

IN THE MATTER Of the Resource Management Act 1991

AND

IN THE MATTER Of application CRC084105 to take and use water in the
Valetta Groundwater Allocation Zone

DECISION OF HEARING COMMISSIONER EMMA CHRISTMAS
11 June 2015

The Application

1. The application to which this decision relates is for resource consent to take and use groundwater in the Valetta Groundwater Allocation Zone.
2. Barford Limited has applied to take groundwater at a rate not exceeding 80 litres per second, up to a maximum annual volume of 1,020,224 cubic metres, from well K37/3269. The well is screened between 105 – 113 m deep and is located at 172 Maronan Road, Valetta. The water will be used in association with groundwater taken under consent CRC011735.6 to fully irrigate 515 ha of land for dairy farming.

Decision

3. The consent is granted with conditions.

The hearing

4. The application was heard at a hearing held on 15 May 2015 at the Hotel Ashburton, Racecourse Road, Ashburton.
5. The following appearances were made:

Applicant:

- (a) Mr Roger Baxter, Director of Barford Limited
- (b) Mr John Talbot, Environmental Engineering Consultant

Submitters:

- (a) Mr Barry Austin, Director of Austin Farming Limited
- (b) Mr Brent Austin, Director of Austin Farming Limited
- (c) Mr Gary Wilson, Chairman of Taylors Drain Water Users Group

Section 42A Reporting Officers:

- (d) Ms Vanessa Horwell, Consents Planner
 - (e) Mr Matt Smith, Principal Consents Planner
6. The hearing was adjourned on 15 May 2015 pending the provision of a copy of the decisions on the Valetta applications granted by ECan in 2010 and by the Environment Court in 2014. On 21 May an update on the status of the proposed Land and Water Regional plan (pLWRP) was provided by Ms Horwell. Mr Talbot provided a response to this and the hearing was then closed, on 26 May.

BACKGROUND

7. The background to this application is covered fully in both the s42A report and Mr Talbot's evidence. In brief, the applicant farms two blocks of land in the Hinds area.

The application was originally lodged in relation to a block known as the Clearwell Farm Block, on Barford Road. It was lodged shortly before the hearing of a large number of consent applications within the (over-allocated) Valetta Groundwater Allocation Zone. Due to the timing of the application, it was not included in that hearing.

8. The application was notified, however the applicant decided to wait for the outcome of that hearing process before proceeding with the application. The final decision on the consents was released in May 2014, following an appeal of some of the ECan decisions.
9. In the meantime consent CRC011735, which was used to irrigate the applicant's second block, the Home Block on Maronan Valetta Road, was partially transferred over a period of years to irrigate the Clearwell Block, approximately 3 km away. That block is now fully irrigated, however the Home Block no longer has sufficient water.
10. At the time of the last partial (permanent) transfer of water to the Clearwell Block, the applicant discussed transferring the on-hold application (the subject of this decision) to the Home Block. This 'transfer' was formally undertaken in October 2014, and a new assessment of effects, relating to the new site, was provided. The application was then re-notified.
11. Both the original and transferred application included takes from both deep and shallow wells. This was amended prior to the hearing, so that the application is now to take water from a single deep well, screened between 105 and 113 m deep. The rate of take and annual volume remain the same as in the original application.
12. In addition, 'adaptive management' conditions, similar to those attached to the recently granted Valetta consents, are proposed. These conditions differ from those attached to the Valetta consents in that the entire take will be subject to the adaptive management conditions, rather than simply a proportion of the take. The adaptive management conditions are discussed later in this decision.
13. The water will be used in association with groundwater taken under consent CRC011735.6 to fully irrigate 515 ha of land (on the Home Block) for dairy farming. The combined rate of take from both consents will not exceed 80 litres per second, and the maximum combined volume will not exceed 2,401,105 cubic metres per year.

Valetta Groundwater Allocation Zone

14. The application falls within the area defined as the Valetta Groundwater Allocation Zone (VGAZ) within the Natural Resources Regional Plan (NRRP) and pLWRP. The VGAZ extends from the foothills to the coast, and is bordered to the south by the Hinds River. The geomorphology and groundwater resource is described in Ms Horwell's report. Much of the area is intensively farmed, which has affected the vegetation, hydrology and water quality of the area. The area east of SH1 was formerly a large wetland area, but is now extensively drained, which allows agricultural production. The drains provide habitat for fish and macro-invertebrates and have some ecological and cultural value.
15. The VGAZ is within the takiwā of Te Rūnanga o Arowhenua.

VGAZ consents 2008 - 2014

16. Approximately fifty five applications to take groundwater from the VGAZ were considered at a hearing which commenced in mid-2008 (the Valetta hearing / Valetta consents). The VGAZ was fully allocated at that time and the applications were non-complying activities under the proposed Natural Resources Regional Plan (PNRRP).
17. The decision concluded that an additional ~ 8.5 Mm³/year of water was available to allocate within the zone. Furthermore, additional water could be taken using the applicant's proposed adaptive management regime, which sought to ensure that water is only taken when water levels are high enough to ensure stream flows and other groundwater users are not adversely affected. In years when water levels are low at the start of the irrigation season, the take is reduced in accordance with the amount of water is available. The reasoning behind this decision is relevant and is discussed later in this decision.
18. The hearing commissioners considered that consents should be granted with a 50% 'base allocation', which was not subject to adaptive management conditions, to ensure they were able to use water efficiently. The additional water was therefore allocated to applicants in priority order, up to 50% of their annual volume, with water subject to adaptive management conditions making up the other 50%.
19. The remaining 24 consents were refused. The decisions were appealed and the appeals settled by mediation. The consents were granted in May 2014 by consent order, with conditions requiring 95% of the annual volume be subject to adaptive management conditions.

20. Ms Horwell did not indicate that there had been any other consents granted recently within the zone. With the exception of the current application, I understand there no outstanding applications for new groundwater allocation within the zone.

New or amended application?

21. At issue at the hearing was whether the application was a new application or simply an amended application.
22. Ms Horwell was of the view that the application was new due to the take being from a different bore on a different site, with a different irrigated area. The effects of the application were therefore different and a new assessment of effects had been submitted.
23. Despite Ms Horwell's comments, there appears to be some confusion within ECan as to whether the application is new or not. The submissions from the original application have been considered as 'live' and one of the original submitters, Mr Austin, gave evidence at the hearing. I note also that the public notice described the application as (emphasis added):

'a re-notification of consent CRC084105 which was originally notified under Clearwell Farm for a water take located on Barford Road ... This consent is being re-notified under Barford Limited, and now relates to a property located as 72 Valetta Road, Mayfield.'

24. The date the application is lodged is relevant in that it determines the activity status (s88A RMA). As discussed below, the date of lodging has no material effect in this case as the status is non-complying whether the application was lodged in April 2008 or October 2014. Ms Horwell confirmed that whether the application is new or amended would likewise make no difference as to how the application should be considered under the relevant plans, or to her recommendation.
25. Having regard to the advice given by ECan in the public notice, and the fact that I heard from one of the original submitters, I am inclined to consider the application as amended, rather than new. While such a determination is not necessary for the purposes of s88, the history of the application does have relevance in making my decision.

PLANNING BACKGROUND

Overview

26. The operative plan is NRRP. This became operative in June 2011. This is being replaced by the Land and Water Regional Plan, which is currently a proposed plan, with a decisions version released in January 2014. Appeals were made on the pLWRP and the majority of these have been resolved. Ms Horwell advised that many of the rules within the plan, including those that relate to this application, and all of the objectives and policies, are beyond challenge. The plan is therefore close to being made operative. Until this happens, however (there are still a small number rules that are still under appeal), the NRRP remains the operative plan.
27. Variation 2 to the pLWRP was notified in September 2014. This focusses specifically on Section 13 – Ashburton and includes new policies and rules to manage over-allocation of water quantity and quality.

Activity status

28. The status of the application is dependent on the plans in force at the time the application was made.
29. If the application is considered to have been lodged in April 2008, the relevant plan at the time was the proposed NRRP. Under Rule WQN22 the application is **non-complying** as the Valetta groundwater allocation was fully allocated at that time.
30. If lodged in 2014, both the NRRP (operative version) and the pLWRP (decisions version) are relevant. Rule WQN13 of the operative NRRP classifies the take as **non-complying**. Rule 5.130 of the pLWRP classifies the taking of groundwater from a fully allocated groundwater zone as a prohibited activity. However, in accordance with s87B(1)(c), the take is to be considered as a **discretionary** activity as the plan is not yet operative.
31. The overall status of the taking of water is therefore non-complying, regardless of which date it is considered to have been lodged.
32. Consent is also required for the use of water. Use of water for irrigation is **permitted** under Rule WQN25 of the PNRRP and Rule WQN15 of the NRRP. For the pLWRP, Variation 2 contains the relevant rules. Ms Horwell advised that as the property has previously been irrigated, there will be no increase in nitrogen loss above the nitrogen baseline. The use of water on this property is a **permitted** activity under Rule 13.5.15, provided a Farm Environment Plan (FEP) has been prepared and is implemented. Mr Talbot clarified at the hearing that a plan had not yet been prepared but would be prior to any irrigation under CRC084105, and proposed a condition to this effect be attached to the water permit. While the use of water is therefore a **non-complying** activity under Rule 13.5.19, Ms Horwell advised

that this situation is typically dealt with by means of a condition on the water permit, if granted. The rule is not triggered until water is used, by which time a FEP has been prepared and the activity is permitted.

