

## APPENDIX 2: Proposed amendments to Policy WQN17 and Rule WQN15

### POLICY WQN17

#### Simplifying Policy WQN17 by removing activity descriptions in Policy WQN17(3)

This version of Policy WQN17 is the current version based on recommendations from all officer reports.

Note: Officers recommend that all of the amendments Black and underlined and Violet and underlined be adopted.

The different colours below have the following meaning:

Black: original proposed plan text

Black and underlined: Changes recommended to the NRRP hearing panel by officers at various hearing stages

Violet and underlined: Additional amendments being recommended by officers to the reconvened Hearing Stage 14 on 2 June 2009.

The changes recommended in Violet and underlined are intended to reflect essentially the same changes in Alternative 1 of Policy WQN17, but just removes the references in the policy to the activity descriptions. These are evident in the rule, and are not longer considered necessary in the policy given other clarifications that have been achieved (e.g. that irrigation schemes are not required to demonstrate that they operate within the Schedule WQN9 standards; that other methods (other than the standards set out in Schedule WQN9) can be used to estimate an annual volume of water for irrigation use that will be reasonable and efficient where they can be verified, and calibrated for specifics of the location).

#### Policy WQN17 Reasonable and efficient use of water

(1) Ensure that:

(a) the instantaneous rate of abstraction, the return period, return period volume<sup>1</sup> and the annual volume of water permits for taking, using or diverting water are no more than reasonable for the intended end use<sub>i</sub>; ~~and thereby~~

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

(c) ~~avoid or limit the any~~ adverse effect on water quality is avoided or limited to meet the requirements of (See also to Policies WQL4(1)(d), WQL9(1)(b) and WQL12).<sup>2</sup>

(2) When assessing water permit applications for irrigation (new or replacement) in terms of (1) above<sub>i</sub>:

(a) the instantaneous rate of abstraction, the return period, the return period volume<sup>3</sup> and the seasonal volume of the proposal to take, divert or use water will be required to meet a reasonable use test<sub>r</sub>, including:

(a<sub>i</sub>) consideration of on-site physical factors such as soil water-holding capacity, climatic factors such as rainfall variability and potential

<sup>1</sup> WQN8.33

<sup>2</sup> WQN8.51

<sup>3</sup> WQN8.33

evapotranspiration and land use activity; and

(bii) ~~assuming~~ that there is an irrigation application efficiency of at least 80% even if the actual system being used has a lower application efficiency. Schedule WQN9 can be used to determine the seasonal volume for the purposes of this provision for a number of land use types.

(iii) ~~Where~~ the water permit application is for an irrigation system with a higher application efficiency, the higher figure will be used; ~~and~~

(b) the use of water is to be managed in accordance with Policies WQL4(1)(d), WQL9(1)(b) and WQL12.<sup>4</sup>

- (3) ~~Further to~~ Where Policy WQN17(2) above is not met, provide for the use of water for irrigation ~~to be~~ only where:
- (a) on-site physical factors such as water holding capacity, climatic factors such as rainfall variability and potential evapotranspiration are different to those used to estimate the seasonal irrigation demand in Schedule WQN9 due to micro-climatic or other variations ~~a permitted activity where the seasonal irrigation demand standards in Schedule WQN9 are met not exceeded for seasonal irrigation use and where seasonal irrigation use is managed in accordance with Policies WQL4, WQL9 and WQL12;~~<sup>5</sup> ~~and/or~~
  - (b) for a lower irrigation application efficiency level only in the case of activities that have been authorised prior to 1 January 2009 and where there is not already an annual volume specified on the resource consent. Where any additional volume is provided for above the relevant Schedule WQN9 standard, or above that based on (a) above, then under this provision, the additional volume may only be made available for a period up to 2015, and none of the volume can be transferred to a new location; a discretionary activity where the seasonal irrigation demand standards in Schedule WQN9 are not met exceeded or where the seasonal irrigation use is not managed in accordance with Policies WQL4, WQL9 and WQL12, provided that exception shall only be made:
    - (i) ~~where it can be demonstrated that the demand conditions are different to those mapped on the Proposed NRRP Map Volume Part 4 Planning Maps, due to micro-climatic or other variations; or~~
    - (ii) ~~for a lower efficiency level or~~
  - (c) a greater seasonal volume where there may be other mitigating circumstances to those in (a) and (b) above that can be ~~are~~ clearly demonstrated. These circumstances may include beneficial effects such as energy savings or prevention of wind erosion that would not be achieved otherwise, or recharge to groundwater, surface water or wetlands. In the case of existing irrigation schemes that have been authorised prior to 1 January 2009, ~~there~~ should be a demonstrable long-term community benefit from the proposal consistent with Objective WQN4(1). Where a long-term community benefit cannot be demonstrated, a programme of staged improvement may be considered as mitigation; ~~or~~ and

<sup>4</sup> WQN8.51

<sup>5</sup> WQN8.99

(iii) where it can be demonstrated that it will achieve the water quality outcomes set in Objectives WQL1 and WQL2.<sup>6</sup>

Any method used to demonstrate this must be verifiable, and where a modelled approach is used, there must be sufficient data available to calibrate for the specifics of the location.

