

EXPERT WITNESS CONFERENCE

Proposed Natural Resources Plan

Topic: Hydrology for the Lower Ruamahanga Groundwater Zone

Date: 17 November 2017

Witnesses present:

Name	For
Lindsay Daysh	AJ Barton, AJ Barton and Ongaha Farms Ltd, Wairarapa Water Users Society Inc
Paula Hammond	Greater Wellington Regional Council

Environment Court Practice Note:

It is confirmed that all present:

- Have read the Environment Court Practice Note 2014 Code of Conduct and agree to abide by it.

And in particular

- Have read the Environment Court Practice Note 2014 in respect of Appendix 3 – Protocol for Expert Witness Conferencing and agree to abide by it.

Background

In our JWS – Planning dated 13 November 2017 we indicated we would seek the advice of the technical experts on the wider implications of groundwater classifications, particularly the Category B classification and management outlined in Schedule P. Based on that advice we are in agreement on the following:

Points of agreement

We agree that Schedule P (Table 4.1 in the s42A report) should be amended as outlined on the following page. The recommended amendments are in [blue](#).

The proposed amendments seek to provide additional guidance as to when restrictions may (or may not) apply to Category B takes.

The table below summarises Schedule P/Table 4.1

Groundwater Category	Stream Depletion effect	Allocation	Restrictions at Minimum Flow
Category A	Direct	Surface water	50% restriction at minimum flow
Category B	Greater than 60%	Surface water and groundwater	0-50% restriction at minimum flow
Category B	Less than 60% but greater than 10L/sec	Surface water and groundwater	0-50% restriction at minimum flow where the cumulative Category B stream depletion effect of a sub catchment attributed to a local surface water body exceeds 10% of natural 7d MALF
Category B	Less than 60% and less than 10L/s	Groundwater	No restrictions
Category C	Low	Groundwater	No restrictions

Schedule P: Classifying and managing groundwater and surface water connectivity

Schedule P Table 4.1 ¹ : Classifying and managing groundwater and surface water connectivity		
Classification of connection between groundwater and surface water	General description of the magnitude of surface water depletion effect and aquifer groundwater characteristics	General management approach
<p><u>Direct connection (Category A) groundwater</u></p> <p>Groundwater directly connected to surface water</p>	<p>Stream depletion effects begin almost immediately after the commencement of groundwater abstraction and increase rapidly over subsequent days. Over the course of weeks to months the volume of groundwater pumped almost entirely represents flow depletion from local surface waters. Depletion effects dissipate quickly when pumping stops.</p> <p><u>Direct connection (Category A) groundwater</u> aquifers are generally shallow, highly permeable gravels that occur along the riparian margins of the main river systems. <u>Direct connection (Category A) groundwater</u> takes are expressed in litres/sec (L/sec) (based on a weekly average).</p> <p><u>Direct connection (Category A) groundwater</u> areas are generally shown in Figures 7.2, 7.5, 7.6, 7.7, 7.8 and 7.9 in chapter 7; Figures 8.1 and 8.2 in chapter 8; and Figure 10.1 and 10.2 in chapter 10.</p>	<p>Groundwater takes in aquifers directly connected to surface water are subject to the same core allocation and restrictions as surface water takes unless there is clear hydrogeological evidence demonstrating that surface water depletion effects from takes are less than expected.</p> <p><u>Allocation</u></p> <p><u>Direct connection (Category A) groundwater takes are allocated from surface water allocation for the relevant catchment and sub catchment unit.</u></p> <p><u>Restrictions</u></p> <p><u>Direct connection (Category A) groundwater takes and are subject to restrictions outlined in Policy P115 and Schedule R.</u></p> <p>Where a groundwater take is located in an area shown in the whitua chapters as Direct connection (Category A) groundwater and there is clear hydrogeological information demonstrating that surface water depletion effects from takes are less than expected, the take may be considered as High or Moderate connection (Category B) groundwater. Such clear new hydrogeological evidence may be advanced by a resource consent applicant seeking a new resource consent or an existing user amending an existing resource consent.</p> <p>Saltwater intrusion into an aquifer or the landward movement of the salt water/fresh water interface shall be prevented.</p>
<p><u>High connection (Category B) groundwater</u></p>	<p>Compared with takes in <u>Direct connection (Category A) groundwater</u>, the onset of stream depletion effects is less immediate and it often takes weeks rather than days for the effect to become significant. However, over the course of months the volume of groundwater pumped that is directly connected to surface water represents at least 60% flow depletion from local surface waters. Depletion effects dissipate more slowly than takes from <u>Direct connection (Category A) groundwater</u> when pumping</p>	<p>Category B groundwater aquifers that are directly connected to surface water are subject to the same core allocation and restrictions as surface water. Groundwater that is not directly connected to surface water is subject to separate groundwater core allocation. The allocation for individual takes at a location in category B groundwater is based on a pumping test that provides hydrogeological evidence demonstrating the effects of taking water on surface water. A pumping test is required by a resource consent applicant</p>