Weighting

33. The weighting that should be given to each plan is relevant for the later consideration of the plans' objectives and policies under sections 104 and 104D.
34. Ms Horwell considered at the hearing that slightly more weight should be given to the NRRP, as the operative plan. While she did not provide further advice on weighting following her update on the status of the plan, in my view significantly more weight should now be applied to the pLWRP. With the exception of a few rules, none of which apply to this application, the plan is in effect operative, albeit not yet technically so.
35. Variation 2 is at an early stage, and in theory relatively little weight should be given to it. Its relevance to this application is primarily in relation to nutrient discharges, and the nutrient discharge rules prevail over those in the pLWRP. The policies add catchment-specific detail to the fairly general nutrient policies within the pLWRP, but given the permitted status of the nutrient discharge, these policies have little application to the consent at this time.

SUBMISSIONS

36. Submissions were received both in relation to the initial notification of the application in 2009, and the re-notification in 2014. Five submissions, all in opposition, were received in 2009. Many of these submissions are specific to the previous location of the application, and are primarily concerned with the effects on shallow wells and surface water flows. Over-allocation from the groundwater zone is also raised. One of these submitters, Mr Barry Austin, attended the hearing.
37. Three submissions, of which two were in opposition, were received following the 2014 notification. These submissions focussed on effects on neighbouring wells, shallow wells within the Taylors Drain system, surface water flows, and over-allocation from the aquifer. Both submitters in opposition, Mr Brent Austin and Mr Gary Wilson, representing the Taylors Drain Water Users Group, attended the hearing.

EVIDENCE PRESENTED

38. Most of the matters raised in evidence are discussed below in the s104 evaluation. The main points made by each participant are briefly summarised as follows:
39. **Mr Talbot's** evidence was pre-circulated, and discussed a number of matters, including the background to the application, his view that the application was not a new application, and comments on the Officer's report, much of which he agreed with. In relation to the potential over-allocation from the aquifer, he considered that the adaptive management conditions proposed would ensure that the take would not contribute to a long-term decline in water levels. Consequently there would be no adverse effects on the values identified in the s42A report as a result of such a decline.
40. Mr Talbot explained that the applicant will convert his shallow takes to deeper takes should the consent be granted, reducing the effect on shallow groundwater in this area. Mr Baxter clarified that if the consent was not granted, only approximately half of the shallow take would be likely to be transferred to deep groundwater, as it would be more difficult to justify the change financially. It was more likely deep groundwater would be used as a back up to the shallow water supply in dry years, using smaller pumps.
41. In response to comments in the officer's report about the potential for additional shallow water to be taken if consent was granted (as the deep well would be used for this consent, potentially resulting in more water being taken from the shallow wells under CRC011735.6), Mr Baxter explained that the property has a storage pond and water is pumped to storage when possible. This, and the conversion of shallow groundwater take to deep groundwater, would prevent additional surface water being taken if the consent was granted.
42. Mr Talbot considered that the take was in accordance with the objectives and policies of the NRRP, which provides for takes above the allocation limit, provided effects are minor. He considered that greater weight should be placed on the policies of this plan, being the one in place at the time the application was made.
43. In relation to the pLWRP, he considered that Policy 13.4.17, introduced in Variation 2, allows 'over-allocation' provided adaptive management conditions are in place, by providing for such consents to be replaced on their expiry. He considered this application is consistent with that policy direction. He also considered the effects of the take, with adaptive management conditions as proposed, were no more than minor.

44. In response to Ms Horwell's update on the status of the plan, following the hearing, Mr Talbot re-iterated that in his view, the effects caused by declining groundwater levels will not occur due to the adaptive management conditions proposed. The application was not contrary to the NRRP. He also stated that in most respects, the pLWRP mirrors the NRRP, however cumulative effects are dealt with by prohibiting additional abstraction, in spite of objectives and policies being able to be achieved.
45. **Mr Barry Austin**, a submitter in opposition, farms three blocks of land, two of which are located either side of Barford Limited's Home Block. One of these blocks, the Cambria Block, is irrigated by a deep well, BY20/0002, which has been operating since 2012. The well is 1800 m from the applicant's well, K37/3269. Mr Austin experienced problems irrigating from this well this season, due to well interference from K37/3269. To remedy this, the pump in BY20/0002 needs to be lowered, at considerable cost to Mr Austin.
46. For this reason Mr Austin is concerned that any further pumping from the well will have a severe impact on the Cambria well.
47. Mr Austin indicated that further deep wells are currently being drilled on his property, to allow switching of shallow groundwater takes to deep groundwater takes.
48. He was concerned that consents with adaptive management conditions could not be required to reduce during the season, if water levels dropped further than anticipated.
49. **Mr Wilson**, also in opposition, represents the Taylor's Drain Water Users Group, which consists of 13 members, many of whom rely on the drain as their only source of irrigation and stock water. Cumulatively, 574.4 l/s of water is taken, from the north bank of the Hinds River.
50. Mr Wilson was concerned that additional water takes from the deep aquifer with adaptive management conditions will reduce the amount of water available to existing consent holders with adaptive management conditions. That is, if there is a fixed volume of water to allocate in any year, and the number of users increases, there will be less for each user.
51. He also anticipated that other surface water users will either choose, or be required, to convert from shallow to deep groundwater. Granting this application to take from the deep resource would add further stress to deep groundwater levels.
52. His other primary concern was the potential direct effect of the take on the headwaters of Taylors Drain.

53. **Ms Horwell's** s42A report, and the addendum tabled at the hearing, concluded that many of the effects of the application were no more than minor. The exceptions were cumulative effects on groundwater levels, and effects on tangata whenua values, due to the fact the take was an additional take in an over-allocated aquifer. Given this, and her view that the application was contrary to the objectives and policies of the pLWRP, Regional Policy Statement and National Policy Statement (Freshwater), she considered it should not be granted.

ASSESSMENT UNDER SECTION 104

Section 104(1)(a) – Actual and potential effects on the environment

54. A number of potential effects were considered by both Mr Talbot and Ms Horwell to be less than minor. These are discussed in both the 2014 application and the Officer's report, and I will not repeat this discussion. I accept the evidence provided and agree that the following effects will be no more than minor:

- a) Direct effect on other users from seawater intrusion. There is no effect due to the distance between the take and the coast.
- b) Effect on aquifer stability. The aquifers in the area are gravel based and are therefore not expected to subside.
- c) Effect on groundwater quality from cross-connection of aquifers or backflow from the irrigation system into the aquifer. The well is screened in only one aquifer and a backflow preventer will be installed should the irrigation system be used to distribute fertiliser, effluent or any added contaminant. This ensures that pLWRP Policy 4.57 and NRRP policies WQN10(7) and WQL11(3) are met.
- d) Direct effect on surface water flows (stream depletion). There will be no effect due to the separation between the deep aquifer from which water will be pumped, and the shallow aquifer which directly feeds springs and streams. This addresses Mr Wilson's concern in relation to direct effects between the well and headwaters of Taylors Drain.
- e) Effect of inefficient take on other groundwater users. The annual volume sought is in accordance with Schedule 10 of the pLWRP and is considered reasonable. Objective WQN5 and Policy WQN16 of the NRRP, and Objective 3.9 and Policy 4.65 of the pLWRP, are therefore met.

I note that the Valetta decision was that no take should be granted unless it had a reliability of supply provided by water unfettered by adaptive management conditions (referred to in the decision as 'classical allocation') of 80% in an average year, and 50% reliability in an 80%-ile demand season.

I have not taken this approach. The applicant will know at the start of the season how much water is available, and can plan to irrigate a reduced area if necessary. I am satisfied that this is an efficient use of water.

- f) Effect on significant indigenous biodiversity and dryland areas. The property has previously been fully irrigated and there are no known areas of significant indigenous biodiversity on the site.
 - g) Effect on water quality as a result of nutrient discharge. Provided a farm environmental plan is prepared and adhered to prior to the taking of water, the take will be consistent with management of nutrient discharges set within the pLWRP and Variation 2. This can be achieved by a condition on the consent.
55. Three potential effects require further discussion: well interference effects, the cumulative effects on groundwater levels and subsequent impacts on spring fed streams, other water users and saltwater intrusion, and the effect on tangata whenua values.