- (4) For existing users, ensure that the water allocation specified on the water permit reflects the actual quantity needed to undertake the ~~land use activity~~ intended use that was specified at the time of granting the water permit<sup>7</sup>. Review the conditions of water permits where necessary when an allocation regime becomes operative under Schedule WQN1 or Schedule WQN3 as per Policy WQN14(11) and Policy WQN16(3),<sup>8</sup> or where monitoring indicates that they have been allocated more than is needed and have actually used, taking into account variable factors such as climatic conditions.<sup>9</sup>
- (5) In addition to requiring the measuring and recording of water that is taken in accordance with Policy WQN16, encourage irrigators to monitor their water application rates, soil moisture, and production as a method for achieving more efficient use of irrigation water.
- (6) Develop guidelines in conjunction with water users, other agencies and the community for cost-effective improvements in water efficiency and conservation, and promote and encourage the use of<sup>10</sup> these across the region.
- (7) Encourage, and where appropriate, require Promote<sup>11</sup> the use of water audits for agricultural, industrial, hydro electricity and community water supply activities to identify areas for improvements in water use efficiency.
- (X) Promote the capture and use of stormwater, and the re-use of water and greywater to improve water use efficiency.<sup>12</sup>
- (8) Encourage and, where appropriate, require the progressive upgrade and piping of stock water races where there is an environmental or economic benefit for so doing, but recognise that some stockwater races may provide important habitats for indigenous species and provide additional base flow to spring-fed streams and wetlands, and may justify strategic continuance or other management to protect these values<sup>13</sup>. (Refer to Policy WQN14(9)(f)).
- (9) Encourage, and where appropriate, require territorial local authorities, and other suppliers of stockwater, and community and group drinking water<sup>14</sup> to take all reasonable steps to progressively upgrade those reticulated supply systems where there is a significant amount of leakage.

<sup>6</sup> WQN8.51

<sup>7</sup> WQN8.62, WQN8.65

<sup>8</sup> WQN8.63

<sup>9</sup> WQN8.72

<sup>10</sup> WQN8.78

<sup>11</sup> WQN8.81

<sup>12</sup> WQN8.26

<sup>13</sup> WQN8.90

<sup>14</sup> WQN8.93

- (10) **Encourage, and where appropriate, require<sup>15</sup> owners and managers of irrigation schemes to minimise water losses through the beds of irrigation canals.**

### Explanation and principal reasons

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

Policy WQN17(1) seeks to ensure that only the amount of water needed for the efficient operation of each activity is taken. It is important that water that is taken is not wasted. Using water more efficiently means greater production from each unit of water used, allowing abstraction amounts to be reduced, redistribution of the surplus to occur, reliability of supply to improve or production to increase, or a combination of these benefits. Additionally, it can also lead to the avoidance or reduction of leaching and the degrading of groundwater quality and connected surface water, and the possible raising of the water tables. The use of water, particularly for irrigation, in combination with other land use practises such as the application of soluble fertilisers and cultivation, can contribute to an increase in leaching of nutrients into groundwater. Any degradation of water quality could affect existing domestic and community water supplies or other sensitive water uses and limit similar future uses. Where new community water supply uses are proposed, there will be a need for them to consider the effects of existing activities on the water quality. Chapter 4 Policies WQL4(1)(d), WQL9(1)(d) and WQL12 addresses the issues of preventing the leaching, run-off of nutrients and<sup>16</sup> community supply zones.

Policy WQN17(2) requires that any take for irrigation use meets a reasonable use test and that the effect of that use of water on water quality is managed in such a way as to met the requirements of Policies WQL4(1)(d), WQL9(1)(d) and WQL12. It<sup>17</sup> sets a target irrigation application efficiency level of 80% that is to be used when applying this test. The reasonable use test is a test of the technical efficiency of the water application and use. It requires an understanding of the use of the water, the water-holding capacity of the soils, the climate of the area, including the potential evapotranspiration, and the rainfall. Water allocation will be limited to what is reasonable as a peak rate of application, relative to the return period of the irrigation system and it will also be limited to what is a reasonable seasonal volume.

Irrigation application efficiency is to be calculated as the amount of applied water reaching that is stored in the crop root zone as a proportion of the total amount of water taken average depth of water applied to the crop.<sup>18</sup> By taking this approach, Environment Canterbury is not saying that less efficient systems cannot be used, rather that if they are used, the amount of water given may be insufficient to irrigate all the area. The remedy to this problem is to install an irrigation system that achieves the 80% application efficiency. In the case of any new activities established since 1 January 2009, the amount of water allocated for irrigation will only provide for an assumed irrigation application of 80% or more, while for activities that may have existed prior to that date, exemptions to this criteria may be considered under some circumstances (see Policy WQN17(3)).

Consideration must also be given to the potential adverse effect of the use of water for irrigation on water quality. Policies WQL4 and WQL9 require that the use of water for irrigation does not result in the maximum concentration of contaminants exceeding the values set out for surface water and groundwater in Objectives

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<sup>15</sup> WQN8.95

<sup>16</sup> WQN8.51

<sup>17</sup> WQN8.51

<sup>18</sup> WQN8.46, WQN8.98

WQL1 and WQL2. Policy WQL12 limits the use of water for irrigation within specified areas in order to protect the quality of community drinking water supplies.<sup>19</sup>

Policy WQN17(3) specifically sets out circumstances when using water for irrigation in a manner not meeting the provisions set out in Policy WQN17(2) will be acceptable.

Policy WQN17(3)(a) provides for circumstances where it can be demonstrated that demand conditions such as evapotranspiration, soil type or effective summer rainfall, for example, are sufficiently different to those used to determine the relevant seasonal irrigation demand standard in Schedule WQN9, that a greater amount of water may be considered reasonable.

Policy WQN17(3)(b) provides for circumstances where the application efficiency is lower than the 80% assumed in estimating the seasonal irrigation demand standards. An additional volume may be considered reasonable where the existing irrigation system cannot be operated to achieve that level of application efficiency because of irrigation system design limitations. This will be considered on a case by case basis. However, any additional volume will only be available for a limited period to allow such irrigators time to adjust their systems to the Schedule WQN9 volume. Where additional volume is provided for above the relevant irrigation demand standard in Schedule WQN9 or based on local demand conditions demonstrated in Policy WQN17(3)(a), there will not be any transfer of take or use to another location, as this will be considered a new activity that will be required to meet an irrigation application efficiency of 80%.

