthew Bubb – Water Resource Engineer for Ag Research Limited, Nico (No 30) Limited, Doig, Cooney and Cantrell and Mitchell;
- (d) Mr Gary Rae – Environmental Consultant for Kingsbury, Letham Farms Limited, Talleys Frozen Foods Limited and Gould;

Submitters:

- (a) Mr Neal Borrie – Environmental Engineer, appearing for Delhaven Cant Limited and G A & R L M Roadley;
- (b) Mr Hibell – Director of Delhaven Cant Limited
- (c) Ms Devon Christensen – Fish & Game Resource Officer, provided written submissions to the hearing for the Central South Island Fish & Game Council;

Section 42A Reporting Officers:

- (a) Mr Andrew Barton;
- (b) Mr Mike Thorley;

- (c) Ms Claire Penman;
- (d) Mr Matthew McCallum-Clark;

Canterbury Regional Council Staff:

- (a) Mr John Young – Manager Water Metering and former Manager of the Rangitata Diversion Race;
 - (b) Mr Carl Hanson – Groundwater Quality Scientist
6. The hearing was adjourned on 18 November 2010 pending the provision of further information requested by us and the review of that information by the relevant officers. That took some time, partly because of the delay created by the Christmas holiday break and, later, because of the disruption caused by the earthquake in Christchurch on 22 February 2011. After receiving that information and replies from the consultants for two of the groups of applicants, primarily addressing conditions, we closed the hearing at 5pm on 18 March 2011.

Background

7. The applications were lodged at various times between 2 June 2005 and 29 June 2010. As a consequence there have been some changes in personnel engaged as consultants to progress the applications, changes in personnel acting as investigating officers for the Canterbury Regional Council ("ECan"), and, in one case, a change in the identity of the consent applicant. The applications were all publicly notified on varying dates, in the Ashburton Guardian,² and attracted a range of submissions both in support and in opposition.
8. The majority have been on hold for considerable periods of time and, as Mr McCallum-Clark noted in his s42A report:

"The applications had been received over many years and had been hold for the majority of those years. This delay led to difficulties on a number of fronts, one of which was the uncertainty for the applicants, in addition changes to the RMA and relevant planning documents, including the recently released Natural Resources Regional Plan decisions. In addition, processing standards, auditing tools and information requirements had changed over time. All of which have led to a number of iterations of the auditing process and at times different

² Notification dates, Watson 7 July, 2007, Biggs & Moriarty, 4 March, 2006, Grice 11 Feb, 2006, P A Farms Ltd, 11 March, 2006, Agresearch, 18 March, 2006, Doig, 28 July, 2007, Cooney & Cantrell, 12 July, 2006, Nico & Co, 29 July, 2006, Kingsbury, 30 Sep, 2006, Letham Farms, 29 July, 2006, Talleys, 10 May, 2008, Mitchell, 28 July, 2007, Chequers, 29 April, 2009, 28 August, 2010

messages and information requests being sent to applicants. (Para 16, S42A Report of Matthew McCallum-Clark)."

9. While it is understandable that the applicants agreed to defer while further work was done on the availability of groundwater in the zone, we observe that such delays do disadvantage submitters. We expect the lack of engagement by submitters was, at least in part, attributable to this delay.

Ashburton-Lyndhurst Groundwater Allocation Zone

10. All applications proposed to take water within the area defined as the Ashburton-Lyndhurst Groundwater Allocation Zone as described in Variation 4 of the Proposed National Regional Resources Plan ("PNRRP"). It is one of 29 groundwater allocation zones covering the Canterbury aquifers, as identified in a 2004 ECan Technical Report.³
11. The zone extends from the foothills of the Southern Alps lying north-west of Methven and runs in a south-easterly direction to the coast. Its south-western boundary runs close to, but does not include, the north branch of the Ashburton/Hakatere River and, downstream of Ashburton, it runs parallel to Wakanui Creek. Its north-eastern boundary is delineated by roads, and borders the Chertsey Groundwater Allocation Zone, which separates the Ashburton-Lyndhurst zone from the Rakaia River. The zone is approximately 63,000 ha in area, comprising primarily flat, well established farmland.
12. A distinguishing feature of this zone is that it is surprisingly devoid of surface water bodies. The only permanently flowing surface water body is Mt Harding Creek in the upper third of the zone which flows into the north branch of the Ashburton River. There are no spring fed surface water bodies at the coastal end of the zone and we are advised that this is due to the presence of coastal cliffs and possibly early drainage works.
13. The physical characteristics of the Ashburton-Lyndhurst Groundwater Allocation Zone mean that, unusually, the applications did not give rise to effects on surface water bodies. Instead the primary concerns raised were effects on adjacent groundwater users, and effects on groundwater quality.

³ Aitchison-Earl, P., Scott, DM and Sanders, R 2004, Groundwater Allocation Limits: Guidelines for the Canterbury Region. Environment Canterbury unpublished Technical Report U04/02.

Ashburton Lyndhurst Irrigation Scheme

14. Another important aspect of the environment which was relevant to our decision making was that a large part of the zone is serviced by the Ashburton Lyndhurst Irrigation Scheme ("the ALIS"). The ALIS is one of three irrigation schemes serviced by the Rangitata Diversion Race ("the RDR"), a large canal taking water abstracted from the Rangitata and Ashburton River and supplying it for irrigation, stockwater and power generation uses. The ALIS services land situated below the RDR canal just north-west of Methven down to land lying adjacent to State Highway 1. While the majority of the applications were outside the area serviced by the ALIS, and had no access to ALIS water, five applicants did. As a consequence we had to consider whether it was appropriate and efficient to grant a groundwater take where an applicant had access to both sources of water.
15. Another issue created by the presence of the ALIS in this zone was the fact that recharge in the shallower aquifers is dominated by ALIS water. With ALIS users gradually converting from borderdyke irrigation to more efficient spray irrigation methods, recharge in the lower portion of the zone was likely to decrease over time. This in turn would impact on the availability of groundwater for abstraction over the life of the consents. There is obvious uncertainty about the timing and significance of the reductions in recharge and this uncertainty had to be taken account of in our decision.

Priority

16. Each groundwater allocation zone is subject to an allocation limit (set as an annual volume), the size of which is set out in table WQN29 of Variation 4 to the PNRRP. Specifically the allocation limit for the Ashburton-Lyndhurst Groundwater Allocation Zone was set at 126.6 million m³ per year.
17. All the applications except the application by S G & M G Watson (CRC054424) fall outside this allocation limit. For this reason, some care was taken in the processing of consents to establish the priority of the consent applications as, applying the "*first in – first served*" approach of the RMA, if we considered there was only sufficient water to grant some of the consents, it would have been important to establish which applications had priority to any water we were prepared to allocate, taking account the allocation limit.

18. We concur with the approach taken by the reporting officers to priority, which adopted the approach articulated by the Court of Appeal in *Central Plains Water Trust v Ngai Tahu Property Limited* (CA69/07) [2008] NZCA 71 where it was held that an applicant's priority is determined by the date of filing the application, provided it is not "a nullity".
19. For completeness, the officer's report of Ms Dana Bambery observed that in the case of these applications they almost all were received before the *Central Plains'* case was decided and at a time when notifiability was used to determine priority for application. That said, it appears it would generally make no difference whether the receipt date, or the notifiable date was adopted (except in the case of the consent application by Nico (No 30) Limited which was receipted after that of A J & N J Doig, but which was notifiable prior to that).
20. However, given our conclusions that water can be allocated to all these consents (at least in the short term) without there being an over allocation of the available groundwater, the issue of priority is of no moment. Had we needed to consider the consents in terms of priority, we confirm that we accept the priority listing contained in Appendix 2 of Ms Bambery's report. The only qualification to that relates to an application by Mr and Mrs TW and BM Lovett, which was lodged earlier than Mr Gould's, but which was delayed as a result of administrative errors by ECan and heard after we heard these applications. Mr Gould has, we were advised accepted that his consent application should be processed on the basis that it has lower priority than the Lovetts', notwithstanding the order of in which the hearings were held.

Activity Status

21. There are two regional planning documents which are relevant to the assessment of these applications. The Transitional Regional Plan contains a general authorisation for the abstraction of natural water. However, as the proposed volumes and rates of abstraction for each application are greater than those specified in the general authorisations, the proposed abstractions require resource consent under section 14 of the RMA, as discretionary activities in accordance with section 369 of the RMA.
22. The use of water is not addressed under the Transitional Regional Plan. As such, the use of water is an innominate class of activity and falls to be

assessed as a discretionary activity, requiring resource consent in accordance with section 77C(1)(b) of the RMA.⁴

23. The relevant chapters of the Proposed Natural Resources Regional Plan ("PNRRP") were notified prior to receipt of these applications, so the rules in the PNRRP are relevant to the application.
24. Decisions on the PNRRP were publicly notified on 23 October 2010 and, given the passage of time, the objectives, policies and rules of the PNRRP have changed during the course of assessing these applications. However, we are advised by Mr McCallum-Clark, that *"the relevant status and rules for the majority of these applications is unchanged"*.
25. As identified above, the allocation limit for the Ashburton-Lyndhurst Groundwater Allocation Zone was set at 126.6 million m³ per year in variation 4 to the PNRRP (Table WQN29).
26. Under Rule WQN13⁵, the taking of water from groundwater within an allocation block for a groundwater allocation zone, listed in Schedule WQN3, or set in Schedule WQN4, is a restricted discretionary activity. Several applications were lodged prior to the zone becoming fully allocated, but they do not comply with Rule WQN13 relating to interference effects on neighbouring wells. They are therefore considered to be non-complying activities.
27. Under Rule WQN13 the taking of groundwater from a groundwater allocation block that is set in Schedule WQN4 and that is fully allocated, is classified as a non-complying activity. The majority of applications were lodged when the allocation block was considered to be fully allocated. They are therefore non-complying, regardless of the interference effects on neighbouring bores.
28. The use of water is similarly not governed by the TRP so is a discretionary activity in accordance with section 77C(1)(b) of the RMA . Under the PNRRP the use is governed by what is now Rule WQN15 of that plan. Mr McCallum-Clark's report discusses the application of this rule to the various applications and we accept his analysis that they range from permitted to fully discretionary. However given that consent is required for both the take and the use of the water under the TRP, and using the "bundling" approach to activity status for related consents articulated in decisions such as *Tairua*

⁴ Now section 87B(1)(a).