Well interference

56. Mr Talbot considered that no new well interference assessment was necessary. Water had previously been authorised to be taken from bore K37/3269, until part of this was transferred away in 2012. At that time he discussed with ECan staff the transfer of the application CRC084105 to the Home Block to replace the water that was transferred away. (I note that Mr Talbot was adamant on this point, although there is no record in the ECan files of the application being transferred at that time). The maximum rate that can be taken from K37/3269 will remain the same as originally authorised, with a slightly reduced annual volume. The drawdown effects on neighbouring wells will be slightly reduced.
57. Ms Horwell agreed that as the full rate and volume of take had previously been authorised on the site under CRC011735.5 and CRC992039 (later amalgamated into CRC011735.6), and that there had been no new consents within the area since consent CRC011735 had been permanently partially transferred, then the 'consented baseline' would apply. That is, a take of equivalent rate and volume was previously authorised from the well, and so the effects will remain the same.
58. The maximum rate of take possible from this well has not changed (up to 80 L/s) so there will be no change to the effects on other deep bores. There are two deep wells within 2 km of the applicant's deep bore. One, BY20/0002 is owned by Austin Farming Ltd. Consent to take water from this well was granted after consent CRC011735. Mr Austin experienced well interference from the Barford well this

season, however the Barford well was part of the existing environment when Mr Austin's consent was granted, so no weight can be given to these effects. To avoid similar problems in future, it appears that Mr Austin will have to lower the pump in this well.

59. Overall, as discussed in the Officer's report, the proposal may result in an increased take from the shallow bores on the property. However, this cannot exceed what is allowed under existing consent CRC011735.6. There will no increase in effects over that which is currently allowed.
60. I am satisfied that will be no additional effects over those that are currently authorised, and that relevant objectives and policies (Objective WQN7 and Policy WQN19 of the NRRP, and Policy 4.59 of the pLWRP) are met.

Cumulative effects

61. The critical issue with this application is the cumulative effects on groundwater levels and the consequent effects on other users, spring fed streams and saltwater intrusion. The groundwater zone is over-allocated in terms of the allocation limit set within the NRRP and pLWRP.
62. It is useful to briefly summarise the history of this allocation limit. The limit for the VGAZ, set in both the operative NRRP and the pLWRP, is 96.6 Mm³/year. Mr Smith advised that this limit was initially calculated as 50% of the land surface recharge of the zone, using the methodology in Schedule WQN4 of the PNRRP entitled 'Interim allocation regimes for groundwater in Canterbury'. Policy WQN14(8) of the notified plan stated that:

"For a groundwater body not included in Schedule WQN4, when establishing an interim allocation block:

The size of the interim allocation block shall be set using a precautionary approach to protect environmental values sustained by groundwater levels, such as flows and levels in rivers, lakes, springs or wetlands. This approach is set out in Schedule WQN4."

63. I note the methodology is described as 'a precautionary approach'.
64. In August 2012, the pLWRP was notified, in part to give effect to the NPS and recently notified RPS. This retained the allocation limit of 96.6 Mm³/year in Section 13 – Ashburton. Takes that exceeded this limit were prohibited activities under Rule 5.104. The s32 report states:

“This is a significant difference from the NRRP, and is primarily in response to the Freshwater NPS and the CRPS. The setting of the limits and prohibited activity status to exceed those limits is also in response to the multitude of applications that have been received to exceed the existing NRRP limits as non-complying activities.

“The NRRP policy position was such that if additional water was able to be identified beyond the groundwater allocation limit in the NRRP, then resource consent could be granted. This approach is less effective at dealing with cumulative effects (the primary issue with groundwater limits), particularly over the wider groundwater allocation zone. ... The establishment of additional water for a groundwater allocation zone is more effectively developed under a plan change process, where the cumulative effects, science modelling and ongoing management can be more effectively developed than under a resource consent process.”

65. Policy 4.62 of the pLWRP anticipates that sub-regional rules may set trigger levels on groundwater take consents, at which point abstraction must cease, and/or identify a proportion of the take that can be taken at the start of the irrigation season. This appears to be a similar approach to the adaptive management conditions attached to many recent groundwater consents.
66. No such provisions have yet been included within Section 13 of the plan, which covers the VGAZ area.
67. The decisions version of the pLWRP retains these provisions.
68. Objective 3.13 of the pLWRP is that:

“Groundwater resources remain a sustainable source of high quality water which is available for abstraction while supporting base flows or levels in surface water bodies, springs and wetlands and avoiding saltwater intrusion.”
69. NRRP Objective WQN3(b), Policy WQN8 and pLWRP Policy 4.4(a) are all to ensure that the cumulative effects of groundwater abstractions do not cause a continuing long-term decline in mean annual groundwater levels and artesian pressures.
70. Policy 4.4(b) is also to manage groundwater so that:

“(b) the individual and cumulative rate, direction and volume of water pumped from bores is controlled so as to prevent seawater contamination;
71. Both plans manage this risk by means of the allocation limit. The NRRP (Policy WQN13.2(d)(iii)) provides for additional allocation beyond the allocation limit as a non-complying activity, as follows:

“the taking of groundwater in excess of an interim allocation block, where the groundwater allocation limit has been determined using Schedule WQN4, only where it can be demonstrated that the proposal, in combination with all other takes from the water body that are to be summed to determine the effective allocation, will not compromise the environmental values sustained by groundwater levels, such as flows and levels in rivers, lakes springs or wetlands, or seawater intrusion of coastal aquifers, and will not compromise the reliability of supply provided for in Policy WQN13.1(7)(a)(i) and WQN13.1(7)(a)(ii);:

72. While Policy WQN13.2 of the NRRP provides for additional abstraction beyond the allocation limit in certain circumstances, the policy direction in the LWRP is more limiting. Policy 4.7 requires that *“new consents will not be granted if the granting would cause a water quantity limit set in Schedule 8 or Sections 6 to 15 to be breached or further over-allocation to occur.”*

73. This is re-iterated in Policy 4.50:

“Where the rate or volume of water consented for abstraction from a catchment exceeds the ... groundwater allocation limit for that catchment, any further allocation of water is limited to:

(a) any abstraction necessary to meet community water supply and stockwater requirements; and

(b) the replacement of existing resource consents...”

74. These policies are reflected in the prohibited status of new takes from a fully allocated zone in the pLWRP.

75. It was Mr Smith and Ms Horwell’s view that despite the adaptive management conditions proposed, the cumulative effects would still be greater than minor, as the aquifer is already over-allocated. That is, in their opinion, effects are already occurring and the new take would add to these. Mr Smith considered the adaptive management conditions would mitigate effects on low water levels, as the take would not occur if water levels were below the baseline. However the taking of water above this level (in years when water levels are sufficiently high to allow the take) will be more than minor. There would be effects in both the season in which water is taken, and in the following season, due to less water being available at the start of the season.

76. Mr Smith’s view was that the pLWRP does not address whether the effects of taking within the allocation are minor or less than minor, they are simply ‘acceptable’.

77. As discussed earlier, 31 consents were granted in the VGAZ at the Valetta hearing, and 25 more on appeal, having demonstrated that they would not compromise the environmental values sustained by groundwater levels. It is my understanding that the applicant is relying on the conclusions from the hearing and appeal decisions to justify his view that cumulative effects will be no more than minor. Consequently, I have summarised the conclusions of the hearing below.
78. The applications were made, and considered, under the PNRRP. The VGAZ was fully allocated in terms of the PNRRP limit. The commissioners determined that base flow to streams in the VGAZ was the primary environmental threshold that should be considered in deciding whether or not to allocate further water, and the focus in the first instance was on protecting this.
79. They considered that allowing abstraction that resulted in no more than a 50% reduction in base flow at MALF of the Valetta area streams and drains, was appropriate. This was determined recognising that groundwater is not the only source of base flow to these drains. The 50% figure was consistent with the 50% reduction in land surface recharge considered appropriate by ECan in the calculation of the zone allocation limit. As noted earlier, this method is described in Policy WQN13.1(8) as a precautionary approach, to protect the values sustained by groundwater levels, such as flows and levels in rivers, lakes, springs or wetlands.
80. The commissioners also concluded that allocation up to this amount would not affect the reliability of supply of existing groundwater users by any more than a minor amount.
81. Through use of a regional model, the commissioners found that an additional ~ 8.5 Mm³ of groundwater was available to be allocated, up to the previously determined threshold of a no more than 50% reduction in stream baseflow. This water could be allocated in a 'classical' sense. That is, without adaptive management restrictions. This additional allocation would still provide acceptable protection for surface waters and existing groundwater users. I note also that the amount allocated was 'total allocation', that is the consented volume, not 'effective allocation', which is a proportion of the consented volume used to estimate the amount of water that is actually taken.
82. The commissioners considered that additional water above the '50% reduction in baseflow' threshold could only be taken only be taken when groundwater storage was such that there would be a less than minor effect on surface flows. This included consideration of seasonal effects.