Policy WQN17(3)(a) identifies that Schedule WQN9 has determined amounts that are reasonable assuming the irrigation system is 80% efficient and given the use that the water is to be put to, the soils and the climatic conditions of the locality. Activities that are within this standard are provided for as a permitted activity in Rule WQN2515<sup>20</sup>. Schedule WQN9 only applies to the activity of using water for irrigation purposes, and does not apply to wastes that are discharged to land under an authorised discharge permit. Such discharges will be subject to the relevant policy provisions and rules set out in Chapter 4. Where there is both the discharge of contaminants to land from an industrial or trade process (excluding animal effluent produced on the property) and the use of water, both occurring as irrigation, then the use of the water will be considered as a discretionary activity.<sup>21</sup>

Policy WQN17(3)(bc) provides for the situation where a greater amount of water is sought than is provided for in Schedule WQN9. The policy provides for considerations such as energy efficiency of the method and other beneficial consequences of the less efficient option. The policy asks that in the case of an existing irrigation scheme that has been authorised prior to 1 January 2009, the benefits to the community of any alternative method that does not meet the standard determined from Schedule WQN9 be demonstrated, and it refers back to Objective WQN4. This aims to ensure that water is being used to maximise the communities wellbeing. If water is being taken and used in a relatively inefficient manner by one or more party, this may deprive others of access to the resource. This may be more so in the future with the setting of allocation limits. The justification for allowing this lesser efficiency should be that the community is better off for this approach over the long-term. The "community" will need to be determined in each situation, but it will generally be those who have an interest in the same water resource or who are affected (beneficially or adversely) by the use of the water that is taken from this resource. Where it cannot be demonstrated that the amount of water sought, or being used, is in the long-term community benefit then a lesser amount that can be justified, will be allocated. Where this is an existing activity, provision may be made for the transition where this requires changes to systems and schemes. If Environment Canterbury does not take this approach then it will be difficult to achieve full benefit of the region's available water resources. There is also a risk that other resources will be targeted, additional adverse environmental effects will be caused, and investment will be made in more expensive methods of water capture and distribution, when this same amount water may be available through improvements in water use efficiency.

Policy WQN17(3)(d) requires that where the land use, in combination with the proposed seasonal irrigation use, will not be managed in accordance with Policies WQL4(1)(d), WQL9(1)(b) and WQL12, it should be demonstrated that the activity will still achieve the water quality outcomes set in Objectives WQL1 and WQL2.

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<sup>19</sup> WQN8.51

<sup>20</sup> WQN11.1

<sup>21</sup> WQN8.171

When giving consideration to Policy WQN17(3), any method used to estimate a reasonable annual volume for irrigation or water quality effects must be verifiable, and in the case where a model is used, it also must be demonstrated that the model is calibrated for the specifics of the location in question.

Policy WQN17(4) reviews consents with excess "paper allocation" to free up water within an allocation block. Many existing consents currently do not have annual volumes as part of their consent conditions. Such consents will need to be reviewed to ensure the annual volume is clearly and unambiguously stated on the consent, and that the volume is based on the actual quantity needed for the intended use for which the consent was granted. Policies WQN14(11) and WQN16(3) set out when such reviews should be instigated, and include the need for the measuring and recording of water use.<sup>22</sup> Where the actual use is significantly different to that which was applied for in the consent application and supporting documents and for which the consent was granted, then it may be appropriate to review the consent to include an annual volume that more closely represents that actual use.<sup>23</sup> It also means that restrictions are more effective and equitable during water shortages. Monitoring of takes will help verify actual use, and when this is taken into consideration with other variable factors such as climatic conditions, this will and<sup>24</sup> provide opportunity to better allocate the resource. Where consents for the taking and using of water for stockwater, or community or group drinking water supplies are being reviewed, consideration also needs to be given to Policy WQN14(9)(e) to ensure provision is made to reserve water for future stockwater, and community and group drinking water supplies in an allocation block.<sup>25</sup>

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

Policy WQN17(7) ~~promotes~~ recognises the use of water audits to determine ways of increasing water-use efficiency. Having identified efficiency improvements, it is important that users are encouraged, and at times, required to implement them in order to achieve a high level of efficiency of use of water. Environment Canterbury sees merit in promoting and facilitating these initiatives, and when necessary, requiring the use of such a tool via resource consent conditions.<sup>26</sup>

Policy WQN17(X) promotes the capture and use of stormwater, and the re-use of water and greywater (as defined in Rule WQL10). This has the potential to increase the efficiency of water use by reducing the demand for water if what is taken and used is re-used, or in the case of stormwater, if it is captured and used. This will help meet Objective WQN5, and will help meet the requirements of the Local Government Act to give consideration to the re-use of greywater during the process of carrying out water and sanitary services assessments for communities.<sup>27</sup>

Policy WQN17(8), (9) and (10) recognise that significant water savings could be made by moving from inefficient open race systems to piped water supply schemes, or by reducing leakage from community and group drinking water, and stock water supply systems, and from the beds of irrigation canals.<sup>28</sup>

In the Ashburton River/Hakaterere catchment, over five cumecs of water is taken for stockwater when about 0.25 cumecs is required for actual stock drinking purposes. Evidence<sup>29</sup> presented to the Rangitata River Water Conservation Order hearings indicated that one cumec of water provides an increased farm gate income of \$4 million (in 2000/2001 dollars). This suggests that if four cumecs of water, taken but not used for stock drinking, was freed up for other irrigation use this would amount to additional farm gate earning of \$16 million per year. Losses can be exacerbated where water conveyance systems are poorly constructed and

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<sup>22</sup> WQN8.63

<sup>23</sup> WQN8.62

<sup>24</sup> WQN8.72

<sup>25</sup> WQN8.96

<sup>26</sup> WQN8.81

<sup>27</sup> WQN8.26

<sup>28</sup> WQN8.93, WQN8.95

<sup>29</sup> B Englebrecht, 2001; Statement of evidence of Robert Lester Englebrecht, to the Rangitata River Water Conservation Order hearings.

maintained. However, upgrading is expensive and may need to be done progressively. The adequacy of a system will be reviewed once a flow and allocation regime is included in Schedule WQN1. Necessary improvements will be required on a strategic basis at any water permit review or replacement stage but improvements will be encouraged throughout the duration of a water permit.