⁵ As it is now numbered

*Marine Limited v Waikato District Council*⁶, we agree with the reporting officers that the most stringent activity status applying determines the overall activity status of the applications

29. In summary, we concur with the reporting officer's conclusion that all applications, except CRC054424 (Mr S G and Mrs N G Watson) are to be assessed as non-complying activities. The overall status of CRC054424 is discretionary.

Submissions

30. There is no consistency in the number of submissions which have been lodged in respect of each application, nor in the scope of matters they address. There were no submissions on the Kingsbury application. Some of the applications simply attracted submissions from neighbouring well owners concerned to ensure that well interference effects are managed, while other applications (such as Grice (CRC061526) and Nico (No 30) Limited (CRC063647)) attracted submissions from a wide range of submitters, primarily expressing concerns about the cumulative effects of water takes.
31. A number of similar submissions were made by Central South Island Fish and Game Council (Fish and Game), the Water Rights Trust and Te Runanga o Ngai Tahu.
32. Fish and Game sought that the consents be declined as they are inconsistent with the purpose and principles of the RMA. They raised particular concerns about the cumulative effect of additional abstraction from the aquifers, the lack of adequate groundwater management, consent duration and impacts on lowland rivers.
33. The submission was expanded upon in written evidence by Devon Christensen. Fish and Game sought a combined annual limit for properties which are also supplied with water from the ALIS. While it supported use of farm management plans it also considered that an environmental monitoring regime to detect actual effects on groundwater quality, along with a response regime, was required.
34. The Water Rights Trust also opposed the applications. It raised similar issues to Fish and Game with additional concerns regarding water quality. It sought that a fertiliser management plan be developed for each property

⁶ High Court, Auckland, Asher J, CIV-2005-485-1490, 29/06/06

and that water quality be monitored at the down-gradient property boundary, that water is allocated in accordance with Schedule WQN9 of the PNRRP and that water takes are metered.

35. Te Runanga o Ngai Tahu stated that water quality and quantity management are perhaps their paramount resource management issues. It expressed its concern at the cumulative effects of water abstraction on surface and groundwater flows, raised concerns about the ability of ECan to gauge cumulative effects and the ability of runanga to effectively participate in the decision-making process on individual consents. It did not specify particular consent conditions.
36. The matters raised by these submitters are discussed in the relevant sections of this decision. Other application-specific submissions, such as those by Ashburton District Council and by neighbouring landowners, are covered in the discussion of the applications they refer to.

Individual Applications

Mr SM & Mrs MG Watson

37. The Watsons currently hold consent CRC001193 to take groundwater from bore L37/0754 at a rate of 91 l/s, to irrigate 200 ha. The Watsons' farm is located on Winters Road, between Seafield and Pendarves.
38. The current application was originally lodged to take an additional 40 l/s from a proposed bore, L37/1423. The application was amended during processing such that it now replaces consent CRC001193, allowing water to be taken from both L37/0754 and the new well. The existing consent will be surrendered prior to the new consent being exercised. The new application includes irrigation of an additional 29.2 ha, and consequently the annual volume to be taken from the two wells is slightly greater (an additional 2,239 m³) than would have been allowed under CRC001193 if this consent was restricted to an annual volume calculated using Schedule WQN2 of the PNRRP. However, there is no annual volume limit on the existing consent, so on paper at least, the new application does not authorise any additional water to be taken.
39. The new annual volume will be split between the two wells and on this basis calculations of well interference showed that no neighbouring well owners would be adversely affected in terms of the thresholds in Policy WQN20 of the PNRRP. A submission was received from a neighbour, Mr J. Petrie,

raising concerns about effects on his irrigation wells. Mr Petrie's wells were shown to be unaffected in terms of Policy WQN20.

40. The Watsons' application is considered to be first in the priority queue of the applications we heard. At the time it was considered notifiable, the allocation block was not fully allocated, and sufficient water remained for this application. The application is therefore a restricted discretionary activity under the PNRRP, but a discretionary activity under the TRP. The overall status is therefore discretionary. For this reason we do not consider it necessary to impose the condition relating to saltwater intrusion, as this is intended to monitor the potential effects of additional allocation above the allocation block.
41. Since the additional volume being applied for is so small, any additional effects on groundwater quality will be negligible. As discussed below, we therefore see no need to limit the concentration of nitrate in the leachate to 16 mg/L.
42. The applicants seek an expiry date of 3 March 2035, the expiry date of the consent which is being replaced. Given the small volume of additional water being sought and the fact that the application falls within the allocation block, we accept this duration.

Mr RC Moriaty & Mr GF Biggs

43. Messrs Moriaty and Biggs farm 192.6 ha of land at Chertsey, which is used for cropping and stock grazing. It is currently unirrigated. The applicants have consent to drill two bores, L36/1934 and L36/1409, and seek to spray irrigate the entire property. Water will be taken at a maximum rate of 60 l/s from L37/1409 and 52 l/s from L37/1934. The annual volume proposed is consistent with Schedule WQN2 of the PNRRP.
44. The application is non-complying under the PNRRP. Two submissions were received, from the Central South Island Fish and Game Council and from the Water Rights Trust. Both submissions were in opposition and are discussed further on in this decision.
45. An assessment of the effects on neighbouring bores showed a number of potentially affected bores, including bores used for irrigation, two used for water quality testing and one for water level monitoring. The applicant has proposed conditions requiring an aquifer test prior to commencing irrigating to ensure that effects on these wells are minor.

46. Ms Blair presented an analysis of the effects on groundwater quality at the hearing. The modelling undertaken predicted an increase of between 0.62 and 1.05 mg/L nitrate concentration at the property boundary. The current background level ranges between 5.3 and 7.7 mg/L.
47. The applicants seek a duration of 35 years.

Mr KB and Mrs BR Grice

48. Mr and Mrs Grice own a 151 ha lamb finishing and sheep farm east of Seafield. It is currently unirrigated and operated as a lamb finishing and sheep farm. The applicants propose to take up to 87 l/s water per day from proposed bore L37/1034. No changes to land use are proposed. The application is non-complying under the PNRPP.
49. Following notification, the annual volume to be taken was increased from 838,050 m³ to 879,692 m³. The impacts of this additional abstraction on groundwater resources and on neighbouring wells have been assessed by the officers and found to be minor. The scale of the activity has not changed to any significant degree and no additional parties are considered adversely affected as a result of the change. We have therefore proceeded to consider the amended application.
50. A number of neighbouring bores were identified as being potentially adversely affected. These wells included three owned by R. Roadley, a submitter on the application. Mr and Mrs Roadley were represented at the hearing by Mr Borrie. They were particularly concerned about the close proximity of the proposed well to their own wells (the applicants' well is 320 m from the Roadley's well L37/0204). The Roadleys sought that an aquifer test was undertaken to demonstrate that effects would be minor prior to any water being taken, and that well L37/0204 was included in the test as an observation well. The applicant has agreed to these conditions. We agree that this is appropriate and have referred to well L37/0204 in the conditions.
51. Kismet Enterprises, another neighbouring landowner, also submitted on the application raising concerns about well interference. We are not certain which well is owned by the submitter, however as discussed below, the applicant is required to undertake an aquifer test and assess the effects on all wells within 2 km, prior to taking any water.
52. Submissions in opposition were also received from the Water Rights Trust and Fish and Game. The issues raised by these submissions are discussed

below. Te Runanga o Ngai Tahu lodged a neutral submission stating they were not opposed as long as papatipu runanga were consulted.

53. A nitrate assessment showed that an increase in nitrate concentration in the range of 0.51 to 0.68 mg/L was predicted. Background levels are currently in the order of 8.4 mg/L.
54. The annual volume sought is consistent with Schedule WQN9 of the PNRRP. The applicants seek a duration of 20 years.

PA Farms Ltd

55. PA Farms Ltd operate a 179 ha sheep and beef finishing farm north of Dromore. The bulk of the farm is currently irrigated using water from the ALIS, while 16 ha is run as a dry block. The applicant intends to convert the farm to dairy and seeks sufficient water to irrigate the entire property at a rate of 5.3 mm/day, in conjunction with water sourced from ALIS. The application is non-complying under the PNRRP.
56. The applicant made some minor amendments following notification. The area to be irrigated, rate of take and annual volume were all reduced slightly. These changes reduce any potential effects, so there is no barrier to us hearing and deciding the application.
57. The application was originally made on the basis that a discrete 54.5 ha block would be irrigated using groundwater, while the remainder of the property would be irrigated using the ALIS supply. However Ms Blair confirmed in further information that the property has been converted entirely to spray irrigation and that both ALIS water and groundwater will be applied over the entire area. That is, the groundwater will be used as a 'top-up'. The applicant has some water storage on the property (80,000 m³).
58. An annual volume of 287,988 m³ was applied for, however the modelling results from Dr Brown suggest an annual volume of 251,000 m³ would be appropriate. This takes into account the use of groundwater as a top-up supply.
59. A well interference assessment revealed a number of wells may be adversely affected, however the applicant owns or has obtained written approval for all these wells.

60. Three submissions were received in opposition. One, from CF & VC Clemens, raised concerns about effects on nearby wells, over-allocation of groundwater, effects on the quality and supply of the Dromore community well, and that sufficient water would be available from the ALIS if storage was installed. These issues are discussed in a general manner further on in this decision. An assessment of the effects on water quality predicted a slight increase in the concentration of nitrate in the groundwater (0.2 mg/L), giving a background level of approximately 6.5 mg/L. Submissions were also received from Fish and Game and the Water Rights Trust. The issues raised by these are discussed below.
61. A duration of 35 years was sought.