¹ Section 42A report: Water allocation Issue 2.2

Schedule P Table 4.1: Classifying and managing groundwater and surface water connectivity		
Classification of connection between groundwater and surface water	General description of the magnitude of surface water depletion effect and <u>aquifer groundwater</u> characteristics	General management approach
Groundwater not directly connected to surface water	<p>stops.</p> <p>High connection (Category B) groundwater considered to be: <u>available as surface water allocation</u> is expressed in L/sec (based on a weekly average). Category B groundwater that is directly connected to surface water is:</p> <p>(a) groundwater with a rate of take at the point of abstraction (based on weekly average) of greater than 5L/sec, and</p> <p>(b) groundwater which over the course of a pumping season represents a flow depletion from local surface waters of greater than 60% of the rate of take or great than 10L/sec. <u>takes with a stream depletion effect from local surface waters of greater than 60% of the rate of take OR a calculated maximum rate of stream depletion of greater than 10L/sec*. Stream depletion effect is calculated using an assessed pumping rate required to meet demand 9 out of every 10 years (90th percentile) over a 90 day maximum demand period.</u></p> <p>High connection (Category B) groundwater areas are generally shown in the <u>Whaitua chapters at the locations and depths described in Figures 7.2, 7.3, 7.6, 7.8 and 7.9 in chapter 7; Figures 8.1 and 8.2 in chapter 8; and Figure 10.1 and 10.2 in chapter 10. Table 7.5 in chapter 7, Table 8.3 in chapter 8 and Table 10.3 in chapter 10, Table 8.2 chapter 8 and Table 10.2 in chapter 10.</u></p> <p>The component of category B groundwater takes considered to not be directly connected to surface water is the balance of the amount assessed as being directly connected (i.e. up to 40%).</p>	<p>seeking a new resource consent or by an existing user with an existing resource consent seeking an increased amount of water.</p> <p>Due to the potential for category B groundwater aquifers to have a less direct effect on surface water than equivalent takes from category A areas, groundwater takes within category B with a weekly average abstraction rate less than 5 litres per second shall be managed solely as groundwater takes.</p> <p>Allocation</p> <p>High connection (Category B) groundwater is allocated from both surface and groundwater allocation amounts. The calculated stream depletion effect is included in the surface water allocation for the relevant sub catchment management unit, while the remainder is included in the groundwater allocation for the relevant sub catchment management unit**.</p> <p>Restrictions</p> <p>High connection (Category B) groundwater with:</p> <ul style="list-style-type: none"> • <u>A stream depletion effect of greater than 60% may be subject to restrictions outlined in Policy P115 and Schedule R.</u> • <u>A stream depletion effect of less than 60% but greater than 10L/sec may be subject to restrictions outlined in Policy P115 and Schedule R where the cumulative Category B stream depletion effect of a sub catchment attributed to a local surface water body exceeds 10% of natural 7d MALF</u> <p>The management approach for individual takes at a location in High Connection (Category B) groundwater will be derived from hydrogeological information that appropriately characterises the potential effects of taking groundwater on hydraulically connected surface water. Hydrogeological information will be required by a resource consent applicant seeking a new resource consent or by an existing user with an existing resource consent seeking an increased amount of water.</p> <p>Due to the potential for category B groundwater aquifers to have a less direct effect on surface water than equivalent takes from category A areas, groundwater takes within category B High Connection (Category B) groundwater with a weekly average abstraction rate less than 5 litres per second shall be managed solely as groundwater takes and are not subject to minimum flow restrictions.</p> <p>Saltwater intrusion into an aquifer or the landward movement of the salt water/fresh water interface shall be prevented.</p>