Some sections of stockwater races have important conservation values that may justify protection or offsetting habitat creation where a race is closed. For example, there are areas where Canterbury mudfish are established. There are other situations where the leakage from the stockwater races provides groundwater augmentation to the base flow of spring-fed streams and wetlands such as in the area of the Papanui Main Drain which discharges into the Heathcote River. When upgrading occurs it may be appropriate to supply these open race areas with water in order to protect these values, or alternately, create suitable sites for them elsewhere. It may also be possible to consider using alternative localised water sources such as groundwater from a bore to provide for strategic augmentation of stream flows or wetlands to ensure environmental values are protected.<sup>30</sup>

## **Methods**

Note: It is recommended that the amendments to the methods proposed in the Response to the Minute dated 31 March 2008 be adopted, as well as all other amendments already proposed in earlier officer reports.

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<sup>30</sup> WQN8.90

## RULE WQN15

### The using of water (in larger quantities)

#### Rule ~~WQN25~~ **WQN15** Using of water for irrigation – ~~permitted activity~~

| Activity  | Conditions   | Cross-ref.                          |
|---|--|-------------------------------------|
| <p>1. The using of water for irrigation that is not <u>classified permitted</u> by rules <u>WQN1, WQN2, WQN9 or WQN10 or WQN13</u>, and is not authorised via a resource consent under rules <u>WQN3 or WQN14</u>:</p> <p>(a) <u>on a property supplied entirely from private surface or groundwater takes that only supply that property; or</u></p> <p>(b) <u>on a property supplied entirely from an irrigation scheme where the irrigation scheme company has a water permit for the use of the water that is supplied by the scheme;</u></p> <p>is</p> <p><u>(a) a <b>restricted discretionary permitted activity</b> on a property supplied entirely from private surface or groundwater takes that only supply that property, provided the activity complies with all of the conditions in this rule;</u></p> <p><u>(b) a <b>discretionary activity</b> Where:</u></p> <p>(i) <u>the water is supplied by a principal water supplier or by an irrigation scheme, and all of conditions 3, 4 and 5 are complied with; or</u></p> <p>(ii) <u>the water supplied on a property is sourced from both private surface or groundwater takes, and an irrigation scheme; and all of conditions 3, 4 and 5 are complied with; or</u></p> <p>(iii) <u>on a property supplied entirely from private surface or groundwater takes that only supply that property, any one or more of conditions 1, 4, or 5 are not complied with;</u></p> <p><u>(c) a <b>non-complying activity</b> Where any one or more of conditions 2, 3 or 6 is are not complied with, the activity is a <b>non-complying activity</b> under Rule <del>WQN32</del>.</u></p> | <p>1. <u>For irrigation use provided for in activity 1(a) of this rule, the amount of water allocated for use shall not exceed be within the annual volume set derived using out in Schedule WQN9 for the intended use.</u></p> <p>2. <u>The irrigation water application rate shall not exceed that required to return the soil to field capacity.</u></p> <p>3. <u>There shall be no surface run-off of irrigation water from the property.</u></p> <p>4. <u>The irrigation of unproductive areas such as impermeable surfaces or roads shall be avoided.</u></p> <p>5. <u>The use shall not be within the Christchurch Groundwater Recharge Zone (refer Map Volume – Part 1 Planning Maps).</u></p> <p>2. <u>A minimum irrigation application efficiency of 80% shall be maintained if the activity commences for the first time after 1 January 2009.</u></p> <p>3. <u>The average annual concentration of nitrate-nitrogen in soil drainage water below the plant root zone, averaged across the whole property, shall not exceed 16 grams per cubic metre.</u></p> <p>4. <u>A management plan for the whole property, or a scheme plan where the area irrigated encompasses a number of properties, shall be prepared in accordance with Section 5.7.3.1 or 5.7.3.2 of Chapter 5.</u></p> <p>5. <u>There shall be no discharge of a contaminant onto or into land from an industrial or trade process (excluding animal effluent produced on the property).</u></p> <p>6. <u>The use shall not be within the Christchurch Groundwater Protection Zones 1 and 2 as identified in Map Volume – Part 1 Planning Maps.</u></p> | <p><u>Policies WQN14 WQN17.</u></p> |
| <p><u><b>Resource consent information requirements</b></u></p> <p><u>Any application for resource consent under this rule must meet the information requirements set out in 5.7.2, 5.7.3.1 and 5.7.3.2.</u></p>   | <p><u>For the purposes of Condition 2, in the case of border dyke irrigation that was established prior to the date of notification, field capacity is the soil moisture content after the soil has been fully saturated and allowed to drain freely under gravity for 24 hours.</u></p>   |                                     |
| <p><b>Notification and service</b></p>  | <p>Restriction of discretion</p>   |                                     |