AgResearch Ltd

62. AgResearch Ltd has applied to take groundwater for irrigation of the Winchmore Research Station north-east of Winchmore. The property is currently irrigated using water from the ALIS but the scheme allocation does not provide sufficient water to fully irrigate the property or supply water during times of restriction. The application is therefore for 'top-up' water. The property may be converted to allow dairy production in the future. Water will be taken from proposed bore L36/2085 at a maximum rate of 60 l/s. The take is a non-complying activity under the PNRRP.
63. It was clear from discussions with Mr Bubb that how the additional water would be used in conjunction with existing scheme water (whether spray or borderdyke) and the storage to be installed, if any, had not been completely thought through. The need for extra water had been recognised, but exactly how much was required and how the system would operate was not clear.
64. An annual volume of 561,200 m³ was applied for, based on 3/8 of the property being fully irrigated by groundwater. However, further information provided by the applicant resulting from the modelling work of Dr Brown suggests a volume of 431,000 m³ would be appropriate.
65. Some minor amendments have been made to the application since notification: an increase to the area of land to which water may be applied, a reduction in duration from 35 to 10 years, and allowing water to be stored in a storage pond prior to application.
66. Three submissions in opposition were received. Two of the submitters, Mr R. Curd and Mr CF & Mrs VC Clemens, raised concerns about over-allocation of

the groundwater, the availability of scheme water to the applicant, the impact on the Winchmore community supply bore, and effects on neighbouring wells.

67. The effects on the community well have been assessed as minor due to the distance of the well from the applicant's bore and the availability of sufficient drawdown within it. An analysis of well interference effects concluded that there would be no adversely affected wells in terms of Policy WQN20 of the PNRRP.
68. A further submission was received from the Central South Island Fish and Game Council. The issues raised by this submission are discussed below.
69. Conversion of the property to dairy farming is likely to lead to an increase of approximately 1 mg/L nitrate in the groundwater. The background level is currently 5.3 mg/L.

Mr AJ & Mrs NJ Doig

70. Mr and Mrs Doig have applied to take groundwater for irrigation of two currently unirrigated blocks south of Chertsey. The blocks (100 ha and 125 ha) are currently used for stock grazing and cropping. Although the original application did not seek a change in land use, Mr Bubb requested that the conditions do not preclude dairy production, as any conversion to dairy is likely to lead to a reduced effect on groundwater quality compared to maintaining the land in crops. We agree that the change is acceptable.
71. Two further minor amendments were identified: a reduction in requested duration from 35 years to 10 years, and minor (10 m) changes to the bore locations. These changes do not materially affect the application. The activity is non-complying under the PNRRP.
72. One submission was received in support and five in opposition. Submissions from Fish and Game and Te Runanga O Ngai Tahu are discussed further on in this decision. Submissions from Mr & Mrs C Copland , Mr CJ Bell, Mr C McArthur and AJ Bird Farm all raised concerns about well interference.
73. A well interference assessment identified a number of potentially affected wells for which written approval has not been obtained. An aquifer test is therefore necessary prior to any pumping to ensure that effects on these wells are acceptable in terms of Policy WQN20. Mr Bubb specified that ECan wells L36/1338 and L36/1340 were likely to be used as monitoring

wells, and had no concerns about including these in the aquifer testing condition.

74. There was some confusion as to the status of a written approval given by AJ Bird, as a submission by the same party was later received expressing concern about well interference. While the written approval was not formally withdrawn we are of the opinion that the later submission in fact revokes the written approval, and the effect on Mr Bird's wells should be considered when the aquifer test analysis is undertaken.
75. A water quality assessment predicted the nitrate concentrations in groundwater would rise in the order of 0.8 mg/L. Upgradient background concentrations were considered by Mr Hanson to be in the range of 6 – 12 mg/L.
76. The annual volume sought is consistent with that determined using the Irricalc⁷ methodology, which is considered an acceptable methodology under the PNRRP.

LK & MR Cooney & GS Cantrell

77. The applicants farm 152 ha east of Winchmore. The property is a dairy farm and is currently spray irrigated using water from the ALIS. Scheme water is stored in a storage pond prior to irrigation. Scheme water is applied to the whole property but is insufficient during times of peak demand and when restrictions are in place. The groundwater sought may be applied over all of the property and is therefore 'top-up' to the existing scheme supply. The property has a 60,000 m³ storage pond. Water will be taken at a maximum rate of 48.5 l/s from well L36/2193. The bore has been drilled and an aquifer test carried out. The application is non-complying under the PNRRP.
78. Mr Bubb commented that the main driver for accessing groundwater is to service the property if and when piped scheme water becomes available. This would provide the ALIS allocation under pressure and on demand, making the storage of water unnecessary.
79. Minor amendments have been made to the application since notification. These are: a reduction in duration from 15 years to 10, an increase to the area of land over which the water may be applied, inclusion of storage as a

⁷ A single layer soil water balance model developed by Aqualinc Research Limited.

use of the groundwater, a slight increase in the maximum rate of take from the well and a minor change in well location (92 m) from the location notified.

80. A well interference assessment has been carried out taking into account the new location and the increase in flow rate and shows that no wells are considered to be adversely affected in terms of the thresholds in Policy WQN20. We therefore accept all amendments made and have proceeded to decide the application on this basis.
81. An annual volume of 392,000 m³ was applied for, however modelling by Dr Brown indicates a volume of 213,000 m³ is appropriate.
82. Seven submissions were received in opposition. The issues raised in submissions by Fish and Game, Te Runanga o Ngai Tahu and the Water Rights Trust are discussed further on in this decision. The remaining submitters, Mr R Curd, Waimara Farm Ltd, MW & DH Haselden and NJ & DA Andrews raised issues of interference with neighbouring wells, over-allocation, existing scheme supply and effects on the Winchmore community supply well. As already stated, no neighbouring wells are considered to be adversely affected. We understand the Winchmore community well has fairly recently been deepened from 50.1 m to 107.83 m, improving the reliability of supply. The issue of whether the grant of this and other consents would over-allocate groundwater is discussed further below.
83. The property is already managed as an intensive dairy farm, so any additional adverse effects on groundwater quality are likely to be small.

Nico (No. 30) Limited

84. The applicant has a dairy farm north-east of Winchmore currently supplied by water from the ALIS. Most of the property is now spray irrigated, with the exception of a 30 ha block that remains border-dyked. The applicant holds consent to store up to 80,000 m³ of water. It proposes to take up to 58.4 l/s of water from bore L36/2083 which was drilled in February 2006. The activity is non-complying under the PNRRP.
85. The water is to be used across the 172 ha of the property currently spray irrigated, and will be used as a 'top-up' to the water supplied by the scheme. As with previous applicants, the scheme water is insufficient at times of peak demand and when the scheme water is restricted. Modelling by Dr Brown indicates that an annual volume of 310,000 m³ is appropriate. This compares to 392,000 m³ originally applied for.

86. The applicant has amended the application slightly since notification. Amendments include increasing the area of land over which water may be applied, increasing the rate of take from 46 l/s to 58.4 l/s to reflect the capacity of the well, reducing the duration from 15 years to 10 and allowing groundwater to be stored in the storage pond. Increasing the pump rate has the potential to adversely affect an increased number of neighbouring wells, however a well interference assessment showed that no additional parties would be affected as a result of the change. We consider these amendments to be minor and within the scope of the application, and have therefore decided the application on that basis.
87. Five submissions in opposition were received. These were from Te Runanga o Ngai Tahu, Fish and Game, Mr R Curd, Waimara Farm Ltd and L & MA Maginness. The concerns raised included the need for an aquifer test to determine effects on neighbouring wells, use of the water in association with ALIS supply, the effect on the Winchmore community supply well and over-allocation within the groundwater zone.
88. An aquifer test on a nearby well has since been carried out and a well interference assessment undertaken using the parameters derived from that test. This shows that there will be no adversely affected wells in terms of the criteria set out in Policy WQN20.
89. As the property is already managed as an intensive dairy farm additional adverse effects on groundwater quality are likely to be small.

RM & GCR Kingsbury

90. The Kingsburys farm a 263 ha property near Wakanui under an intensive mixed cropping and livestock grazing system. About 160 ha of the property is currently spray irrigated under an existing consent. This application is to irrigate an additional 80 ha. Some of the land to be irrigated is located within the Ashburton River Groundwater Allocation Zone, however the bore (L37/1559) is located within the Ashburton-Lyndhurst Groundwater Allocation Zone. In practice, it is likely that water from the two sources will be combined and may be used over the entire property.
91. Water will be taken at a maximum rate of 60 l/s. The activity is non-complying under the PNRRP.
92. A well interference assessment identified a number of neighbouring bores potentially adversely affected. Written approvals were obtained from the

owners of all these bores, however since that time one property has changed hands. Written approval from the new owner is therefore required. This has not been obtained, therefore an aquifer test and assessment of effects on that well must be carried out prior to any abstraction.

93. The property is located adjacent to Wakanui Creek, however we were advised that since diversion of the creek upstream it does not flow in this reach. The creek bed has become part of the paddock. The creek has springs in its lower reaches which flow when groundwater levels are high. There is no risk of stream depletion of either Wakanui Creek or the Ashburton River.
94. The applicant commented that since the land use was not changing, or intensifying, there will be no adverse effect on water quality. A water quality assessment indicated that the increase in concentration of nitrate-nitrogen in the groundwater was likely to be in the order of 0.4 mg/L. The background concentration of nitrate-nitrogen in the groundwater was given as 9 mg/L (data from 2002 – 2005).
95. The application is relatively close to the coast (approximately 7 km), however saltwater intrusion as a result of pumping from this well alone is not considered likely. The consent, as with others in the zone that rely totally on groundwater, will be subject to the saltwater monitoring conditions in order to detect any saltwater intrusion as a result of pumping from the zone as a whole.
96. No submissions were received. A duration of 15 years is sought.

Letham Farms Limited

97. Letham Farms Ltd farm a 432 ha property north-east of Winchmore under an intensive dairy system. The farm is supplied by water from the ALIS, some of which is applied by border dyke and some via a storage pond and spray irrigation. Mr Rae advised that it is probable that areas still under border-dyke will be converted to spray over the next 10 years. Groundwater will be applied to only the part of the property that is spray irrigated, however the applicant accepts a condition requiring that scheme water is used in preference to groundwater.
98. Water will be taken at a maximum rate of 75 l/s from bore L36/2200. The activity is non-complying under the PNRRP.