83. The applicants proposed an adaptive management methodology in order to achieve this, whereby calculations at the start of each season would determine whether there was water available to be taken above the level required to ensure adequate protection of existing groundwater users' reliability of supply, and ensure that critical low flows are not adversely affected by a reduction in groundwater base-flow. The adaptive management methodology assesses the available storage in the aquifer at the start of the season and determines what proportion of the take, from 0% to 100%, can be taken that season.
84. The proposed adaptive management conditions were amended by the commissioners to provide a greater level of conservatism and also account for effects from abstraction that was authorised but not yet exercised. The commissioners were satisfied that the revised methodology was sufficiently robust in its level of protection of existing consented takes and environmental flows to surface waters.
85. With the adaptive management conditions in place, the commissioners concluded that the effects on the environment would be minor.
86. The adaptive management methodology proposed by Barford is the same as granted on the Valetta consents.
87. I note also that the applications that were declined at the Valetta hearing on the basis of there being insufficient 'classical' allocation available to grant them, were later granted on appeal, with adaptive management conditions covering 95% of each take. Similar conclusions were therefore presumably reached in that process.
88. Evidence was given at this hearing that the adaptive management restrictions on the recently granted consents had not yet been triggered, including during the 2014/2015 season, which was very dry. Mr Austin described how water levels were high at the start of the season, with the Hinds River flowing, which is an unusual occurrence. However with no rain in late winter or spring, water levels declined. The rates achievable from his wells reduced.
89. It was agreed between witnesses that a greater volume of water than normal would have been taken from the zone due to the lack of rain through the season. Water level falls in the VGAZ were clearly variable however, as Mr Austin indicated his neighbour's wells had not dropped significantly. Mr Wilson indicated that his deep well had dropped about 5-6 m more than normal, following full pumping all season, although the maximum rate of take was unaffected. Mr Baxter indicated another deep well on his Clearwell property had dropped 8 m, 2 m lower than normal.

Following rain in mid-March, pumps were turned off and the monitoring well rose by 8 m.

90. It would be re-assuring if the experiences of this year could be used to determine whether the existing allocation and adaptive management conditions are appropriate. There appear to have been no studies to date, however. Full allocation was allowed under these conditions this year as a result of good water levels at the start of the season. It appears that water levels in deep wells, while dropping more than normal, did not create an issue for well users. Water levels in shallow wells, and flows in surface water bodies, were affected, however the extent to which this was due to low rainfall or increased pumping from the deep aquifer is not known. Mr Smith acknowledged there had been no instances of saltwater intrusion.
91. In discussion, Mr Smith drew attention to the number of assumptions in the adaptive management conditions, including the low water level used, the inter-seasonal water level decline and well drawdown.
92. I heard no technical evidence on the appropriateness of the various components of the adaptive management methodology. However these components, and the assumptions that are included within the methodology, were examined extensively at the Valetta hearing, and the conclusion of that hearing was that the methodology is sufficiently conservative and robust. I have heard no evidence that leads me to doubt that conclusion.
93. Mr Smith also indicated that while a 1 September water level assessment allows farmers to plan for the season, if there are concerns about the appropriateness of the trigger level, a back-up is needed. That is, the ability to reduce takes during the season. This might be the ability to decrease annual allocation part way through the season, in the same way that the methodology allows for an increase if water levels are higher than those expected at the start of the season.
94. Mr Talbot was of the view that there was sufficient ability to re-assess the trigger level with the review condition attached to the consents. Furthermore, the consent duration was only 10 years. He considered a number of years of data were needed to fully assess the appropriateness of the conditions.
95. While I accept this, relying on the review condition does not allow re-evaluation in the middle of a dry season, in order to reduce the allocation if necessary. The adaptive management conditions allow for a re-assessment of the allowable allocation if, in the opinion of either ECan or the consent holder, the water levels

during the season differ significantly from those predicted at the start of the season. In my view, this appears to allow a review if water levels are either higher or lower than expected, and could be relied upon by ECan, should it be necessary, to reduce the abstraction mid-season.

Effect of an additional take on existing and future users

96. Mr Wilson was concerned that granting an additional take may affect the availability of water for existing takes with adaptive management conditions, and potential future deep groundwater takes.
97. The concern is in relation to future takes relate to groundwater takes that are granted to replace existing surface water or shallow groundwater takes. Variation 2 to the pLWRP allows the substitution of an existing surface or a stream depleting groundwater take for a groundwater take with no stream depletion (for example a deep take) as restricted discretionary activity under Rule 13.5.31, provided the water is taken from the same property and there is no increase in annual volume. The existing shallow groundwater / surface water consent must be surrendered.
98. Mr Smith explained that applications currently being made under this rule will result in an increase in the annual volume abstracted from groundwater, as part or all of the existing takes are from surface water. So while there is a net benefit to the catchment in terms of reducing the effects on surface flows, an increase in groundwater allocation will result. No such takes have yet been granted and they do not currently form part of the environment against which this application must be considered.
99. The applicant, Mr Austin and Mr Wilson all indicated that they, or their acquaintances, were intending to transfer some of their shallow takes in this way. Mr Wilson was concerned that if these takes are granted with adaptive management conditions, granting of this consent may reduce the amount of water available in future years for these consent holders, by dividing a fixed amount of water between an increasing number of users. Mr Smith and Mr Talbot clarified that this was not the case in terms of water availability in any one season. All users could take the pre-determined proportion of their take during the season. However if more is taken out one year due to additional users, then there may be less in the aquifer at the start of the following season, when the allocatable volume is determined.
100. I accept that the take will (along with all other takes) have an effect on water levels at the start of the following season, provided water levels are not sufficiently high to be controlled by natural outflows. However the degree of effect will be very small,

and the impact on any other user, in terms of the volume of water they may be able to take under adaptive management conditions, will be negligible.

101. There is no possibility of this application setting a precedent effect, which may result in additional cumulative effects, since the relevant rule prohibiting further takes is now operative.
102. In conclusion, having considered the Valetta decision and the evidence at this hearing, I am satisfied that the approach take in the Valetta decision is appropriate. As a consequence of the adaptive management conditions there will be no more than minor effects on values sustained by groundwater, including surface flows, other users, and the absence of saltwater intrusion.

Tangata whenua values

103. Ms Horwell considered that effects on tangata whenua values may be more than minor, despite the lack of any comment or submission in that regard from Te Rūnanga o Arowhenua or Te Rūnanga o Ngāi Tahu. The concern is based on her conclusion that there will be more than minor effects on groundwater levels which may affect stream flows.
104. The relevant iwi management plan, the Iwi Management Plan of Kāti Huirapa for the area Rakaia to Waitaki, July 1992, does not discuss groundwater takes.
105. Te Rūnanga o Ngāi Tahu's Freshwater Policy Statement contains broad objectives and policies to restore and maintain the mauri of waterways, and maintain healthy mahika kai populations and habitats. Achieving these objectives will be assisted by maintaining flows in lowland water bodies.
106. The Hinds River / Hekeao is a Statutory Acknowledgement area. This runs adjacent to the irrigation area, but will not be directly affected due to the depth of the bore.
107. While I accept that if there were effects on stream flows, then values of significance to rūnanga may be affected, I have concluded that there will be no more than minor effects as a result of the conditions imposed. I am satisfied therefore that effects on tangata whenua values will also be no more than minor.

Alternatives

108. Mr Austin raised the possibility that scheme water may be available in the area in the near future as an expansion of the Barrhill Chertsey Scheme, which may provide an alternative water source. However Mr Baxter indicated that the property was located 6 km from the proposed pipeline and the expense of extending it would be

unlikely to be justified. Mr Wilson also indicated that expansion of the Mayfield Hinds scheme to the north side of the Hinds River would not occur in the immediate future.

109. Availability of scheme water at this location therefore seems highly unlikely as an alternative in the near future.

Positive effects

110. Granting the application will clearly result in positive economic effects for the applicant in terms of improved ability to irrigate the property. Mr Baxter also indicated that he would convert the existing surface water takes to groundwater takes if consent is granted. He indicated it would only be possible to do this fully if the financial benefits of full irrigation of the Home Block were realised. While conversion will clearly have a positive net effect on surface flows, I am not inclined to give it much weight, as I suspect that there are other incentives to convert the takes, particularly in terms of reliability of supply. It is clear from evidence heard that a number of other shallow water users are planning to do the same.

Section 104(1)(b) - Relevant provisions of planning and policy documents

111. The relevant provisions of the regional plans have been discussed in terms of the potential effects, above. I consider that the application is consistent with the NRRP, in particular Policy WQN13.2(d), as the proposal, cumulatively with other takes, will not compromise the environmental values sustained by groundwater levels, such as flows and levels in rivers, cause seawater intrusion, or compromise the reliability of supply of groundwater users.
112. The pLWRP seeks to achieve the same outcomes, however does not allow takes over the allocation limit. While I consider the application will achieve the freshwater outcomes specified in the pLWRP, specifically through Objective 3.13 and Strategic Policy 4.4 (see below), the application is not consistent the directive policies seeking to prohibit further takes (policies 4.7 and 4.50). I note, however, Mr Smith's comments that it is ECan's policy not to count takes subject to adaptive management conditions in the allocation limit. If this is correct, then I question whether this take will in fact count towards an exceedance of the limit.
113. Other planning documents to which regard must be had include the National Policy Statement on Freshwater (NPS), the Regional Policy Statement (RPS), and the Canterbury Water Management Strategy (CWMS).