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| <p><u>In accordance with section 94D(2) Resource Management Act 1991, an application for resource consent for a restricted discretionary activity required by this rule does not need to be notified, and in accordance with section 94D(3) of that Act, notice of such an application does not need to be served on those persons identified under section 94(1) of that Act.</u></p> | <p>Where an activity is classified as a <b>restricted discretionary activity</b>, Environment Canterbury has restricted its discretion to the following matters:</p> <ol style="list-style-type: none"> <li>1. <u>The volume and rate reasonably required for the intended uses(s).</u></li> <li>2. <u>The effectiveness and efficiency of methods of conveyance and application of water.</u></li> <li>3. <u>Measures (including nutrient budgets) to avoid or minimise the potential for contaminants to leach to surface water or groundwater.</u></li> <li>4. <u>The contents, implementation and review of a property management plan.</u></li> <li>5. <u>The monitoring of the activity and its effects.</u></li> </ol> <p style="text-align: center;"><b>Discretion</b></p>   |
| <p><b>Where rule applies</b></p> <p>This rule applies everywhere in the Canterbury Region <u>except where the activities are covered by rules in the Waitaki Catchment Water Allocation Regional Plan, excluding the Coastal Marine Area.</u></p>  | <p>Where an activity is classified as a <b>discretionary activity</b>, the discretion of Environment Canterbury is unlimited but will include the following matters:</p> <ol style="list-style-type: none"> <li>1. <u>The volume and rate reasonably required for the intended uses(s).</u></li> <li>2. <u>The effectiveness and efficiency of the methods of conveyance and application of the water.</u></li> <li>3. <u>The effects of irrigation on levels and flow of groundwater and downstream water bodies and drains, including any cumulative effects arising from the irrigation of the combination of properties supplied by an irrigation scheme.</u></li> <li>4. <u>The effects of any discharge of contaminants onto or into land that may be occurring in conjunction with the use of water for irrigation, in terms of the efficiency of use of the water and in terms of the potential for adverse effects on groundwater quality that may result from the combination of these activities.</u></li> <li>5. <u>The effects, including any cumulative effects, on groundwater and surface water quality and on associated instream values.</u></li> <li>6. <u>Measures (including nutrient budgets) to avoid or minimise the potential for contaminants to leach to surface or groundwater.</u></li> <li>7. <u>The contents, implementation and review of a property or scheme management plan.</u></li> <li>8. <u>The effect of micro-organisms on water for individuals, livestock and communities.</u></li> <li>9. <u>The monitoring of the activity and its effects.</u></li> <li>10. <u>The requirement for financial contributions or bonds.</u></li> <li>11. <u>Duration of consent.</u></li> </ol> |
| <p><u>Cross reference: This rule contributes to the implementation of Policies WQN14, WQN17, WQL4, WQL9 and WQL12</u></p>  |  |

## 5.7 Making resource consent applications and providing information

### 5.7.2 Form of application

Application for a resource consent or other authorisation contemplated within the the Proposed NRRP should be made in accordance with the procedures and forms established by the RMA and guidelines established by Environment Canterbury with respect to specific authorisations.

Applications for resource consent should be in accordance with section 88 and the Fourth Schedule of the RMA. Section 88 specifies the information that must be provided with a consent application. In particular, an assessment of any effects the activity may have on the environment is required. The Fourth Schedule describes the matters that should be included and considered in such an assessment of effects.

The information provided shall be in such detail as to correspond with the scale and significance of the actual and potential effects that the activity may have on the environment. In other words, if the environmental effects are likely to be minor, less detail will be required than if the effects could be significant or their extent is not known.

Environment Canterbury has prepared application forms and information booklets to assist applicants when preparing a consent application. Resource Consent Information Series Booklet 1 – Applying for a Resource Consent – describes how the application will be processed by Environment Canterbury. Other information booklets provide more specific guidance regarding information required for specific types of consent applications, for example taking of surface water and bores and groundwater.

The application forms, information booklets and fee schedules are available from your nearest Environment Canterbury office or from our customer services section by phoning 0800 EC INFO (0800 324 636). A list of consultants who may be able to help you prepare an assessment of the effects of the activity is also available.

### 5.7.3 Information to be provided for all resource consent applications

- (a) full name, postal address, home and business telephone numbers of the person or organisation to whom the consent is to be issued.
- (b) name, address and telephone number of the person or consultant who is fully conversant with all aspects of the consent application.
- (c) name and address for service of documents (if different from above).
- (d) a description of the activity, its nature, purpose and duration.
- (e) the location of the activity together with a site plan, legal description, and map references (topographical map 260 1:50,000).
- (x) advise whether the proposed activity is, or may be, located in an area covered by a Water Conservation Order, or an area where an application for a Water Conservation Order has been notified.<sup>31</sup>
- (f) a description of possible alternative locations or methods and the reasons for making the proposed choice.
- (g) the scale of the activity, including the size of the area required for the activity in hectares or square metres.
- (h) an assessment of any actual or potential effects of the activity on the environment.
- (i) a description of the measures to be undertaken to avoid, remedy or mitigate any adverse<sup>32</sup> effects on the environment.

<sup>31</sup> BLR1.26

<sup>32</sup> WQN13.3

- (j) a list of names and addresses of property owners or occupiers likely to be adversely affected by the activity.
- (k) an identification of those people adversely affected by the activity, any consultation undertaken, and any response to the views of those consulted. The extent of the consultation will depend on the type of activity proposed, its scale or location. These people might include:
  - (i) Te Runanga o Ngai Tahu and the appropriate papatipu runanga Māori;<sup>33</sup>
  - (ii) other Maori papatipu rūnanga;<sup>34</sup>
  - ~~(iii) Te Rūnanga o Ngāi Tahu;~~<sup>35</sup>
  - (iv) Department of Conservation;
  - (v) territorial authorities;
  - (vi) Fish and Game councils;
  - (vii) commercial user groups;
  - (viii) New Zealand Historic Places Trust;
  - (ix) recreation user groups;
  - (xx) conservation groups;<sup>36</sup>
  - (x) the community in general; and
- (l) a statement of all other resource consents or approvals that the applicant may require from Environment Canterbury or any other consent or approval authority to undertake this and every other activity associated with the proposal, and whether or not the applicant has applied for, or obtained, such consents or approval. Note that where other resource consents will be required in respect of the proposal to which the application relates, Environment Canterbury or any other consent or approval authority may require that these are all proceeded with at the same time.

#### 5.7.4 Specific information requirements

In addition to the general information requirements described in the above documents, the following particular information is required as indicated below, in order to audit the resource consent application or request for approval.