99. The annual volume applied for has been reduced since notification as the original application also provided for water for dairy shed use. This is now taken under a separate consent but from the same bore. The maximum rate at which water is taken from this bore under both consents is limited to 75 l/s. The change in volume reduces rather than increases the effects of the application.
100. Modelling by Dr Brown shows a volume of 605,000 m³/year would be reasonable. A volume of 628,560 m³/year was originally applied for.
101. A submission in opposition was received from Fish and Game. The concerns raised in it are discussed further on in this decision. A submission in support was received from Brookden Farm Ltd, noting the economic benefits to Canterbury from extra irrigation but also requesting there are no adverse effects on their deep wells.
102. The applicant and the officers both stated that there were no other wells within 2 km at the time the application was made, and therefore none that could be adversely affected in terms of the provisions of Policy WQN20.
103. As the property is already managed as an intensive dairy farm, additional adverse effects on groundwater quality should be small.
104. A duration of 10 years is sought.

Talleys Frozen Foods Ltd

105. The applicant owns a 224 ha property and leases an additional 182 ha of adjoining land south-east of Fairton. It operates an intensive 'cut and carry' pastoral system and process vegetable crop system. The applicant holds consent to take and use sufficient groundwater for 224 ha and seeks additional water to irrigate the remaining 182 ha. The 182 ha block has previously been irrigated using the existing consent.
106. Water will be taken at a maximum rate of 115 l/s from proposed bore L37/1617. The activity is non-complying under the PNRRP.
107. Four submissions in opposition were received, from the Dumbarton Land Co. (2 submissions), the Radlea Trust and Singletree Dairies Ltd. All raised concerns about well interference. A submission in support was received from the MM Ford Children's Trust (no reasons were given) and a neutral submission from the Ashburton District Council. This submission is

concerned with potential over-allocation of the groundwater resource and seeks that sufficient groundwater remains available for current and future domestic use. It also noted the Council's plans to drill a new deep bore to replace the Fairton domestic supply.

108. A well interference assessment identified nine potentially adversely affected wells, including wells belonging to at least two of the submitters. The applicant has agreed to undertake an aquifer test and re-assess well interference before any water is taken.
109. The applicant commented that since the land use was not changing or intensifying, there would be no adverse effect on water quality. The applicant's groundwater quality assessment indicated that an increase in the concentration of nitrate –nitrogen in the order of 0.5 mg/L could be expected. The background level was given as 6.2 mg/L.
110. A 10 year duration is sought.

Mr DJ Mitchell

111. The applicant farms a 293.5 ha property at Seafield which is run as a sheep pasture and cropping operation. Consent is held to irrigate 217 ha of this land, however the rate is insufficient to fully irrigate it at times of peak demand. Groundwater is therefore sought to irrigate the remaining 76.5 ha plus supply additional water to the 217 ha. Water will be taken at a maximum rate of 79 l/s from either of two proposed bores, L37/1630 and L37/1631. A condition has been recommended by the investigating officer to prevent over-irrigation of the 217 ha able to be irrigated by both consents. The activity is non-complying under the PNRRP.
112. Since notification there have been minor changes to the locations of the proposed wells, by less than 10 metres. These changes are considered to be insignificant. The applicant has also requested that the conditions do not exclude milking dairy cows as a use to which the irrigated land may be put. The reasoning is the same as for the Doigs' application, that the effect on water quality of an intensive mixed cropping operation would exceed those from a well-managed dairy farm, and hence there is no need to exclude dairying as a use. We accept this reasoning and agree that the exclusion would serve no useful purpose.
113. One submission, from Copland Dairy Ltd, was received in support. No reasons were given. One submission was received from MJ McManus,

neither in support or opposition, but which raised concerns about effects on his wells. However, since submitting, Mr McManus has provided his written approval, therefore effects on his wells cannot be considered. A submission in opposition was also received from the Fish and Game. Matters raised in this submission are discussed further on in this decision.

114. A well interference assessment identified a number of potentially adversely affected wells, however the applicant has obtained the written approval of all affected well owners.
115. A groundwater quality assessment indicates the expected increase in nitrate concentration will be in the order of 0.5 to 1.5 mg/L.
116. The applicant seeks a 10 year duration.

Chequers Stud Limited

117. The applicant has a 43 ha property east of Seafield. It is run as a sheep and beef operation however the applicant plans to convert it to dairying. The land is currently unirrigated. Water will be taken at a maximum rate of 25 l/s from bore L36/1711. The activity is non-complying under the PNRRP.
118. A well interference assessment has identified 11 bores that may be affected by the proposed pumping. The applicant accepts the need to undertake an aquifer test prior to taking water.
119. Three submissions, all in opposition, were received. The submitters, KR & BR Grice, Delhaven Cant Ltd and CT Wakelin, all raised concerns about effects on neighbouring wells. The Grices raised the issue of priority with their consent application CRC061526, which was notified prior to this application and is also being decided by us.
120. Delhaven Cant Ltd was represented at the hearing by Mr Neal Borrie. Delhaven owns property adjacent to the Chequers Stud block. The well will be located 991 m and 1,316 m away from Delhaven's two irrigation wells. A well interference assessment has identified that Delhaven's wells will be potentially adversely affected by the proposed take. Delhaven seek that an aquifer test is carried out and that one of their bores is used for monitoring during the test.
121. The potential for well interference is real. Mr Hibbell (Delhaven) noted that in one of his wells which is electronically measured, the water level falls 7 m

and the output reduces by 20% when his neighbours (G & R Roadley) begin pumping.

122. A bore owned by G & R Roadley is located only 85 m from the site of the applicant's proposed well. Whilst the Roadleys did not submit on the application, Mr Borrie advised us that Mr Roadley would be willing to have his well monitored during any aquifer test. This well has been identified by the Investigating Officer and Ms Blair as being potentially affected. Ms Blair confirmed that she had no objection to the wells discussed above being listed in the aquifer test condition as wells that should be monitored.
123. A water quality assessment predicted that the nitrate concentration in groundwater may increase by between 0.92 to 2.54 mg/L, although the higher figure is unlikely due to the small size of the property. The existing background concentration is 5.8 mg/L.
124. The annual volume sought is consistent with Schedule WQN2 of the PNRRP.
125. A duration of 10 years is sought.

OA Gould

126. Mr Gould's application has the lowest priority, in terms of date lodged, of all the applications before us. It is the only application lodged after the 2009 amendments to the RMA. Two other applications, which were not heard by us, were lodged earlier than Mr Gould's. One of these is on hold at the applicant's request and we were advised had therefore lost its priority over Mr Gould. The other (TW & BM Lovett) had been delayed as a result of administrative errors by ECan. It was notified after these applications and heard in January 2011. The 2009 amendments set particular timeframe requirements for the closing of hearings. We were advised by Mr McCallum that Mr Gould has agreed to waive any such requirements under these amendments to allow his consent and that of the Lovetts to be processed with regard to their relative priorities. A decision on the Lovett application was issued in February 2011.
127. The applicant farms a 231 ha property west of Chertsey. It is currently used for grazing dairy replacement stock and is irrigated using groundwater from bores L37/0853 and L37/1568. Mr Gould wishes to increase the annual volume of water taken from the two wells and allow the irrigation of pasture for dairy grazing. While the application was made and notified as a replacement application for a greater volume, Mr Rae clarified at the hearing

that the applicant wished to retain the existing consent, which has an expiry date of 2036. The new consent is therefore only for the increase in annual volume. A 10 year duration is sought for the new application.

128. The rate of take under the existing consent is 75 l/s from bore L37/0853 and 60 l/s from bore L37/1568. These rates will not increase. The annual volume authorised under the existing consent is 507,600 m³. An additional 672,400 m³ is sought, making a total annual volume of 1180,000 m³. The annual volume taken will be split between the two wells (655,555 m³ from L37/0853 and 524,445 m³ from L37/1568) in order to minimise impacts on neighbouring bores. The total annual volume is slightly less than that allowed under Schedule WQN2 and is therefore considered reasonable.
129. Four submissions were received in opposition. The concerns of Fish and Game have been discussed earlier. The other submitters, Mr D Thomas, Mr DW & Mrs PA Burrowes and Mr J Campbell all raised concerns of well interference.
130. A well interference assessment was undertaken and a number of neighbouring wells were considered adversely affected. The written approvals of all affected well owners were obtained. The assessment indicated that the effects on the Burrowes' and Mr Thomas' wells would be less than 0.1 m. Mr Campbell's well is located more than 2 km away. The effects on all wells are therefore within the thresholds laid out in Policy WQN20 of the PNRRP.
131. A neutral submission was received from the Ashburton District Council. It seeks that sufficient groundwater remains available for current and future domestic water requirements within the zone.
132. The proposal is predicted to result in a slight increase in nitrate levels in groundwater (less than 0.1 mg/L), although the Investigating Officer questioned the accuracy of the assessment. The applicant accepts the need for nutrient management conditions in order to minimise the discharge of nitrate to groundwater.

Assessment under Section 104

133. At the hearing, the issues in contention were readily identified and were confined to a few key topics. We therefore propose to combine our discussion of the actual and potential environmental effects of the applications under section 104(1)(a) with our discussion of the relevant

provisions of the applicable planning documents under section 104(1)(b), referring to the submissions and evidence presented on each issue as we do.

134. In summary, the actual and potential effects of these applications which were the subject of submission and discussion at the hearing are as follows:

- (a) Adverse effects on surrounding groundwater users (well interference effects);
- (b) Adverse effects of an inefficient take, including effects of granting water to ALIS shareholders;
- (c) Adverse cumulative effects of water take, including salt water intrusion;
- (d) Adverse effects of use on water quality.

Each of these is discussed in more detail below.