Schedule P Table 4.1: Classifying and managing groundwater and surface water connectivity		
Classification of connection between groundwater and surface water	General description of the magnitude of surface water depletion effect and <u>aquifer groundwater</u> characteristics	General management approach
<p><u>Moderate connection (Category B) groundwater</u></p>	<p>Compared with takes in <u>Direct connection (category A) groundwater</u>, the onset of stream depletion effects is less immediate and it often takes weeks rather than days for the effect to become significant. Depletion effects dissipate more slowly than takes from <u>Direct connection (category A) groundwater</u> when pumping stops.</p> <p><u>Moderate connection (Category B) groundwater</u> is considered to be:</p> <ul style="list-style-type: none"> (a) <u>groundwater takes with a weekly average rate of abstraction of 5L/sec or less, or</u> (b) <u>groundwater takes with stream depletion effect from local surface waters of less than 60% of the rate of take AND the calculated maximum rate of stream depletion of less than 10L/sec*. Stream depletion effect is calculated using an assessed pumping rate required to meet demand 9 out of every 10 years (90th percentile) over a 90 day maximum demand period.</u> <p><u>Moderate connection (Category B) groundwater</u> areas are generally shown in the <u>Whaitua chapters at the locations and depths described in Figures 7.2, 7.3, 7.6, 7.8 and 7.9 in chapter 7; Figures 8.1 and 8.2 in chapter 8; and Figure 10.1 and 10.2 in chapter 10. Table 7.5 in chapter 7, Table 8.3 in chapter 8 and Table 10.3 in chapter 10, Table 8.2 chapter 8 and Table 10.2 in chapter 10.</u></p>	<p><u>Allocation</u></p> <p><u>Moderate connection (Category B) groundwater</u> is allocated from the groundwater allocation for the relevant sub catchment management unit.</p> <p><u>Restrictions</u></p> <p><u>Moderate connection (Category B) groundwater</u> is not subject to restrictions outlined in Policy P115 and schedule R.</p> <p>The management approach for individual takes at a location in <u>Moderate connection (Category B) groundwater</u> will be derived from hydrogeological information that appropriately characterises the potential effects of taking groundwater on hydraulically connected surface water. Hydrogeological information will be required by a resource consent applicant seeking a new resource consent or by an existing user with an existing resource consent seeking an increased amount of water.</p>

Schedule P Table 4.1 ¹ : Classifying and managing groundwater and surface water connectivity		
Classification of connection between groundwater and surface water	General description of the magnitude of surface water depletion effect and aquifer groundwater characteristics	General management approach
Limited connection (Category C) groundwater	<p>Groundwater takes may contribute to stream flow depletion at a catchment scale over the course of a pumping season but effects are much less immediate and significant than for Direct connection (Category A) groundwater, High connection (Category B) groundwater and Moderate connection (Category B) groundwater takes.</p> <p>Aquifers-Groundwater with a limited degree of connection generally comprise low permeability geology and/or are the farthest removed from surface waters (e.g. deep confined aquifers).</p> <p>Limited connection (Category C) groundwater areas are generally shown in the Whaitua chapters at the locations and depths described in Figures 7.2-7.9 in chapter 7, Figures 8.1-8.2 in chapter 8, and Figure 10.1 in chapter 10.</p>	<p>Takes from category C groundwater are not subject to core allocation and restrictions that relate to surface water but rely on separate core allocation for groundwater in whaitua chapters 7 and 8.</p> <p>Allocation</p> <p>Limited connection (Category C) groundwater is allocated from the groundwater allocation for the relevant sub catchment management unit.</p> <p>Restrictions</p> <p>Limited connection (Category C) groundwater is not subject to restrictions outlined in Policy P115 and schedule R.</p> <p>Where a groundwater take is located in an area shown in the Whaitua chapters as Limited connection (Category C) groundwater and there is clear hydrogeological evidence demonstrating that surface water depletion effects from take is greater than expected, the take may be considered as High connection (Category B) groundwater.</p> <p>A pumping test is required by a resource consent applicant seeking a new resource consent or by an existing user with an existing resource consent seeking an increased amount of water.</p>

* For small streams in the **Kāpiti Whaitua**, if the stream depletion factor is less than 60%, a groundwater take is considered to have a **High connection** if the stream depletion effect is greater than:

- 10 L/sec in streams with a MALF greater than 100 L/sec, or
- 10% of MALF in streams with a MALF less than 100 L/sec

** In the **Hutt Whaitua**, the total groundwater allocated for a groundwater take is included in the **Lower Hutt groundwater catchment management unit**. In addition to this, the stream depletion effect (based on a stream depletion factor of 0.5) is included in the **Te Awa Kairangi / Hutt River catchment management unit**.

Process for the reclassification of groundwater take category

As part of the conference process we also sought to reach agreement on the approach for the reclassification of the groundwater category for a particular take. Unfortunately, in the time available, the parties have been unable to agree on an approach. The parties will provide briefs of evidence on this outstanding matter as directed in Minute #21 to the Hearings Advisor by 12noon on Monday 20 November 2017.

Signed:

Name	For	Date	Signed
Lindsay Daysh	AJ Barton, AJ Barton and Ongaha Farms Ltd, Wairarapa Water Users Society Inc	17 November 2017	
Paula Hammond	Greater Wellington Regional Council	17 November 2017	