##### 5.7.4.1 *The taking, using, damming or diverting of surface water*

In addition to the general information outlined above, applications for the taking, use, damming or diversion of surface water must include the following information, where appropriate:

- (a) the proposed location of the point or points of abstraction, damming or diversion to an accuracy of 50 metres, and located on a topographical map from New Zealand Map Series 260 1:50,000 scale;<sup>37</sup>
- (b) a site map plan identifying, showing the location of:

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<sup>33</sup> WQN13.3

<sup>34</sup> WQN13.3

<sup>35</sup> WQN13.3

<sup>36</sup> WQN13.3

<sup>37</sup> WQN13.6

- (i) ~~the proposed point or points of abstraction (to an accuracy of 10 metres), damming or diversion, location of neighbouring (upstream and downstream) abstraction points; and location of~~
- (ii) the water body for which the activity is proposed in relation to springs, wetlands, drains, tributaries, streams and rivers; and
- (iv) the area to be irrigated and indicate its size in hectares, ~~if the water abstracted is to be used for irrigation, then the location of the area to be irrigated must also be shown;~~<sup>38</sup>
- (bc) a description of the proposed pumping schedule, including the following detail relating to each abstraction point: instantaneous maximum pump rate; the hours of pumping; proposed maximum return period weekly<sup>39</sup> volume; and proposed maximum seasonal volume and months of the year when abstraction is to occur;<sup>40</sup>
- (ed) if water is to be dammed, details of the maximum safe volume of water to be dammed. A site map should be provided showing the location of the dam and dammed water. In addition, the following information must also be included in the assessment of environmental effects provided with the application:
- (i) the design of the dam, including the dam dimensions, detail of the material the dam will be constructed out of, and the spillway capacity;
- (ii) an analysis of the geology of the area and whether there are any geological features that could affect the dam and result in it failing; ~~A dam-break analysis, undertaken by a suitably qualified professional, which includes detail of who would be affected by a dam-break and to what extent,~~
- (iii) details of how the dam is classified under the Building Act 2004 and regulations governing dams, including whether it will have a low, medium or high impact on people, property and the environment in the downstream area if the dam were to fail;
- (iv) a dam-break analysis for dams storing 20,000m<sup>3</sup> or more, and retaining three or more metres depth of water or other fluid;<sup>41</sup>
- (v) details of what on-going maintenance programme is proposed to be implemented during first filling and then on-going; and<sup>42</sup>
- (iii)vi)<sup>43</sup> details of the maximum safe quantity of water to be dammed and maximum rate/volume diverted. Details of the storage capacity sought, of the proposed flow regime and augmentation flows following damming;
- (de) if water is to be diverted, a description of whether the diversion is continuous or intermittent. If the diversion occurs on an intermittent basis, a description of the diversion schedule should be provided, including, the instantaneous rate of diversion, the hours per day the diversion will occur, and the number of days the diversion will occur;
- (ef) a description of the use to which the water is to be put, including a demonstration of the reasonable use of the water:

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<sup>38</sup> WQN13.6, WQN13.7

<sup>39</sup> WQN8.33

<sup>40</sup> WQN13.6

<sup>41</sup> WQN13.6

<sup>42</sup> WQN13.6

<sup>43</sup> WQN13.6

- (i) for irrigation use, this will need to consider the intended land-use activity, irrigation system being used, its system capacity and the design return period; and on-site physical factors such as soil water-holding capacity; and climatic factors such as effective irrigation season rainfall and <sup>44</sup>evapotranspiration. It will need to include details of other existing resource consents and permitted activities, to use surface and/or groundwater for irrigating land on the same property, and show that cumulatively, the exercise of all resource consents will be an efficient use of water;
  - (ii) for community and/or stockwater supply purposes, it will need to consider the proposed quantity of water per head of population and per hectare or stock unit supplied, potential growth in demand, method of conveyance and evidence that it is efficient (i.e. that excessive quantities are not leaked from the system), as well as detail of water shortage strategies;
  - (iii) for industrial uses, this will need to consider the product output per unit of water used, and include a water audit of the whole business. For guidance on this, obtain a copy from Environment Canterbury of guidelines that have been developed for auditing industrial water use;
- (fg) an assessment of the effect of the take, use, diversion and damming of surface water on other surface water resource users and owners of land upstream on a river or on the edge of the lake near an intake for a community drinking water supply. The techniques used to assess effects may include some or all of the following:
- (i) knowledge of the effects of existing surface water abstractions and hydraulically connected groundwater abstractions in the area;
  - (ii) a list of all surface water users or land owners, who may be adversely affected by the proposal. Describe any consultation with these people and any measures proposed to avoid remedy or mitigate adverse effects, including written approvals if these have been obtained. Environment Canterbury can provide copies of standard forms for recording of written approvals, if required, and can also provide a list of resource consent holders within the catchment. The effects of the proposal on permitted users should also be considered;
  - (iii) in the case of damming of surface water, specifically, consideration must be given to the effects of changing the way the river flows on recreational users such as fishers, canoeists and jet boaters, etc. Consideration must also be specifically given to the effect of the damming on downstream users (including permitted activities) – on whether they will have the same, better or less reliability of supply.
- (gh) An assessment of the effect of the take, use, diversion and damming on surface water flows and surface water quality, including:
- (i) a description of the water body from which water will be taken, used, diverted or dammed, including: low, average and maximum flow rates; variability of flow; seasonal fluctuations; proposed lake levels; flora and fauna values, recreational values and Tāngata whenua Ngai Tahu <sup>45</sup>values; other users of the resource; and water quality;
  - (ii) a description of the minimum flows and the allocation block that the applicant considers any take, damming or diversion will be limited by, or that may be affected by any damming;
  - (iii) details, specifically, of how damming may impact on aquatic species as a result of any change to river flow, including residual flows being released from the dam and