135. Other potential adverse effects identified in Ms Bambery's report, but which did not feature in the hearing, were:

- (a) Adverse effects of take on aquifer stability;
- (b) Adverse effects from cross connection on groundwater quality
- (c) Adverse effects of take on surface water flows; and
- (d) Adverse effects of take and use on tangata whenua values.

136. Dealing with the potential adverse effects listed in paragraph 33 we note as follows:

- (a) In relation to aquifer stability Ms Bambery's report explained that the aquifers in the area of the proposed takes are gravel based and thus are not expected to subside.
- (b) In relation to effects from cross connection on groundwater quality, with the inclusion of a condition requiring a backflow preventer being installed, should the irrigation system be used to distribute fertiliser, effluent or any added contaminant, adverse effects from cross contamination were unlikely.
- (c) As already discussed, there are no surface water bodies in the immediate vicinity of the takes. Having considered the site-specific information for each application, Ms Bambery's report concluded that

none of the takes would have an effect that required the take to be included in any surface water allocation block.

We concur with those conclusions.

137. The tangata whenua issues raised by the Te Runanga o Ngai Tahu submissions⁸ were generic in form and focussed on cumulative effects, effects on water quality and quantity, and on the difficulty for Papatipu Runanga to be engaged in the consenting process related to these applications. Te Runanga o Ngai Tahu did not appear or provide evidence to the hearing on their submission, and no submission was received from Te Runanga o Arowhenua.
138. We recognise however, the significant challenge that is posed to Papatipu Runanga and, for that matter, the community to be engaged over time in an elongated process involving continuing iterations of voluminous technical information. We also recognise the cost and frustration of delays that the applicants have had to endure in this consent process.
139. While we have concluded that the cultural issues have been appropriately satisfied on cumulative effects and water quality and quantity issues, (as we discuss below), we consider it would be useful to provide some comment on consultation and engagement of tangata whenua. The motivation for this is in part recognition of the increasing complexity and specialisation around groundwater and surface water management which leads to the separation from decision making by affected parties including tangata whenua.
140. In terms of undertaking consultation, we note that there was no contact made with Papatipu Runanga by either the applicants or their consultants. The reason given was generally to the effect that “The applicant is unaware of any tangata whenua values that may be significantly affected by the proposal, that as part of the resource consent process the local Runanga will receive details of the application from ECan and have the opportunity to comment at that time. It was therefore decided not to duplicate this process given limited effects identified by the proposal”.
141. In her section 42A Report Dana Bambery notes (para 118) that the sites are located within the rohe of Te Runanga o Arowhenua, that the Runanga was advised of each of the applications when they were lodged and were

⁸ Te Runanga o Ngai Tahu submitted on the Grice, Doig, Cooney & Cantrell and Letham Farms consent applications, although they subsequently withdrew their submission on the last of these.

requested to provide a response within five working days. The Runanga was also notified of each application at the time they were publicly notified

142. As already noted, Te Runanga o Ngai Tahu submitted on several applications and their submissions made reference to being on behalf of “nga” Runanga, which indicates that it was cognisant of the fact that more than one Papatipu Runanga has an interest in the area between the Rakaia and Ashburton/Hakaterere Rivers.⁹ A number of the consultants' reports state that the area is in the takiwa of Te Runanga o Arowhenua and appear not to recognise the shared interest of Ngai Tuahuriri Runanga (Tuahiwi) and Te Runanga o Taumutu (Taumutu).
143. The four year timeframe over which the individual applications were publicly notified, plus the period that can be added if the date of lodgement is factored into the equation, meant it would be difficult for members of the public or Runanga to keep engaged and up to date. If the complications referred to by Matthew McCallum-Clark are considered from a Papatipu Runanga perspective, the issue of effective participation magnifies considerably for organisations that are essentially voluntary and limited in their capacity to deal with such complex processes continuously.
144. We accept that in the ECan notification process there are several steps that involve tangata whenua (Papatipu Runanga) as described in paragraph 141 above. However, as already identified, the process is not easy to follow and can be complicated by changes in the process and/or standards being applied. Absorbing the technical and scientific reports that support the individual applications and the time demands to stay abreast of the iterative process must be a daunting task for those whose primary role is not dedicated to maintaining such a watching brief.
145. We provide this commentary simply to make it clear we understand why Runanga have not engaged more actively in this consent process and to observe that the statutory processes could be enhanced for tangata whenua through transparency and sharing of information in a manner that enables more effective consultation with Papatipu Runanga.
146. That said, the evidence we heard was that the Ashburton-Lyndhurst area lacks any natural surface water or wetlands that might support mahika kai

⁹ The prefix “nga” indicates the plural. In addition to Te Runanga o Arowhenua, the Te Runanga o Ngai Tahu Act (1996) recognises that two other Papatipu Runanga share an interest in the area south of Rakaia River, ie; Te Runanga o Ngai Tuahuriri and Taumutu Runanga.

values. In fact, as already explained, the only surface water body present in this zone is Harding Creek, a tributary of the Ashburton/Hakatere North Branch.

147. However we also heard evidence this may not always have been so. For example the Wakanui Creek which is located on the boundaries of two groundwater zones at the southern end of the Ashburton Lyndhurst zone and running roughly parallel to the Ashburton River was interesting due to its descriptive name. A rudimentary translation of its name would suggest that it was a place where a “large canoe” (waka – canoe, nui – large) might have had some presence in times past assuming it is a traditional name for the creek. If that were the case it would indicate that at least historically, Wakanui was a waterway of some scale and if waka used that waterway then there would be values attracting waka visits such as mahika kai. We were told that where the Wakanui ‘runs’ through the applicant Kingsburys’ property, that it is ephemeral due to an historical diversion further upstream, and that the dry bed of the Wakanui appears as no more than a swale in the Kingsburys’ paddock, although it has springs in the lower reaches which flow when the groundwater levels are high.
148. Reference to the 1880 Ngai Tahu mahinga kai inventory compiled by Hori Kerei Taiaroa¹⁰, provides some interesting clues as to the past significance of this watercourse. Taiaroa interviewed Ngai Tahu elders to identify important mahinga kai sites and the resources found at each identified site for much of Canterbury and parts of Otago. At the Taumutu interviews he collected names for several sites between the Rakaia and Hakatere (Ashburton River), including a place called Whakanui, and describes it as “A food gathering place, a habitation”. This is a strong pointer to the fact that the name for Wakanui Creek was traditionally “Whakanui”, which has quite a different meaning to Wakanui. If the name Whakanui is correct, then the waterway may have at times been ephemeral or at least operated with a reduced flow (for example in dry periods) and expanded considerably at other times such as when natural groundwater levels rose. It still suggests though, that this was a place or resource where water was found at times in abundance.¹¹
149. We accept that we must consider these applications in the environment as it exists now, and that it is impossible to turn the clock back. Today from the

¹⁰ A member of the Legislature and noted Ngai Tahu leader of the 19th century.

¹¹ The term ‘whaka’ as a causative may combine with an adjective such as ‘nui’ (big) to give the meaning to make or be made big. Note the Ngai Tahu dialect interchanges the ‘k’ with the ‘ng’, and if this were the case with ‘whaka’, ie; that it equates with “whanga” then the term ‘whanga’ could refer to a ‘stretch of water’, with ‘nui’ added, it would mean a “large stretch of water”, as in Whanganui.

air the Ashburton Lyndhurst zone area looks like a tight knit patchwork of cropping and pasture with little in the way of non-agrarian land or natural waterways that might be host to mahinga kai values important to tangata whenua. While the 1880 Ngai Tahu inventory indicates that this was not necessarily the norm historically, that is not something we can address within the scope of the decision we are tasked with. All we can do is ensure the remaining water resource, which is now a groundwater, not surface water resource, is not over-allocated, nor is its quality unacceptably compromised.

Adverse effects on surrounding groundwater users (well interference effects)

150. A large number of the submissions in opposition came from other abstractors in the vicinity of a particular applicant's take, who opposed the grant of consent unless it could be demonstrated that the well interference effects were acceptable.
151. Both the RPS and PNRRP give strong policy direction on this issue, requiring us to ensure new grants of consent do not unreasonably interfere with existing authorisations. Specifically Chapter 9, Policy 6 of the RPS states:
- "In considering a permit to take water, a consent authority should, as part of the requirements of s104 of the RM Act, consider the need to:...*
(c) provide for existing water permit holders to have priority for the term of their permit;"
152. Policy 5 of the RPS also gives priority to existing users, saying that the grant of a permit to take water *"should not preclude the reasonable exercise of an existing consent to takewater"*
153. Objective WQN7 of the PNRRP seeks to ensure that groundwater abstractions from new bores, in conjunction with all other abstractions from existing bores, do not significantly affect the yield from neighbouring bores.
154. Policy WQN20 of the PNRRP establishes a threshold of acceptable interference and requires that any new bore be located so that the abstractions from it do not cause any significant interference on abstractions from neighbouring bores. Specifically, the policy states that the extent of direct accumulative interference effect on any neighbouring bore should not exceed 20% of the available drawdown in any bore with an existing authorisation that is within 2 kilometres, unless the effect is mitigated. A de minimus threshold of 0.1 metres (formerly 0.05 metres before decisions on

Variation 1 of the PNRRP were released on 23 October 2010) is set for direct drawdown effects, below which effects are considered to be insignificant.