114. The NPS came into effect in August 2014. One of its key focusses is addressing over-allocation of water. Over-allocation is defined as:
- ‘Where the resource has been:*
- a) allocated to users beyond a limit; or*
 - b) is being used to a point where a freshwater objective is no longer being met’.*
115. Objective B1 is:
- “To safeguard the life-supporting capacity, ecosystem processes and indigenous species including their associated ecosystems of fresh water in sustainably managing the taking, using, damming or diverting of fresh water.”*
116. Objective B2 is:
- “To avoid any further over-allocation of fresh water and phase out existing over-allocation.”*
117. These objectives and their associated policies are reflected in the objectives and policies of the RPS and pLWRP.
118. The pLWRP, in section 2.4, states:
- “The objectives in Section 3 and Policies 4.1 – 4.6 in this Plan form the ‘freshwater objectives’ for Canterbury Region, as described by the Freshwater NPS.”*
119. Of these, the most relevant objective in Section 3 is 3.13, which is:
- “Groundwater resources remain a sustainable source of high quality water which is available for abstraction while supporting base flows or levels in surface water bodies, springs and wetlands and avoiding salt-water intrusion”.*
120. Policy 4.4 is concerned with groundwater management, and has been stated earlier. It seeks to manage abstractions so that there is no continuing long-term decline in water levels or pressures, seawater contamination is prevented, there is no localised pressure reversal causing a downward movement of contaminants, an overall upwards pressure gradient is maintained, and overall water quality does not decline.
121. As discussed earlier, these freshwater outcomes will not be affected by granting this application. However, the VGAZ allocation limit will be (further) breached, and therefore over-allocation, as defined in the NPS as “exceeding a limit”, will occur.
122. The RPS became operative in 2013. Policy 7.3.4 is:
- “(1) to manage the abstraction of surface water and groundwater by establishing environmental flow regimes and water allocation regimes which:*

- (a) manage the hydrological connections of surface water, groundwater and the coastal environment;*
 - (b) avoid long-term decline in groundwater levels and saltwater intrusion of coastal groundwater resources;*
 - (c) protect the flows, freshes and flow variability required to safeguard the life-supporting capacity, mauri, ecosystem processes and indigenous species including their associated ecosystems and protect the natural character values of freshwater bodies....*
- and*
- (2) Where the quantum of water allocated for abstraction from a water body is at or exceeds the maximum amount provided for in an environmental flow and water allocation regime:*
 - (a) avoid any additional allocation of water for abstraction or any other action which would result in further over-allocation; ...”*

123. The proposed application, while meeting the stated freshwater objectives as a result of the adaptive management conditions, is contrary to the provisions of the NPS and RPS as it will result in a further exceedance of the stated allocation limit.
124. The CWMS is a strategy prepared to guide the management of freshwater in Canterbury. The Officer’s report explains that its principles are to ensure that the first order priorities of the environment (that is, customary use, community and stockwater needs) are met, and to allow second order priorities, including irrigation, providing they do not impinge on the first order priorities.
125. Implementation of the CWMS is through the Zone Implementation Programmes (ZIP). Ms Horwell notes that she can see no major inconsistencies between the proposed activity and the ZIP. However, an addendum to the ZIP was released in association with Variation 2 of the pLWRP. This includes Recommendation 7.1: *To prohibit new allocation from the VGAZ unless it is a switch from surface to deep groundwater.* The application is contrary to this policy.

Section 104D

126. As the application is a non-complying activity, the threshold test in section 104D of the RMA is relevant. Section 104D states that consent for a non-complying activity may only be granted if either the adverse effect of the activity on the environment will be minor (s104D(1)(a)), or the activity will not be contrary to the objectives and policies of the relevant plans (s104D(1)(b)).

127. The earlier discussion has covered the evidence and my conclusions on the effects of the environment. Many potential effects are accepted by both parties as being no more than minor. In terms of the cumulative effects on groundwater levels, including saltwater intrusion, and effects on surface flow and others users, I am satisfied that the adaptive management conditions proposed will ensure that adverse cumulative effects on groundwater levels will be no more than minor.
128. I am therefore satisfied that the test in section 104D(1)(a) is met and the consent could be granted.
129. For completeness, I also consider the test under section 104D(1)(b).
130. There was no dispute between the Ms Horwell and Mr Talbot that the application was consistent with the objectives and policies of the NRRP. This provides, through Policy WQN13.2, grant of consent for groundwater takes above the allocation limit, where the proposal, together with all other takes from the water body, will not compromise the environmental values sustained by groundwater levels, cause seawater intrusion of coastal aquifers, or compromise reliability of supply.
131. While identifying the same issues in terms of groundwater allocation, and having similar objectives, the pLWRP proposes to resolve these issues by prohibiting any groundwater allocation above a fixed allocation limit.
132. As discussed earlier, this is partly in response to the NPS requiring that a limit be established, and allocation above that be reduced until the limit is met, and partly for simplicity, given that many groundwater zones in Canterbury are over-allocated in terms of the limit. The clear policy direction is that such an application should not be granted.
133. Mr Talbot considered that new Policy 13.4.17 under Variation 2, which allows consents with adaptive management conditions to be re-authorised upon expiry with the same conditions, suggests that the plan anticipates granting consents over the allocation limit, and that this application is not contrary to that approach. I do not agree that Policy 13.4.17 is any more than a mechanism of ensuring that such consents retain the adaptive management conditions. Rule 5.128 allows expired consents to be replaced as a restricted discretionary activity, and without Policy 13.4.17 there would be a risk that the conditions may not be included on the replacement.
134. In my view, the application is not consistent with the policies of the pLWRP.
135. I conclude that the application does not meet the test in section 104D(1)(b).

Part 2

136. The conclusions reached under section 104D and 104 are subject to an assessment against the purpose and principles of the RMA set out in Part 2 of that Act.
137. The applications will not affect any of the matters of national importance under section 6 of the RMA.
138. Relevant considerations under section 7 include 7(b) - *the efficient use and development of natural and physical resources*. Conditions are proposed, including an annual volume and monitoring conditions, which provide for efficient use.
139. Ms Horwell also identified as relevant section 7(g) – *any finite characteristics of natural and physical resources*. Groundwater is not a finite resource as it is replenished from rainfall, river flows and irrigation. I accept that in any season there can be considered to be a fixed amount available, however the proposed conditions ensure water is only taken when there is sufficient in any season to provide for existing users and baseflow to streams. I do not consider the application will create an issue with respect to 7(g).
140. In regard to section 8, Te Rūnanga o Arowhenua and Te Rūnanga o Ngāi Tahu have been given an opportunity to comment on the application and have chosen not to. As discussed earlier, I do not consider there will be any adverse effects on values of significance to iwi.
141. Finally, the application must be considered 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.
142. There will clearly be benefits to the applicant in terms of economic and social wellbeing, with flow-on effects to the local community. This on its own would not be sufficient to override effects on the groundwater and surface water resources, however I have concluded that those effects will be no more than than minor. Overall, I am satisfied that the purpose of the Act will be achieved.
143. The clear policy direction of the (almost operative) pLWRP, which at this stage of the process carries more weight than the NRRP, is not to grant any further allocation. However, the Act allows consents to be granted when contrary to the objectives and policies of the relevant plan. Such a decision should not be taken lightly, as the purpose of the plan is to guide resource users and decision makers as to the appropriate use of the resources.

144. In this regard, there are relevant factors in the applicant's favour which should be considered. These include:

- The history of the application. If it had been lodged only a few weeks earlier, it would have been included in the Valetta hearing and almost certainly eventually granted on the same basis as the other Valetta applications.

The application was lodged prior to the pLWRP being notified, under a planning regime that provided for applications above the allocation limit to be made and granted in certain circumstances. The delay to proceeding to a hearing was for good reason, to await the decision of the other applications. The introduction of the more restrictive pLWRP approach could not have been foreseen at the time the application was originally put on hold.

- The application achieves the freshwater outcomes in the RPS, pLWRP and NRRP.
- The effects of the application are no more than minor, and I am satisfied it achieves the purpose of the Act.
- ECan's policy not to count consents (or the part of consents) that are subject to adaptive management conditions within the allocation limit (if that is the case) suggests a view that these consents will not in any meaningful way add to the allocation of the VGAZ, being in effect a 'B' permit.
- There are no other applications in a similar position, and the relevant rule is now operative, so this decision cannot set a precedent for granting further applications.

145. I consider the above reasons are sufficient to outweigh the inconsistency with the planning documents. It is therefore my decision to grant consent, subject to conditions.

Duration

146. The consent duration sought is 10 years. I consider this to be appropriate.

Consent conditions

147. The conditions are those proposed by the applicant, with changes made as discussed earlier in this decision. They are attached in Annexure 1.