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<sup>44</sup> WQN8.33

<sup>45</sup> WQN13.6

- passage of fish; impacts on the geomorphology and hydrology of the river system; impacts on bed loading and coastal erosion;
- (iv) details to show how storage lake water quality will be maintained above required levels by avoiding and remedying problems such as:
- (1) nutrient and carbon enrichment from lake-bed soils and vegetation;
  - (2) nutrient enrichment from changing surrounding land uses;
  - (3) changes in thermal regimes in lakes;
  - (4) thermal stratification (layering);
  - (5) low oxygen concentrations and chemical changes in bottom layers;
  - (6) changes upon lake remixing;
  - (7) lake drawdown effects; and
  - (8) sedimentation, e.g. re-suspension of lake shore sediments.
- (v) details specifically of how the taking and use of surface water, when used for augmentation, may impact on groundwater. In particular, consideration must be given to the potential for incidental recharge to cause land drainage problems because of elevated groundwater levels, and the impact this may have for other land users, for example, land-based sewerage discharge systems;
- (vi) details of how the take, dam or diversion will be monitored and how the effects of these will be monitored and by whom;
- (vii) an assessment of any actual and potential effects that the activity may have on the environment, including any effects on:
- (1) aquatic ecosystems values;
  - (2) cultural and spiritual, including Ngai Tahu,<sup>46</sup> values;
  - (3) human use values, including recreational use values and food gathering;
  - (x) registered archaeological sites;<sup>47</sup>
  - (4) natural character, amenity and aesthetic values; and
  - (5) water quality.
- (i) if water is to be used for irrigation, an assessment of the effect on groundwater and surface water quality, including
- i. calculation of the average concentration of nitrate-nitrogen in the leachate below the plant root zone, averaged over the whole property; and
  - ii. any monitoring proposed, including location of monitoring bores and frequency of sampling; and
  - iii. for properties that are supplied by a private take (ie. not part of an irrigation scheme), preparation of a property management plan for the property, detailing as a minimum -
    - mitigation measures, best management practices and industry standards and guidelines that will be adopted to manage farm activities to ensure that the leaching of nitrate-nitrogen will be minimised, and if appropriate, will be reduced over time.

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<sup>46</sup> WQN13.6

<sup>47</sup> WQN13.5

- mitigation measures, best management practices and industry standards and guidelines that will be adopted to avoid and minimise the loss of other nutrients, sediment, and microbiological pathogens to surface and groundwater.
  - mitigation measures, irrigation industry best management practises (as set out in the code of practise), and irrigation design standards that will be adopted to avoid over-watering, watering unproductive areas and excessive losses via conveyance and application of water.
  - measures that will be undertaken to protect wetlands and waterways, including riparian margins.
  - proposed monitoring of water and soil quality indicators.
  - the records that will be kept to allow monitoring of the effectiveness of the management methods undertaken and compliance with the property management plan.<sup>48</sup>
- iv. for an irrigation scheme supplying water to a number of properties, preparation of a scheme management plan detailing as a minimum -
- how the matters listed in (iii) above will be managed across the scheme, including through the use of individual property plans for properties within the scheme.
  - compliance and enforcement procedures for water users to ensure that each property comply with individual property management plans and conditions of resource consent.
  - monitoring of surface and groundwater quality in the scheme area.<sup>49</sup>

#### **5.7.4.2 The taking and use of groundwater**

In addition to the general information outlined above, applications for the taking or use of groundwater must include the following information, where appropriate:

- (a) a description of the proposed location of the bore or bores from which the proposed abstraction is to occur, to an accuracy of 50 metres, and located on a topographical map from New Zealand Map Series 260 1:50,000 scale;
- (b) as well as specific detail for each individual bore from which it is proposed to abstract, including bore depth, screen depths and lengths, bore diameter, geological log, and water level information, also detail of the depth, length, width, orientation, and construction design of any associated gallery;
- (c) Also provide a report prepared by an appropriately qualified person to demonstrate compliance with conditions in rules WQL36 and WQL38;
- (d) A site plan map showing the location of: proposed abstraction bores (to an accuracy of plus or minus 10 metres);
- (i) the location of all other neighbouring bores;
  - (ii) and the location of any surface water bodies such as springs, wetlands, drains, streams, and rivers; and
  - (iii) if the water abstracted is to be used for irrigation, then the location of the area to be irrigated and indicate its size in hectares should also be shown; if the water abstracted is to be used for irrigation.<sup>50</sup>

<sup>48</sup> WQL13.40

<sup>49</sup> WQL13.122

- (be) a description of the proposed pumping schedule including the following detail relating to EACH bore it is proposed to abstract from – instantaneous maximum pump rate, proposed maximum return period weekly<sup>51</sup> volume and proposed maximum seasonal volume;
- (ef) a description of the use to which the water is to be put, including a demonstration of the reasonable use of water:
- (i) for irrigation use, it will need to consider the intended land-use activity, irrigation system being used, its system capacity and the design return period; and on-site physical factors such as soil water holding capacity; and climatic factors such as effective irrigation season rainfall and<sup>52</sup> evapotranspiration. It will need to include details of other existing resource consents (including permitted activities) to use surface and/or groundwater for irrigating land on the same property, and show that, cumulatively, the exercise of all resource consents will be an efficient use of water;
  - (ii) for public and/or stockwater supply purposes, it will need to consider the proposed quantity of water per head of population and/or per hectare or stock unit supplied, potential growth in demand, method of conveyance and evidence that excessive quantities are not leaked from the system, as well as detail of water shortage strategies;
  - (iii) for industrial uses, it will need to consider the product output per unit of water used, and include a water audit of the whole business. For guidance on this, obtain a copy from Environment Canterbury of guidelines that have been developed for auditing industrial water use;
- (dg) a description of the allocation block (see Policy WQN14) from which the applicant wishes to abstract water and what the applicant considers the abstraction will be limited by;
- (eh) an assessment of the effect of the take and use of groundwater on the groundwater resource. The techniques used to assess effects may include some or all of the following:
- (i) use of water balance estimates based on estimated recharge and through flow to show the proposal will not result in unacceptable stress to the groundwater resource;
  - (ii) use of quantitative tools such as numerical modelling to show the proposal will not result in unacceptable stress to the groundwater resource;
- (fi) an assessment of the effect of the take and use of water on other groundwater resource users. The techniques used assess effects may include some or all of the following:
- (i) knowledge of the effects of existing groundwater abstractions in the area, including the existing cumulative impacts on neighbouring well yields;
  - (ii) use of quantitative tools such as analytical equations or numerical modelling for estimating well interference impacts on neighbouring wells. It will need to be demonstrated that appropriate hydrogeological data is used (see Table 3 for the appropriate aquifer test information to use in analytical equations or numerical modelling). For guidance on using these techniques, obtain a copy from Environment Canterbury of guidelines that have been developed for auditing well interference effects;