155. Because of the range of times over which these consents were lodged, many had used earlier methods of calculating well interference effects. We were advised that all applications were re-audited for interference effects using the present day criteria of considering wells within a 2 kilometre radius, and using a 0.1 metre "*cut-off*" for the degree of effect that is considered to constitute an insignificant direct interference effect.
156. As has been discussed in more detail in relation to the individual consents, several of the consents are for wells which have been assessed (using the method outlined in Schedule WQN10) as having the potential to affect neighbouring bores by increasing drawdown in the area of the existing wells. Where all affected party approvals were not given the officers have recommended that a condition be placed on the grant of consent requiring an aquifer test and an analysis of the potential drawdown effects on neighbouring bores. Where surrounding groundwater users are potentially affected by the proposed take and use of the water in terms of Policy WQN20 further mitigation would be required. All applicants in this category expressed a willingness to accept such a condition.
157. The submitters we heard from with potentially affected wells also agreed that the appropriate mitigation was to require an aquifer test and analysis of drawdown effects on bores within a 2km radius of the new well, and then require mitigation if actual drawdown effects were identified. They explained the significant investment they had in their irrigation infrastructure and understandably did not wish to see that compromised by further grants of consent. That said, their approach was pragmatic and the parties who engaged Mr Borrie of Aqualinc to give evidence, expressly said they were willing to co-operate with the consultants undertaking the aquifer testing and allow use of their bores as water level monitoring observation bores.
158. The only concern we had about taking this approach (where potential effects were not fully known until after the consent was granted), was the risk that we may grant a consent that then needed to be so severely restricted that it had little or no utility. Mr McCallum-Clark also shared that concern, noting in his report that, for this reason, he "somewhat nervously" suggested the condition requiring post-installation testing and remediation of interference effects to address well interference effects.

159. However we canvassed that issue with the technical experts representing the applicants and with the reporting officers, and gained some comfort that such an outcome was most unlikely. In their experience, predicted effects tended to be conservative and actual effects were usually somewhat less, and mitigation to manage those actual effects on neighbouring bores could be achieved without unduly compromising the utility of the consent granted. They advised that there were a number of practical mitigation options available to the consent holder, including reducing the maximum abstraction rate, reducing the annual volume and/or reaching negotiated agreements with the affected bore owner on the operation of the take to minimise the adverse effect on that person's irrigation system.

160. On the basis of that evidence we accept that it is appropriate to grant consent on the condition recommended, but with some modifications to that condition as is discussed in more detail in the section on consent conditions below. We also note that in all cases the applicant agreed that such a condition was appropriate and acceptable to them. Given that the alternative may well have been to decline consent, they were clearly prepared to accept the limitations that such a condition may place upon their use of the consent.

Adverse effects of inefficient take

161. Policy 3 of Chapter 9 of the RPS seeks to "*promote efficiency in the use of water*" and, as the supporting text explains, efficiency involves both a technical evaluation and an evaluation of allocative efficiency. The issue of whether it was efficient to allocate the water sought in each of these applications was highlighted for two reasons:

- (a) The categorisation of the Ashburton-Lyndhurst Groundwater Allocation Zone as a "*red zone*" mean that, prima facie, the groundwater is fully allocated; and
- (b) Some applicants already have access to water from the ALIS which brought into question the need for the quantities of groundwater sought.

162. The PNRRP reflects the RPS's focus on efficient use of water. Objective WQN5 seeks to: "*Achieve a high level of efficiency in terms of resource availability and the use of water*" and Policy WQN17 includes a number of provisions to ensure that the instantaneous rate of abstraction, the return period and annual volume of water authorised to be taken is no more than

reasonable for the intended end use of the water and reflects the actual quantity needed to undertake the land use activity.

163. It is beyond dispute that groundwater in Canterbury is a finite and valuable resource, and that in order to maximise the benefits of allocating that groundwater for irrigation use, applicants should be allocated sufficient water to achieve the benefits of irrigation, but not be permitted to take more than is reasonably needed. Over-allocation has adverse effects both on the availability of the resource to other parties, and on the environment by depleting the groundwater resource.
164. In this case each application includes an annual volume limit which has been derived from Schedule WQN9 (Variation 2) to the PNRRP or Schedule WQN9 (Variation 3) of the PNRRP. Ms Bambery's report considered that (except in cases where ALIS water available which we will discuss further below) the annual volumes sought were reasonable, given the site-specific characteristics and intended use of the water. She also endorsed the consents being granted with conditions which required the efficient use of water including that application of water not exceed field capacity.
165. Five applications (Nico (No. 30) Limited, Letham Farms Ltd, AgResearch Ltd, LK & MR Cooney & GS Cantrell and PA Farms Ltd) are within the supply area for the ALIS and currently receive water from the scheme for irrigation of their properties. The scheme has traditionally supplied water sufficient to fully irrigate 5/8 of each property via border-dyke systems. All applications are for additional water to allow the whole property to be irrigated and to supply water when the scheme, which is supplied by water from the Rangitata and Ashburton Rivers, is restricted.
166. Most of the applicants have previously installed storage dams and partially or fully converted the border-dyke irrigation to spray irrigation. While this has allowed water to be used more efficiently, the scheme supply is still insufficient to fully irrigate the whole property.
167. Applications were typically made on the basis of irrigating the remaining 3/8 of the property area with the groundwater. Annual volumes were calculated using Schedule WQN2 or Irricalc for that area of land. Subsequently all applicants, following discussion with the Investigating Officers, or for their own reasons, amended the applications such that water could be applied as a 'top up' over the entire farm area, rather than used as the sole supply for a discrete parcel of land.

168. It was acknowledged by all parties that border-dyke irrigation within the scheme is gradually being converted to spray. Mr Thorley's evidence identifies that recharge from the ALIS is a significant contributor to groundwater within the zone due to low irrigation efficiency and leakage from water races. The recharge buffers the effects of groundwater abstraction. He states:

"If the ALIS area was converted to spray irrigation, recharge would decrease and could cause significant reduction in groundwater levels in the vicinity of the ALIS."

Such reductions in groundwater levels have the potential to affect existing groundwater users.

169. ECan Technical Report R09/55 'Land Surface Recharge and Groundwater Dynamics - Rakaia-Ashburton Plains' considers the full conversion of border-dyke to spray within the next ten years 'unlikely', based on discussions with ALIS staff. However we heard evidence that significant conversion may occur, although the timing and extent of changes are unclear. Mr Davoren's opinion was that there would be no border-dyke in ten years. Mr Young advised us that laterals 1, 2 and 2a of the ALIS were now piped and that the scheme had been given money to research the viability of piping the remainder of the scheme. Provision of a piped, pressurised supply would inevitably mean that water was applied by spray rather than border dyke.

170. Report R09/55 states: *"If the goal is to minimise piezometric changes when converting to more efficient irrigation practices, then surface water supply for irrigation should be used over the widest area possible in order to minimise groundwater pumping demand and maximise the additional recharge of rainfall via soil percolation."*

171. This has implications for users within the scheme area. To avoid these effects additional irrigation should be undertaken primarily by using surface water takes. Mr Thorley's conclusion was that there is sufficient water available to allow more groundwater to be taken within the scheme area for the purposes of a backup supply that augments surface water supplies.

172. The applicants were not opposed to this approach and amended their applications to provide only for 'top-up' groundwater for areas primarily irrigated by scheme water. They also agreed to the imposition of a condition

that required surface water to be used as the primary source of irrigation water.

173. This approach is supported by the objectives of the PNRRP. Objective WQN3 is to:

"Enable present and future generation to gain access to the region's groundwater resources for social, economic cultural and other benefits..."

Objective WQN4(1) is that:

"The available water is allocated in ways that enables people and communities to maximise their social economic and cultural wellbeing, and their health and safety, giving priority to potable water for community drinking water supplies and for stock use."

174. Enabling access to, and maximising community benefit from, groundwater is reliant in this case on the continued use of ALIS water to the fullest extent possible. Groundwater should be used only when ALIS water is unavailable as this is, in our view, consistent with the efficient use of the resource sought by Objective WQN5 cited above. Accessing scheme water is also more efficient in terms of minimising energy costs for pumping deep groundwater.
175. We were concerned when first hearing evidence from the applicants that the annual volumes sought had been calculated in a fairly crude manner. We considered that if groundwater is applied as a secondary source on areas primarily irrigated by surface water, then somewhat less will be used than if it is applied as the sole source of water on a discrete area, which was the basis for most of the applications. We felt the existing availability of scheme water had not fully been taken into account when application volumes were determined. Furthermore, if we over-allocated water to these properties, then, as Ms Bambery's report said, *"the consent holder would be effectively "double-dipping" and tying up allocation that would then not be available to other parties"*.
176. We therefore requested that modelling be carried out to more accurately determine need. This was provided by Dr Peter Brown of Aqualinc Research Ltd, who assessed reasonable water requirements by estimating on-farm demand using a daily water soil balance model over the last 30 years, estimating the reliability of supply for the RDR on a daily basis over the same period, estimating the supply reliability for the ALIS taking into account

stockwater demand and leakage, and from the above, calculating daily and annual groundwater requirements. The water requirements were calculated to meet the demand in nine years out of ten, consistent with the latest version of Schedule WQN9 of the PNRRP.

177. As we expected, the estimated annual demand in each case was less than had been calculated (and applied for) using Schedule WQN9 of the PNRRP for the equivalent area of land and the differences are set out in the table below:

Applicant	Ag Research	Nico (No 30)	Cooney & Cantrell	P A Farms	Letham
Consent	CRC062717	CRC063647	CRC063645	CRC062197	CRC070080
Groundwater limit applied for (m ³ /y)	561,200	392,000	392,000	287,998	628,560
Modelled groundwater allocation (m ³ /y)	431,000	310,000	213,000	251,000	605,000

178. We are satisfied that the calculations of Dr Brown, while they have their shortcomings, are sufficiently reliable for us to use as the basis for our assessment of a reasonable seasonal volumetric allocation. In each case, we accept that the reduced volume arrived at through Dr Brown's analysis, is appropriate, and granting consent with these amended volumetric limits will ensure a more efficient use of the water resource than the quantities initially applied for.

Adverse cumulative effects of water take

179. On the face of it, the most critical issue raised by these applications (at least at the time the consents were applied for), was that they almost all sought access to water in excess of the allocation limit set for this zone.

180. It is beyond question that in the Canterbury Plains there is serious pressure on the groundwater resource and, in some areas, it is fully allocated if not over allocated.