E. Christmas

E Christmas

Annexure 1 – Conditions of consent CRC084105

1	<p>Water may be taken only from:</p> <p>a. bore K37/3269, 300 millimetres diameter and screened between 105 and 113 m below ground level, at map reference Topo50 BY20:80756-38514.</p>
2	<p>a. Water may be taken from bore K37/3269 at a rate not exceeding 80 litres per second.</p> <p>b. The maximum rate of take in (a) is the combined rate that may be taken under this consent and from bore K37/3269 and bore K37/0886 under condition 1(b)(iv) of consent CRC011735.6, or any subsequent variation of that consent.</p>
3	<p>Water shall be used for irrigation of 515 hectares of land, as shown on the accompanying plan CRC084105, which forms part of this consent.</p>
4	<p>Annual Volume The combined volume of water with consent CRC011735.6 (or any subsequent replacement or variations of that consent) taken between the 1st July and following 30th June shall not exceed 2,401,105 cubic metres.</p>
5	<p>The maximum annual volume taken between the 1st July and following 30th June shall not exceed 1,020,224 cubic metres per year, and shall consist of an adaptive management allocation determined using the method set out in Condition (6).</p>
6	<p>Calculation of the adaptive management allocation for each season</p> <p>In any irrigation season where it is proposed to use an Adaptive Management Allocation, prior to irrigation commencing:</p> <p>a. The Adaptive Management Allocation shall be calculated by the Consent Holder subject to that season’s water availability which shall be assessed in accordance with Annexure 1 - Adaptive Management, forming part of this consent and including any amendments to Annexure 1 agreed in writing by the Consent Holder and the Canterbury Regional Council (“Annexure 1”);</p> <p>b. The calculation of the Adaptive Management Allocation under Annexure 1 shall be documented in a report (“The Report”);</p> <p>c. The Report shall be sent to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager;</p> <p>d. On receipt of the Report, the Canterbury Regional Council shall provide written notice to the Consent Holder certifying that the Adaptive Management Allocation has been correctly calculated in accordance with Annexure 1;</p> <p>e. Notwithstanding the provisions of this condition, the Consent Holder shall be entitled to take groundwater subject to the restrictions (if any) set out in the Report if the Canterbury Regional Council does not provide written notice in accordance with this condition within 20 working days of receipt of the Report.</p>
7	<p>Reassessment of Adaptive Management Allocation</p> <p>The Adaptive Management Allocation as calculated in accordance with Annexure 1, shall be reassessed if in the opinion of Canterbury Regional Council, or the Consent Holder, measured water levels indicate a significant variation from that</p>

	<p>predicted using the water level methods outlined in Annexure 1. For the purposes of this condition, “significant” means a change in the Groundwater recession and reference level greater than 100 millimetres. Where such a reassessment is required the following shall apply:</p> <ol style="list-style-type: none"> a. The Consent Holder or group of consent holders shall commission a report to be prepared by a suitably qualified person or persons which provides data and analysis to support a new Groundwater Recession and Reference Level interpolated from the measured water level for the Production Bore, water levels, and Groundwater Recession and Reference levels from other nearby bores (within 1,000 metres of the Production Bore) that are screened at a similar depth; b. The report shall be sent to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager; c. The Canterbury Regional Council may advise the Consent Holder in writing stating whether or not it is satisfied with the information and analysis provided in the Report and whether it accepts that the proposed Groundwater Level and the Reference Level are consistent with the methodologies set out in Annexure 1. If the Canterbury Regional Council is not satisfied with the Report contents or proposed Groundwater Recession and Reference level, the written notice shall outline any concerns with the information provided. If no response is received within 20 working days the revised Groundwater Recession and Reference Level shall apply; d. If further information is required, that shall be provided to the Canterbury Regional Council as soon as is practicable. Following receipt the Canterbury Regional Council may advise the Consent Holder in writing stating whether or not it accepts any further revision of the Groundwater Recession and Reference Level as consistent with the methodologies set out in Annexure 1; e. If no agreement can be reached on a revised Groundwater Recession and Reference level, then either the Canterbury Regional Council may review the conditions of this consent (including Annexure 1) or the Consent Holder may seek a change of conditions (including Annexure 1) for the purpose of revising the Groundwater Recession and Reference Level and (if appropriate) adjusting the methodology for calculation of the Groundwater Recession and Reference Level.
8	<p>Water User Group</p> <p>Subject to Conditions 4 and 5, water may be taken in excess of the Fixed and Variable Base-Allocation volumes specified in condition 5, provided that:</p> <ol style="list-style-type: none"> i. A Water User Group is in operation whereby the Consent Holder and the consent holder(s) of two or more resource consents to take and use water within the Valetta Groundwater Allocation Zone have determined to share their individual allocations in a manner that ensures that the total take of water does not exceed that available individually under their own individual resource consent(s) (Water User Group); <ul style="list-style-type: none"> <i>Advisory note: A Water User Group may be established in consultation with the Canterbury Regional Council among members holding resource consents to take water from both ground water and surface water sources; provided that the total combined groundwater take does not exceed the total groundwater that is authorised to be taken were the Water User Group not in place.</i>

	<ul style="list-style-type: none"> ii. The Water User Group has prepared a water sharing roster that specifies how their individual annual allocations are to be shared; iii. The water sharing roster ensures that the combined volume proposed to be taken and used by all members of the Water User Group will not exceed: <ul style="list-style-type: none"> i. the combined annual allocation able to be taken by all those consent holders who are members of the Water User Group; and ii. their actual irrigation need; iv. The water sharing roster has been provided to the Canterbury Regional Council no less than 10 working days before it is implemented; and v. Each consent holder in the Water User Group that is taking groundwater is recording the volume of water abstraction by tamper-proof electronic recording systems in a manner consistent with conditions 10 to 12 of this consent, and a record is made either on site or at a remote location via telemetry of the recorded abstraction volume.
9	<p>Aquifer testing</p> <p>Prior to using the Adaptive Management Allocation permitted by this consent or unless the Canterbury Regional Council agrees that sufficient hydraulic information is available (within 2,000 metres of the Consent Holder's Production Bores), for the purposes of defining the drawdown effect of the seasonal Adaptive Management Allocation at 750 metres from the Production Bore consistent with the methodology given in Annexure 1:</p> <ul style="list-style-type: none"> a. The Consent Holder shall arrange for a suitably qualified person to undertake a constant rate discharge aquifer test in the Production Bores. The minimum duration of the aquifer test shall be 24 hours; b. Prior to the commencement of the aquifer test the Canterbury Regional Council and the Consent Holder shall agree the number of bores to be tested (in the case of multiple production bores), and the methodology for the test; c. The aquifer test shall be undertaken with reference to Canterbury Regional Council technical report No.R08/25 (2008) or any subsequent replacement pumping test guidelines published by Canterbury Regional Council available at the time of testing; d. Data, results and analysis of the test data shall be forwarded to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, within three months of completion of the test and at least one month prior to using the Adaptive Management Allocation; e. If the Canterbury Regional Council does not accept the aquifer test has been carried out in accordance with clause (c) of this condition, it may require that a repeat analysis or repeat of the test be carried out. (Such a requirement may only be on reasonable grounds).
10	<p>Metering</p> <p>The consent holder shall, before the first exercise of this consent, install an easily accessible straight pipe(s), with no fittings or obstructions that may create turbulent flow conditions, of a length at least 15 times the diameter of the pipe, as part of the pump outlet plumbing or within the mainline distribution system.</p>
11	<p>The consent holder shall before the first exercise of this consent:</p> <ul style="list-style-type: none"> a. <ul style="list-style-type: none"> i. install a water meter(s) that has an international accreditation or equivalent New Zealand calibration endorsement, and has pulse

	<p>output, suitable for use with an electronic recording device, which will measure the rate and the volume of water taken to within an accuracy of plus or minus five percent as part of the pump outlet plumbing, or within the mainline distribution system, at a location(s) that will ensure the total take of water is measured; and</p> <ul style="list-style-type: none"> ii. install a tamper-proof electronic recording device such as a data logger(s) that shall time stamp a pulse from the flow meter at least once every 15 minutes, and have the capacity to hold at least one season's data of water taken as specified in clauses (b)(i) and (b)(ii), or which is telemetered, as specified in clause (b)(iii). <p>b. The recording device(s) shall:</p> <ul style="list-style-type: none"> i. be set to wrap the data from the measuring device(s) such that the oldest data will be automatically overwritten by the newest data (i.e. cyclic recording); and ii. store the entire season's data in each 12 month period from 1 July to 30 June in the following year, which the consent holder shall then download and store in a commonly used format and provide to the Canterbury Regional Council upon request in a form and to a standard specified in writing by the Canterbury Regional Council; or iii. shall be connected to a telemetry system which collects and stores all of the data continuously with an independent network provider who will make that data available in a commonly used format at all times to the Canterbury Regional Council and the consent holder. No data in the recording device(s) shall be deliberately changed or deleted. <p>c. The water meter and recording device(s) shall be accessible to the Canterbury Regional Council at all times for inspection and/or data retrieval.</p> <p>d. The water meter and recording device(s) shall be installed and maintained throughout the duration of the consent in accordance with the manufacturer's instructions.</p> <p>e. All practicable measures shall be taken to ensure that the water meter and recording device(s) are fully functional at all times.</p>
12	<p>Within one month of the installation of the measuring or recording device(s), or any subsequent replacement measuring or recording device(s), and at five-yearly intervals thereafter, and at any time when requested by the Canterbury Regional Council, the consent holder shall provide a certificate to the Canterbury Regional Council, Attention: Regional Manager, RMA Monitoring and Compliance, signed by a suitably qualified person certifying, and demonstrating by means of a clear diagram, that:</p> <ul style="list-style-type: none"> a. The measuring and recording device(s) has been installed in accordance with the manufacturer's specifications; and b. Data from the recording device(s) can be readily accessed and/or retrieved in accordance with clauses (b) and (c) of condition (x).
13	<p>The Canterbury Regional Council, Attention: Regional Manager, RMA Monitoring and Compliance, shall be informed immediately on first exercise of this consent by the consent holder.</p>
14	<p>The taking of water in terms of this permit shall cease for a period of up to 48 hours, on notice from the Canterbury Regional Council, to allow measurement of natural groundwater levels.</p>