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<sup>50</sup> WQN13.6

<sup>51</sup> WQN8.33

<sup>52</sup> WQN8.33

- (iii) a list of all the neighbouring well owners, with details of their wells, who may be potentially adversely affected by the proposal. Describe any consultation with these people, including written approvals if these have been obtained. Environment Canterbury can provide copies of standard forms for recording of written approvals, if required, and can also provide a list of the wells currently listed in the WELLS database operated by the council;
- (gj) an assessment of the effect of the take and use of groundwater for group or community drinking water supply on other groundwater resource users, including neighbouring land owners; and a risk assessment of the potential for contamination of the water supply. The assessment should include:
  - (i) the number of dwelling houses or other buildings, and the number of people to be served by the supply scheme to determine whether the use is for group or community drinking water supply; and
  - (ii) where the use is for community drinking water supply, the extent of and establishment of a community water supply protection zone for the protection of the quality of the water to be supplied from the take;
  - (iii) where the use is for community drinking water supply, a risk assessment of the potential for groundwater contamination to occur, and measures that will be taken to ensure the risk is minor;
  - (iv) consideration of the effects of establishing such a community water supply protection zone on neighbouring land owners and/or occupiers and any measures proposed to avoid remedy or mitigate adverse effects;
  - (v) in addition to (ii) and (iii) above, the following information is to be provided and used to determine the dimensions of any Community Water Supply Protection Zone:
    - (1) hydrogeology of the aquifer;
    - (2) assessment of the vulnerability of the groundwater to contamination;
    - (3) pumping rate of the well;
    - (4) population served by water supply;
    - (5) identification of existing potential sources of contaminants, their volume, concentration and pathways into groundwater;
    - (6) time of travel of identified contaminants to the well;
    - (7) mitigation methods, such as water treatment; and
    - (8) determination of risk, including modeling of credible worst-case risk scenarios;
- (hk) an assessment of the effect of the take and use of groundwater on surface water flows. The techniques used for assessing effects may include some or all of the following:
  - (i) a general description of the source water body from which water will be taken, including: low, average and maximum flow rates, variability of flow, seasonal fluctuations, flora and fauna values, recreational values, other users of the resource, water quality and ~~Tāngata Whenua~~ Ngai Tahu<sup>53</sup> values;
  - (ii) resource availability, including a description of the minimum levels or flows and the surface water allocation block (see Policy WQN14) which the hydraulically linked groundwater will be limited by;
  - (iii) use of quantitative tools such as analytical equations or numerical modelling for estimating stream depletion effects. It will need to be demonstrated that the

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<sup>53</sup> WQN13.6, WQN13.7

- appropriate hydrogeological data is used (see table below for the appropriate collection of field measurements to use in analytical equations or numerical modelling). For guidance on using these analytical equations and numerical modelling obtain a copy from Environment Canterbury of guidelines that have been developed for estimating stream depletion effects;
- (i) an assessment of the effect of the take and use of groundwater on saltwater intrusion – where the take is within 2000 metres of the coast. The techniques used to assess effects may include some or all of the following:
- (i) use of quantitative tools such as analytical equations or numerical modelling for estimating a change in the saltwater/freshwater interface at the coast. It will need to be demonstrated that appropriate hydrogeological data is used (see table below for the appropriate collection of filed measurements to use in analytical equations or numerical modelling). For guidance on using these analytical equations and numerical modelling, obtain a copy from Environment Canterbury of guidelines that have been developed for auditing for saltwater intrusion effects;
  - (ii) if a replacement take is sought, then information to show there have been no such adverse effects occurring in the past;
  - (iii) details, specifically, of how the taking and use of groundwater, when used for augmentation, may impact on groundwater in another area. In particular, consideration must be given to the potential for incidental recharge to cause land drainage problems because of elevated groundwater levels and the impact this may have for other land users, for example, land-based sewerage discharge systems.
- (m) if water is to be used for irrigation, an assessment of the effect on groundwater and surface water quality, including
- i. calculation of the average concentration of nitrate-nitrogen in the leachate below the plant root zone, averaged over the whole property; and
  - ii. any monitoring proposed, including location of monitoring bores and frequency of sampling; and
  - iii. for properties that are supplied by a private take (ie. not part of an irrigation scheme), preparation of a property management plan for the property, detailing as a minimum -  
mitigation measures, best management practices and industry standards and guidelines that will be adopted to manage farm activities to ensure that the leaching of nitrate-nitrogen will be minimised, and if appropriate, will be reduced over time.  
mitigation measures, best management practices and industry standards and guidelines that will be adopted to avoid and minimise the loss of other nutrients, sediment, and microbiological pathogens to surface and groundwater.  
mitigation measures, irrigation industry best management practises (as set out in the code of practise), and irrigation design standards that will be adopted to avoid over-watering, watering unproductive areas and excessive losses via conveyance and application of water.  
measures that will be undertaken to protect wetlands and waterways, including riparian margins.  
proposed monitoring of water and soil quality indicators.  
the records that will be kept to allow monitoring of the effectiveness of the management methods undertaken and compliance with the property management plan.

- iv. for an irrigation scheme supplying water to a number of properties, preparation of a scheme management plan detailing as a minimum -
- how the matters listed in (iii) above will be managed across the scheme, including through the use of individual property plans for properties within the scheme.
  - compliance and enforcement procedures for water users to ensure that each property comply with individual property management plans and conditions of resource consent.
  - monitoring of surface and groundwater quality in the scheme area.<sup>54</sup>

Many of the techniques that should be used to assess the different potential adverse effects will need to use hydrogeological data collected, based on field measurements carried out in the vicinity of the proposed activity. Outlined below in Table WQN3 is a list of the types of field measurements that may need to be undertaken to provide the appropriate data. As can be seen from the table, many field measurements will provide hydrogeological data that can be used to assess a number of different potential adverse effects.

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<sup>54</sup> WQL13.122