181. The PNRRP seeks to prevent long term decline in groundwater levels with Policy WQN9 stating:
- "Control the total amount of groundwater allocated for abstraction so that there is not significant continuing long term decline in mean annual ground levels and artesian pressures".*
182. If groundwater is over allocated it affects surface water bodies, the reliability of other groundwater users, and can have other consequences such as salt water intrusion.
183. As already explained, allocation limits were set for each of the groundwater allocation zones as set out in Table WQN29 of the Variation 4 to the PNRRP, which in turn was based on Technical Report U04/97.
184. However, since that initial report was undertaken, the further Technical Report R09/55 has been released which updates and revises the 2004 report.
185. The purpose of the second report was to advance the technical understanding of the groundwater system in the Rakaia/Ashburton area, both to inform resource management decisions, and to provide further information for stakeholders about how groundwater would respond to various irrigation development scenarios.
186. The water balance review completed in R09/55 differs from the 2004 report, in that it has nearly doubled the amount of recharge which is assumed to come from surface water irrigation across the ALIS. The explanation given by Mr Thorley is that this is *"due to more specific and tailored calculations and updates of irrigated area"*. As a consequence it identifies that there is more water available in some parts of the groundwater allocation zone than is identified in the allocation limit in the PNRRP. Indeed, assuming the same 50% threshold for recharge as was applied previously, he considers that the annual groundwater allocation limit would increase in the order of 10 million cubic metres. As Mr Thorley notes, the additional land surface recharge caused by the ALIS is significant when compared with other areas across the Rakaia/Ashburton plains.
187. The evidence of Mr Thorley has satisfied us that there is currently sufficient groundwater available in this zone to grant the current applications even though it means the allocation limit specified in the PNRRP is exceeded.

188. However, there are some caveats on this conclusion. In particular, as discussed earlier, as borderdyke irrigated farms convert to spray irrigation across the ALIS, the amount of recharge attributable to the scheme will decrease because water losses from inefficient irrigation will reduce. While Mr Thorley notes this could be partially counterbalanced by increasing the area over which the ALIS supplies surface water for irrigation, overall, the predicted changes in groundwater levels due to increasing irrigation will be significantly less than the changes associated with more efficient irrigation across the ALIS.
189. There is considerable uncertainty about the timing and significance of these effects, and it is because of this uncertainty that we have been reluctant to issue consents for a lengthy period.
190. While we accept the findings of the technical report R09/55, and considered there is sufficient water available in this part of the groundwater allocation zone to allocate water in excess of the PNRRP's allocation limit, we do not consider that we have sufficient certainty about the future to be satisfied that these consents¹² should be granted for more than a 10 year period. In these circumstances we have decided that, (except for the Watson consent, which falls within the existing allocation limit) an appropriate term of consent for all applications is 10 years.
191. A further potential cumulative effect of granting these applications is the increased likelihood of saltwater intrusion into groundwater. Saltwater intrusion is the migration of saltwater into an aquifer which occurs when there is a reduction in the freshwater head and flow at the interface with seawater. A risk of over-allocating groundwater in coastal areas is that the normal upwards pressure gradient can be reversed or reduced, allowing saltwater to move laterally in from the sea to groundwater.
192. Objective WQN3 of the PNRRP identifies the need to ensure that use of groundwater *"does not result in seawater intrusion that compromises the existing quality in neighbouring bores"* and this is supported by Policy 14.2 which seeks to ensure that a grant of consent in excess of an allocation limit does not compromise environmental values, including seawater intrusion.
193. As all groundwater takes will contribute to a reduction in coastal discharge from the groundwater system, Mr Thorley's section 42A report echoed

¹² Leaving aside consent CRC054424 which applies for water within the allocation limit.

recommendations in R99/05 that, at least for consents seaward of State Highway 1¹³, coastal monitoring be undertaken and if salinity thresholds are exceeded, that should trigger restrictions on takes.

194. The applicants for consents seaward of State Highway 1 were prepared to accept these recommendations and the mitigation proposed was for existing monitoring bores at the Kyle Coastal Monitoring Site (L37/0693, L37/0867 and L37/1713) to continue to be monitored as discussed in further detail in the section on conditions below. If increased salinity was detected that would in defined circumstances require the take of water to cease. However, the officer's report noted that at present there was no evidence of saline intrusion at the Kyle coastal monitoring wells.

Adverse effects of use on water quality

195. From our perspective the most challenging issue raised by these applications was the effect of the take and use of this water on groundwater quality, particularly in light of the already relatively high nitrate nitrogen concentrations recorded in this area.
196. We were referred to the findings of the 2004 ECan Technical Report R04/9 by Shirley Hayward and Carl Hanson which found about 25% of the 155 wells sampled in the area between the Ashburton River/Hakatere and the Rakaia River had nitrate concentrations above Maximum Acceptable Value ("MAV"), a significantly higher rate than found in the region overall (where in annual surveys only 2-6% of wells exceeded MAV in the four years of records preceding the report). This was largely attributed to contamination from agricultural activities in the area. Furthermore, there were distinct "plumes" of groundwater contamination associated with the meat processing plants at Fairton and Seafield in the Ashburton-Lyndhurst Groundwater Allocation Zone.
197. Mr Hanson, at our request, addressed us at the hearing in relation to the 2004 report, and subsequently provided us with a further memorandum updating us on the results of nitrate contamination in the Ashburton-Rakaia Plains area. That updating report looked at 15 wells in the Ashburton-Lyndhurst Groundwater Allocation Zone which had been used in compiling the 2004 report and where sampling had been ongoing since then. They revealed changes in nitrate-nitrogen concentrations ranging from a decrease

¹³ Noting that the consents in the area to the landward side of the State Highway 1 were only backup supplies to surface water supplies.

of 1.6 mg/L to an increase of 1.7 mg/L, but with the average change in this zone being an increase of 0.4 mg/L from 9.0 mg/L to 9.4 mg/L.

198. We also asked the reporting officers to advise whether the two meat processing plants within the zone were having their consents reviewed in light of the findings of the 2004 report. From those enquiries we learnt that the relevant consents were "currently under review" (and had been for 5 or more years), but that the review processes seemed to have stalled. In those circumstances we decided we could not assume the contamination associated with those operations would be reducing in the foreseeable future.
199. The RPS recognises that protecting groundwater quality, particularly where it is a source of drinking water, is important. Objective 3 focuses on the importance of protecting water quality from contaminants and *"safeguarding the existing value of water bodies for efficiently providing sources of drinking water for people"*. Policy 11 is to *"Promote land use practices which maintain and where appropriate enhance water quality"*.
200. The PNRRP also sets out certain aspirations for groundwater quality. Objective WQL2.1 of Chapter 4 says that *"if, during the life of this plan, the overall maximum nitrate-nitrogen concentration exceeds 5.6 milligrams per litre in any aquifer, any increase...shall not exceed a rate of 1.5 milligrams per litre every ten years"*. The base rate for this calculation is derived from concentrations measured or reasonably deduced in the three years prior to 1 November 2010 (which was one of the reasons why we sought an update from Mr Hanson on the 2004 report findings of nitrate-nitrogen concentrations measured in the area). The objective also seeks to cap the overall nitrate-nitrogen concentration at 11.3 mg/L.
201. When we looked further into the policies and rules supporting this objective, we found a relative paucity of guidance and direction on how this was to be achieved. While Policy WQL9 promotes the use of "best management practices" to manage the leaching of nutrients, including nitrogen, Rule WQL 20 only imposes restrictions on particular land uses, being cropping and grazing with 30 stock units or more per hectare. It requires those farms to calculate the average nitrate-nitrogen concentrations in soil drainage water from the land using OVERSEER, to implement "best management practices" when those calculations exceed 8 mg/L, and not to exceed a calculated discharge of 16 mg/L. If they can not comply with these requirements then

their land use activity becomes a restricted discretionary activity. Other farming activities can occur as of right.

202. Chapter 5 of the PNRRP also tangentially addresses water quality issues. Policy WQN 17 of that chapter requires that, when assessing applications to take water, we have regard to avoiding or limiting adverse effects on water quality, and it cross references us back to specified policies in the Water Quality chapter of the PNRRP including Policy WQL9. However Rule WQN15 permits use of water from a private groundwater take as long as certain conditions relating to the efficient use of water are met. There are no conditions which directly relate to nutrient management practices.
203. As almost all the applications were non-complying activities, we had wide scope to consider the effects of granting consent, including adverse effects on groundwater quality. However we found it difficult to glean from the PNRRP strong guidance on what conditions should be placed on the consents to achieve the objectives sought in that plan. The focus is on adopting best management practices particularly as nitrate levels approach MAV, but the plan does not suggest any bottom lines. While the PNRRP aims to keep nitrate-nitrogen concentrations below 11.3 mg/L, it appears many farming operations have no constraints placed on their nutrient management by the plan. Even the more intensive grazing and cropping farms can discharge drainage water with nitrate-nitrogen concentrations calculated to be up to 16 mg/L as long as they are complying with certain best management practices.
204. We recognise that existing groundwater quality in this area is compromised, and in a number of bores the measured nitrate-nitrogen concentrations approach or exceed 11.3 mg/L. We also accept that one of the cumulative effects of granting consents to take and use water for irrigation is a likely decrease in groundwater quality. While we acknowledge there is no real risk to the water quality of surface water bodies in this area, many properties source their drinking water from wells and it is important to maintain the potability of that water.
205. The evidence we heard from Mr Hanson, and the advice we received from the reporting officers, was that the most useful kind of condition we could impose was to require farmers to keep records of what they are doing and analyse those records to see where nutrient losses were occurring. That should be coupled with an obligation to amend their practices to address

unacceptable nutrient losses. We were also cautioned that it would be difficult to put bottom lines into the conditions as the modelling systems relied on to produce the estimates of nutrient losses, were subject to significant variability, even when run properly.

206. In the end, we have decided to modify the condition proposed by the reporting officers and impose the same threshold that is contained in Rule WQL20, which is that when average annual concentrations calculated for nitrate-nitrogen concentrations exceed 16 mg/L, the use of the water is no longer authorised under the consent. This will apply to all applicants, except SG & MG Watson whose application is for such a small additional volume (2,239 m³/year) that the effects on water quality will be negligible. Below the 16 mg/L threshold the focus of the condition is on using best management practices to minimise nutrient losses.
207. We consider this provides a strong incentive for farmers to stay within an acceptable envelope of nitrate losses, while still giving those with more intensive farming operations scope to undertake those activities. We accept that some applicants will have to modify their existing practices to bring themselves within this limit, but that is considered necessary by us to keep groundwater quality in this zone within acceptable limits and avoid adverse cumulative effects on groundwater quality.