15	<p>If the irrigation system is used to distribute diluted effluent, fertiliser or added contaminants the consent holder shall ensure:</p> <ol style="list-style-type: none"> a. An effective backflow prevention device is installed and operated within the pump outlet plumbing or within the mainline to prevent the backflow of contaminants into the water source; and b. The backflow prevention device is tested at the time of installation and annually thereafter by a suitably qualified or certified person in accordance with Canterbury Regional Council approved test methods for the device used; and c. The test report is provided to the Canterbury Regional Council Attention: Regional Manager, RMA Monitoring and Compliance, within two weeks of each inspection.
16	<p>The consent holder shall take all practicable steps to:</p> <ol style="list-style-type: none"> a. Ensure that the volume of water used for irrigation does not exceed that required for the soil to reach field capacity; and b. Avoid leakage from pipes and structures; and c. Avoid the use of water onto non-productive land such as impermeable surfaces and river or stream riparian strips.
17	<p>Farm Environment Plan</p> <p>Prior to the first exercise of this consent, the consent holder shall prepare a Farm Environment Plan (FEP) in accordance with Appendix One, which forms part of this consent. On farm practice shall be in accordance with the FEP and the FEP shall be updated as necessary to reflect any changes in the farming operation over time. A copy of the FEP shall be provided to Canterbury Regional Council Attention: Regional Manager, RMA Monitoring and Compliance on request. The Farm Environmental Plan (FEP):</p> <ol style="list-style-type: none"> a. shall be audited in accordance with Part C of Appendix One. A copy of the audit shall be provided to the Canterbury Regional Council, Attention: RMA Monitoring and Compliance Manager within two months of the audit being completed; and b. an audit shall be undertaken within two years of the first exercise of this consent. Subsequent audits shall be undertaken within the timeframes specified in Part C of Appendix One.
18	<p>Review</p> <p>The Canterbury Regional Council may, at any time after the end of the first full irrigation season following the implementation of this consent, serve notice of its intention to review the conditions of this consent for the purpose of:</p> <ol style="list-style-type: none"> a. Revising the Reference Level that was established in terms of Annexure 1 if groundwater levels measured by the Consent Holder indicate a significant variation in the Groundwater Recession and the Reference Level calculated using the water level method outlined in Annexure 1 (a change that is greater than 100 millimetres, shall be considered to be significant); and/or b. Revising the methodology set out in Annexure 1, if a model (such as an Eigen value or some other analytical or numerical model) is developed that can more accurately and reliably predict groundwater levels at specific locations in each aquifer than the current water level methodology

	and where the Canterbury Regional Council considers that it is more appropriate to use that method.
19	The Canterbury Regional Council may, once per year, on any of the last five working days of any month, serve notice of its intention to review the conditions of this consent for the purposes of dealing with any adverse effect on the environment which may arise from the exercise of the consent.
20	If this consent is not exercised before 31 December 2017 it shall lapse in accordance with section 125 of the Resource Management Act 1991.

Appendix One – Farm Environment Plan

Part A

Farm Environment Plans

A Farm Environment Plan can be based on either of:

1. The material set out in **Part B** below;

OR

2. Industry prepared Farm Environment Plan templates and guidance material that:

- a. Include the following minimum components:
 - i. The matters set out in 1, 2 and 3 of Part B below;
 - ii. Contains a methodology that will enable development of a plan that will identify actual and potential environmental effects and risks specific to the property, addresses those effects and risks and has a high likelihood of appropriately avoiding, remedying or mitigating those effects;
 - iii. Performance measures that are capable of being audited as set out in Part C below; and
- b. Has been approved as meeting the criteria in (a) and being acceptable to the Canterbury Regional Council by the Chief Executive of the Canterbury Regional Council.

Part B

Farm Environment Plan Default Content

The plan requirements will apply to:

1. A plan prepared for an individual property or farm enterprise; or
2. A plan prepared for an individual property which is part of a collective of properties, including an irrigation scheme, principal water supplier, or an Industry Certification Scheme.

The plan shall contain as a minimum:

1. Property or farm enterprise details:
 - a. Physical address;
 - b. Description of the ownership and name of a contact person; and
 - c. Legal description of the land and farm identifier.

2. A map(s) or aerial photograph at a scale that clearly shows:
 - a. The boundaries of the property or land areas comprising the farm enterprise;
 - b. The boundaries of the main land management units on the property or within the farm enterprise;
 - c. The location of permanent or intermittent rivers, streams, lakes, drains, ponds or wetlands;
 - d. The location of riparian vegetation and fences adjacent to water bodies;
 - e. The location on all waterways where stock access or crossing occurs; and
 - f. The location of any areas within or adjoining the property that are identified in a District Plan as “significant indigenous biodiversity”.
3. A list of all Canterbury Regional Council resource consents held for the property or farm enterprise.
4. An assessment of the adverse environmental effects and risks associated with the farming activities and how the identified effects and risks will be managed, including irrigation, application of nutrients, effluent application, and stock exclusion from waterways, offal pits and farm rubbish pits.
5. A description of how each of the following objectives will, where relevant, be met:
 - a. Nutrient management: To maximise nutrient use efficiency while minimising nutrient losses to water.
 - b. Irrigation management: To operate irrigation systems efficiently and ensuring that the actual use of water is monitored and is efficient.
 - c. Soils management: To maintain or improve the physical and biological condition of soils in order to minimise the movement of sediment, phosphorus and other contaminants to waterways.
 - d. Collected animal effluent management: To manage the risks associated with the operation of effluent systems to ensure effluent systems are compliant 365 days of the year.
 - e. Livestock management: To manage wetlands and water bodies so that stock are excluded as far as practicable from water, to avoid damage

to the bed and margins of a water body, and to avoid the direct input of nutrients, sediment, and microbial pathogens.

- f. Offal pits: to manage the number and locations of pits to minimise risks to health and water quality.

The plan shall include for each objective in 5 above:

- a. Detail commensurate with the scale of the environmental effects and risks;
 - b. Defined measurable targets that clearly set a pathway and timeframe for achievement and set out defined and auditable “pass/fail” criteria;
 - c. A description of the good management practices together with actions required; and
 - d. The records required to be kept for measuring performance and achievement of the target.
6. A nutrient budget shall be prepared annually using the current version of the OVERSEER™ nutrient budget model, or equivalent model approved by the Chief Executive of Environment Canterbury, to cover the property or farming enterprise for the upcoming 12 months. At the end of each 12 month period the modelling shall be revised, if necessary, to accommodate any differences between the projected modelling and actual farm practise, to calculate the average annual amount of nitrogen loss from the property or farm enterprise.

Part C

Farm Environment Plan Audit Requirements

The Farm Environment Plan must be audited by a Farm Environment Plan Auditor who is independent of the farm being audited (i.e. is not a professional adviser for the property) and has not been involved in the preparation of the Farm Environment Plan.

A Farm Environment Plan Auditor is a person who can provide evidence of at least 5 years' professional experience in the management of pastoral, horticulture or arable farm systems and holds either:

1. A Certificate of Completion in Sustainable Nutrient Management in New Zealand Agriculture from Massey University;
2. A Certificate of Completion in Advanced Sustainable Nutrient Management in New Zealand Agriculture from Massey University; or

3. Another qualification that has been approved by the Chief Executive of the Canterbury Regional Council as containing adequate instruction and assessment on agricultural sciences and nutrient management.

The farming activity occurring on the property will be audited against the following minimum criteria:

1. An assessment of the performance against the objectives, targets, good practices and timeframes in the Farm Environment Plan;
2. An assessment of the robustness of the nutrient budget/s;
3. An assessment of the efficiency of water use (if irrigated).

The audit shall identify any non-compliance with the Farm Environment Plan, detail any action required to remedy instances of non-compliance and provide an overall grade based on the assessment of the property.

Part D

Farming Information

Whenever one of Rules 5.41-5.58 requires information to be submitted, the following is to be provided:

1. The OVERSEERTM, or equivalent model approved by the Chief Executive of Environment Canterbury, input and output files for the property; or
2. Information detailing:
 - a. The site area to which the farming activity relates;
 - b. Monthly stocking rates (numbers, types and classes) including breakdown by stock class;
 - c. Annual yield of arable or horticultural produce;
 - d. A description of the farm management practices used on each block including:
 - i. Ground cover – pasture, crops, fodder crops, non-grazed areas (including forestry, riparian and tree areas) and any crop rotation;
 - ii. Stock management – lambing/calving/fawning dates and percentages, any purchases and sales and associated dates, types and age of stock;
 - iii. Fertiliser application – types and quantities per hectare for each identified block, taking into account any crop rotation;
 - iv. Quantities of introduced or exported feed;

- e. Farm animal effluent, pig farm effluent, feed pad and stand-off pad effluent management including:
 - i. Area of land used for effluent application;
 - ii. Annual nitrogen loading rate and nitrogen load rate per application;
 - iii. Instantaneous application rate;
- f. Irrigation – areas, rates, monthly volumes and system type.