Section 104D

208. As all these applications, apart from the Watsons' application (CRC054424), are categorised as non-complying activities, we must decide whether the threshold test contained in section 104D of the RMA is satisfied before we can grant consent.
209. The threshold test in section 104D provides that we may only grant a resource consent for a non-complying activity if we are satisfied that either the adverse effect of the activity on the environment will be minor, or the application is for an activity that will not be contrary to the objectives and policies of the relevant plans.
210. The foregoing discussion has covered the evidence we heard, and our conclusions on the effects on the environment of granting each of these applications. In terms of the assessment of cumulative effects of the groundwater take, given Mr Thorley's evidence, which was accepted without contradiction, we are satisfied that there is, at least for the duration of these

consents, sufficient water to be allocated. The cumulative effects of the groundwater take, subject to mitigation, will therefore be no more than minor.

211. While some of the applications have been identified as having potential well interference effects, again, with the condition requiring post installation testing and remediation of interference effects, we are satisfied that those effects will be no more than minor.
212. Finally, with the conditions requiring management and monitoring of nutrient losses, we consider that the effects on groundwater quality will also be mitigated so that they are no more than minor. Thus we are satisfied that the test in section 104D(1)(a) has been met.
213. The objectives and policies of the PNRRP (which we have focused on given that it is close to being operative and given the lack of objectives and policies in the TRP) are primarily focused on avoiding adverse effects, while achieving the social, economic, cultural and other benefits to be gained from access to the region's groundwater resources. Given our findings that the adverse effects of granting consent should be no more than minor, we are also of the view that the activities, with the mitigation proposed, will not be contrary to the objectives and policies of either the RPS or the PNRRP, and section 104D(1)(b) is also satisfied. We can therefore go on to consider the grant of consents.

Part 2

214. Our conclusions under section 104 and 104D are still subject to an assessment of each application in light of the purpose and principles of the RMA set out in Part 2 of that Act.
215. The applications did not raise any of the matters of national importance under section 6 of the RMA.
216. Relevant considerations under section 7 include 7(b) "*the efficient use and development of natural and physical resources*" and 7(f) "*the maintenance and enhancement of the quality of the environment*". We have had regard to the efficient use of the groundwater resource, primarily through the tools of imposing seasonal volumetric limits and by imposing controls on how the water is applied, including keeping records of water use.
217. The need to maintain and enhance the quality of the environment has been addressed when we considered the mechanisms for protecting groundwater

quality to ensure it is protected as a supply of drinking water, and is not subject to saltwater intrusion.

218. In terms of section 8 considerations, while we have made some observations about engagement with Papatipu Runanga, we accept that these applications do not impact on resources of significance to tangata whenua as seriously as such applications may do in other catchments, and these are not applications which bring section 8 considerations into sharp focus.
219. Finally, we must consider the applications in light of the overriding purpose of Part 2 of the RMA set out in section 5. This section seeks to enable people to meet their needs, including their social and economic wellbeing, while sustaining the resource for future generations and avoiding remedying or mitigating adverse effects.
220. One effect which we have not discussed to date, (largely because it was not debated in the hearing) is that economic and social benefits are derived from irrigation. As Mr McCallum-Clark's report notes "*these benefits are considerable to individual farmers, the local South Canterbury community and indeed nationally*". The benefits are further reflected in the PNRRP decision on Objective WQN3 which now expressly refers to the enabling effects of providing access to the groundwater resource.
221. Given our prior discussion on the management of adverse effects through conditions, we are satisfied that granting these consents promotes the sustainable management of a natural and physical resource, while avoiding, remedying or mitigating any adverse effects of the take use of that groundwater on the environment.

Consent Conditions

222. A suite of standard conditions was presented to us by the officers. These conditions were largely accepted by the applicants, with some minor changes which we discuss below. The need for the conditions has been discussed earlier.

Aquifer testing

223. Mr Bubb in particular raised a number of matters in relation to the proposed aquifer testing condition.

224. We accept the need to remove the requirement for ECan to approve the aquifer test methodology, but maintain that the methodology should still be provided, in the interests of information sharing and to allow ECan to comment if they wish. The methodology submitted should be followed ‘as far as is practicable’, recognising that occasionally matters do not go to plan and some flexibility is required.
225. The conditions set a minimum duration for the aquifer test of three days. We accept that a shorter duration may sometimes be acceptable. We have reworded the clause such that this may occur only where there is agreement with ECan.
226. The draft condition required that water levels are monitored for a specified number of hours following the cessation of pumping, to ensure that the full recovery of water levels is monitored. Mr Bubb suggested an alternative wording, used in other consents, that monitoring must continue until 95% of the water level recovery is observed. We accept this proposed change.
227. We discussed the need to specify particular wells to be monitored in each case and agree that this is the preferred approach. Where monitoring wells have been determined by applicants, these are included in the conditions.
228. Mr Bubb also proposed an additional clause stating that where there are no suitable observation bores within two kilometres, making a constant rate discharge aquifer test impossible, an alternative methodology, for example a step-test, is carried out instead. Mr Thorley had no concerns with this clause and we have therefore included it.
229. Mr Bubb also sought to change the definition of ‘adverse effect’ within the condition such that wells which can still supply sufficient yield for the given use are not protected, even if the cumulative drawdown exceeds 20%. The reasoning behind this comes from Objective WQN7 of the PNRRP, which states that:
- “Ensure that groundwater abstractions from new bores, in conjunction with all other abstraction from existing bores, do not significantly affect the **yield** from neighbouring bores that are adequately penetrating the aquifer.” (our emphasis)
230. Previous consents granted in recent years, for example those in the Selwyn Waimakariri zone, have included a similar, if rather more complex, clause, which specifies how self-induced drawdown may be predicted. This is then

used as a basis for re-calculating the available drawdown that must be protected in terms of Policy WQN20. Assumptions are made for the self induced drawdown of wells solely for domestic or stockwater. Recent consents in the Valetta / Ashburton River zone have a looser clause, simply requiring:

“an assessment that otherwise ensures that the yield of any potentially affected neighbouring well will be protected...”

231. We accept that Objective WQN7 refers to the yield of the well. Provided neighbouring well owners are able to take their authorised volumes then effects on them will be minor. We also accept that in some cases the threshold in Policy WQN20 will be conservative, limiting development by the applicants when there are no adverse effects on neighbouring wells. The risk is that incorrect assumptions may be made, when determining the drawdown in the neighbouring well, such that the yield is not protected. Mr McCallum-Clark's preference was for there to be no such clause in the condition. If a neighbour was found to be affected in terms of Policy WQN20 and did not give written approval, then a change of conditions to the consent would have to be made, giving the neighbour further opportunity to submit, and a decision made based on the degree of effect on the neighbour. His second preference was for a clearly worded condition that allowed no room for argument in terms of whether the neighbour's yield was affected or not.
232. Mr Thorley agreed with the intent of the proposed condition but indicated that the drawdown in each well was different, and a desktop judgement could not reliably be made. He preferred that each affected neighbour was consulted on the drawdown in their well, and ideally a step-drawdown test was conducted to accurately determine drawdown. Drawdown data from when the well was drilled is usually unreliable.
233. Mr Bubb, in his right of reply, considered that the wording in Appendix D excluded monitoring and observation wells and the methodology could not be used to consider effects on these wells.
234. We consider that the wording originally proposed by Mr Bubb is too vague and has the potential for applicants to determine that a neighbour's yield will not be affected with few checks on the process used. We have therefore endeavoured to tighten this condition, using some of the restrictions from the Selwyn-Waimakariri consents referred to earlier. In particular we have limited the assumptions that can be made about the self-induced drawdown

in the affected well. This must be directly measured or determined from an aquifer test. We accept that there will be situations where this information is not available and cannot be obtained – in such cases, if alternative mitigation is not possible, a change of conditions to the consent must be sought.

Annual volume in ALIS supplied areas

235. The officers recommended that applications in areas also supplied by ALIS water be subject to a combined annual volume, in order to ensure that application of water from both sources is technically efficient.
236. Mr Bubb argued strongly that this would likely result in the inability to use scheme water at the end of the season when it was available, and that neighbouring properties would not be similarly restricted. We agree with this reasoning. The modelling carried out by Dr Brown has determined reasonable volumes of groundwater to top-up ALIS supply. Use of scheme water in addition to this should not be restricted by us.
237. We have included a condition requiring that scheme water is used in preference to groundwater whenever it is available as this is the basis on which we are granting these top-up applications. Use of groundwater in preference to scheme water will put additional strain on the groundwater resource and reduce the recharge to groundwater currently provided by the scheme.

Saltwater intrusion monitoring

238. Mr Bubb sought a change to the proposed condition to more tightly define the location of the monitoring wells. We accept this amendment.
239. We also had concerns about the requirement in the condition for ECan to monitor the wells. To avoid any problems about the legality of the proposed wording, we have reworded the condition along the lines of a minimum flow condition, where pumping must simply cease if salinity levels in the monitoring wells, as measured by ECan, exceed a trigger level.

Duration

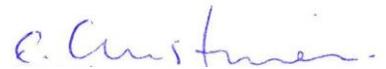
240. The consent durations sought by the applicants range from 10 to 35 years. As discussed earlier, there are significant concerns within this zone about the long-term availability of recharge water from the ALIS, given the ongoing conversion of border-dyke irrigation to spray. The gradual piping of the

scheme will further reduce a source of recharge from rates and storage ponds.

241. While we have decided there is sufficient additional water within the zone at present to grant these consents, we are not confident that this situation will persist over the long-term. We therefore consider that ten years is the maximum duration for which we should grant consent. Applicants should be aware that there is no certainty of renewal of these consents upon expiry and this must be borne in mind by the applicants when decisions are made about investing in the infrastructure necessary to exercise the consents. The available groundwater resources and demand within the zone will need to reassessed at that stage.



R M Dunningham



E Christmas



E Ellison