The information is to be collated for the period 1 July to 30 June in the following year and be provided annually, no later than 31 of October.

ANNEXURE 1 – ADAPTIVE MANAGEMENT

USE OF THE METHODOLOGY

1. This adaptive management methodology will be used prior to the commencement of each irrigation season (typically September – May) to determine the Adaptive Management Allocation available in the forthcoming irrigation season as follows:
 - (a) if the Seasonal Interference Effect from the Assessment Bore is less than or equal to the Available Water then the consent holder can take the full Adaptive Management Allocation provided for in Condition 6(b) of the consent; or
 - (b) if the Seasonal Interference Effect from the Assessment Bore exceeds the Available Water then the consent holder must reduce the volume of take until the Seasonal Interference Effect is less than or equal to the Available Water; or
 - (c) if the Seasonal Interference Effect from the Assessment Bore exceeds the Available Water and the consent holder cannot reduce the volume of take until the Seasonal Interference Effect is less than or equal to the Available Water, then no Adaptive Management Allocation may be taken in the following irrigation season.

DEFINITIONS

2. The **Seasonal Interference Effect** is the drawdown estimated to occur on The Assessment Bore.
3. The **Groundwater Recession** is the sum of the seasonal environmental discharge and the seasonal abstractive discharge. It is the difference in water level between the Spring High Water Level (relative to 1 September 2005) and the Autumn Low Water Level (relative to 30 April 2006) and including a proportion of the previous irrigation season's discharge component for the aquifer system (relative to the 1 September 2004 Water Level). The Groundwater Recession relevant to this consent is determined by:
 - (a) using the water level record from an observation bore to calculate the difference in water level between the spring high water level (in relation to 1 September 2005) and the autumn low water level (in relation to 30 April 2006); and
 - (b) Using that same water level record, calculating 50% of the difference between the Previous Irrigation Season Water Level (in relation to 1 September 2004) and the reference season spring high water level (in relation to 1 September 2005);where the Groundwater Recession is the sum of the differences in water levels from both (a) and (b) as above.
4. The **Reference level** means one or more of the 1 September Water Levels for the years 2004 and 2005 and/or the 30 April Water Level for the year 2006.

5. The **Reserved Water Level** is the 30 April 2006 Water Level plus the Groundwater Recession. It is the water level that determines if any additional Adaptive Management Allocation is available for use in the forthcoming irrigation season.
6. **Available Water** is the available volume (as represented by the depth) of groundwater from which the Consent Holder may abstract their Adaptive Management Allocation in the forthcoming irrigation season. It is the depth of water measured between the Reserved Water Level and the 1 September Water level.
7. The **1 September Water Level** is the “median” groundwater level which shall be measured annually by the Consent Holder during the last week of August in the locality of the production bore. The Consent Holder shall obtain the 1 September Water Level using an approved measurement device to take water level measurements from:
 - the production bore; and
either
 - subject to access and availability, bores located within 1000 metres of the production bore that are screened within the same strata as the production bore;
or
 - any Canterbury Regional Council observation bore(s) that are within the same strata as the production bore,
or
 - any other method acceptable to the Canterbury Regional Council and notified in writing to the consent holder by the Canterbury Regional Council.
8. The **Autumn Low Water level** is the groundwater level that was measured, or in the absence of real measurements determined, for 30 April 2006 in the locality of the production bore.
9. The **Spring High Water Level** is the groundwater level that was measured, or in the absence of real measurements determined, for 1 September 2005 in the locality of the production bore.
10. The **Previous Irrigation Season Water Level** is the groundwater level that was measured, or in the absence of real measurements determined, for 1 September 2004 in the locality of the production bore.
11. The **Assessment Bore** is a virtual bore, similar to an image bore as described in the “method of images” set out in Freeze and Cherry (1979, located 750 m distant from the production bore and used to calculate the Seasonal Interference Effect of the production bore, The interference of the production bore on the Assessment Bore shall be determined from a well interference assessment using the average rate of take that would be required to deliver the

Adaptive Management Allocation over a period of 150 days. The Assessment Bore shall have the following specifications:

- the same depth, diameter and screen profile as the production bore;
- the same aquifer hydraulic characteristics (Transmissivity, Storativity and Leakage) as the production bore;
- the same discharge, self-induced drawdown and specific capacity as the production bore.

12. The **Observation Bore** is a bore that is located within 1000 metres of the Consent Holder's production bore(s) that is screened in the same aquifer.

PUMPING FROM MULTIPLE BORES

13. (a) If the consent is to take water from more than one production bore for the irrigated area, the seasonal interference effect (the seasonal cumulative effect) of the Assessment Bore on the production bore at the expected rate of take from that bore must be determined. The methodology is as follows: The proportion of the Annual Volume attributed to each production bore is the proportion of flow from each bore to the total abstraction flow; i.e. $(Q_i / Q_{\text{total}}) \times \text{Irrigated Area Annual Volume} = \text{Production Bore } Q_i \text{ Annual Volume}$. Where the sum of the rates of take in production bores is greater than the maximum rate under this resource consent, the proportion of Adaptive Management Allocation will be applied to each production bore on a pro-rata basis. Production bore Annual Volume divided by 150 days is to be used in the seasonal interference assessment from the Assessment Bore.
- (b) Any Annual Volume restriction will be determined in the adaptive management assessment and applied to the respective production bore Q_i .

Carrying Out an Aquifer Test for the Assessment Bore

14. In order to determine the seasonal interference from the Assessment Bore on the production bore it may be necessary to carry out an aquifer test to obtain representative aquifer parameters.

Carrying Out the Adaptive Management Assessment for Seasonal Water Entitlement

15. The adaptive management assessment requires determination of all the water levels described above and as shown in Table A1. The procedure is as follows:
- (a) Determine the Reference Levels (i.e. the 1 September Water Levels for the years 2004 and 2005 and the 30 April Water Level for the year 2006))
- (b) Enter these values in the correct cells of the Excel spreadsheet (Table A1). (Note: the determination and data entry will be required once because the Groundwater Recession, Reference Level and Reserved Water Level will be calculated and are fixed values.)

- (c) Determine and enter the cumulative effect of the full Adaptive Management Allocation for the forthcoming irrigation season (the seasonal interference effect from the Assessment Bore on the Consent Holder's Adaptive Management Allocation) in the correct cell of the Excel spreadsheet. This will need to be undertaken only once.
- (d) Determine and enter the measured 1 September Water Level from the production bore in the correct cell of the Excel spreadsheet. This figure will be derived each year.
- (e) The result will automatically be calculated: i.e.
- The Adaptive Management Allocation of the consent can be exercised in full (the seasonal cumulative effect is less than the depth of Available Water); or
 - The Adaptive Management Allocation of the consent will need to be partially restricted (so the seasonal cumulative effect is less than the depth of Available Water); or
 - The Adaptive Management Allocation of the consent cannot be exercised (the seasonal cumulative effect cannot be reduced to less than the depth of Available Water)

WELL/TAKE DETAILS			
Well number		K37/XXXX	
Consent number		CRCXXXXXX	
WQN9 allocation		200000 m3	
Fixed allocation		50 %	
REF SEASON LEVELS			
1 September 2004 water level		-1.9 m bgl	
1 September 2005 water level		-2.25 m bgl	
30 April 2006 water level		-3.9 m bgl	
Groundwater recession		1.65 m	
Additional inter-seasonal head		0.175	
		0.175 m	
Total recession		1.825	
Reference level		-3.9	
Reserved water level		<u>-2.075</u>	
SPECIFIC SEASON LEVELS			
1 September water level		-1.95 m bgl	
Available water		0.125	
		0.125 m	
Cumulative effect of adaptive take		0.5 m	
Percentage of adaptive allocation for year		0.25	
		0.25	
		0.25 %	
Available adaptive allocation for year		25000 m3	
Fixed allocation for year		100000 m3	
Total water allocation for year		125000 m3	
Percentage of WQN9 allocation		62.5 %	

FUTURE REVISION OF METHODOLOGY

16. The methodology for determining the Groundwater Reference and Recession Levels may be revised by the Canterbury Regional Council via review of the consent if a model (such as an Eigen value or some other analytical or numerical model) is developed that can more accurately and reliably predict groundwater levels at specific locations and at specific depths, than the water level methodology described in this consent. Where such a revision is proposed, a report shall be prepared by a suitably qualified person or persons who will provide data and analysis to support the revised methodology and revised Groundwater Recession and Reference Levels interpolated from the measured water levels.



CRC084105 - Irrigation area

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0 0.2 0.4 0.6 0.8 Kilometres
Scale: 1:20,000 A4
Map Created by Environment Canterbury on

