

**Title:** Water allocation in Te Awarua-o-Porirua Whaitua

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# Water allocation in Te Awarua-o-Porirua Whaitua

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## 1. Purpose

To provide information to Te Awarua-o-Porirua Whaitua Committee (the Committee) to help identify preferences for setting limits for taking water and allocating water in the Te Awarua-o-Porirua Whaitua (the Whaitua). Any policy preferences the Committee arrives at now may be revised when freshwater objectives for water quality and quantity are considered in greater detail once results from the Collaborative Modelling Project (CMP) have been received and considered.

## 2. Introduction

Demand for water in the Whaitua is less of an issue than in other parts of the region such as the Ruamāhanga, Wellington and the Hutt Valley, and the Kāpiti Coast. In these whaitua managing competing water uses has been a priority for some time now. Limited demand for water in the Whaitua at the present time gives the Committee an opportunity to start with a clean slate. The Committee is not constrained by existing minimum flows and water uses especially as they are not contentious compared with other parts of the region. Key policy preferences to be addressed in the Whaitua for water allocation are minimum flow limits, water allocation limits, and the amount of water available on an individual's (property) as a permitted activity. Each of these policy areas is discussed below.

The proposed Natural Resources Plan (pNRP) includes provisions on all three key policy areas for water allocation. The pNRP uses "default" limits in the Whaitua for minimum flows and allocation. Default limits refer to limits that apply to all catchments across an identified area (the Whaitua) rather than using specific limits that apply to individual rivers. These are commonly used in areas of low water demand. Default limits are identified using a flow statistic such as the mean annual low flow (MALF). MALF is the average of the lowest flow measured in each year of record. Default limits are applied by giving them numerical values for each catchment in the Whaitua (e.g. in litres per second).

Community water supply accounts for moderate to high proportions of the amount of water taken in other whaitua in the region. This is not the case in Te Awarua-o-Porirua Whaitua where no water is taken and used for community water supply. Community water supply in the Whaitua comes from the Hutt, Wainuiomata and Orongorongo catchments.

## 3. Water quantity limits

### 3.1. Minimum flows

Minimum flows are the management flow below which all water takes from a river or stream must cease. Consequently, minimum flows are sometimes called "hands off" flows. A minimum flow is set in order to protect the values of a waterbody. Typically this flow is set to provide a certain amount of wetted river channel to protect the survival of an identified species of fish (e.g. tuna or banded kokopu or trout). It is important to note that the naturally occurring flow in a river will sometimes fall below the minimum flow. This is because in times of drought, the flow of the river will naturally continue to drop regardless of the amount of water that was taken out of it when the flow was higher.

The pNRP establishes default minimum flows for rivers in the Whaitua. Minimum flows are 90% of the MALF for rivers in the Whaitua. The default limit of 90% MALF was selected in the pNRP as

current best practice for setting minimum flows based on the proposed National Environment Standard (NES) for ecological flows and water levels (MfE 2008)<sup>1</sup>.

Snelder and Kerr (2017)<sup>2</sup> in their report to the Committee on water management units (WMUs) include some analysis of reliability of supply and effects on aquatic habitat when default minimum flows are 90% MALF. They estimate such default flows will result in some level of water restriction between 10% and 14% of the time and complete cessation of water takes between 6% and 9% of the time. Such levels of restriction are generally consistent with minimum flows being applied elsewhere in the region.

Snelder and Kerr also estimate that the default minimum flows will provide approximately 97-98% of the amount of habitat for long-fin tuna (eels) that would be available naturally at low flow (i.e. MALF) and 88-90% of the habitat for trout, which both represent a relatively high level of habitat protection compared to some other parts of the region (e.g. Ruamāhanga). This level of protection will be provided to sensitive native species as well. They also provide estimates of how both reliability of supply and the amount of instream habitat provided would change if higher or lower minimum flows were set instead of the default minimum flows. All this information can be used to help the Whaitua Committee assess whether the existing default minimum flows reflect an appropriate consideration of the balance between habitat provision and allowance for some water use. Once such an assessment has been made the Committee could choose to express freshwater objectives in terms of the percentage of habitat provided for identified species such as tuna, given the minimum flow and allocation limits chosen.

### 3.2. Allocation limits

Water allocation limits are the maximum amount of water that can be taken and used from rivers and directly linked groundwater in a catchment. The pNRP establishes default allocation limits in the Whaitua using the same criteria applied in all other whaitua in the region. The default allocation is 30% of the MALF. As for minimum flows, the default allocation applies the approach of the proposed NES on ecological flows and water levels.

Unlike many other catchments and sub-catchments in the region, rivers in the Whaitua are not fully-allocated. It means rivers in the Whaitua are generally not under the same degree of stress due to taking water from them as in some other places (e.g. Ruamāhanga). Table 1 gives examples of minimum flows and allocation limits for the largest rivers in the Whaitua.

**Table 1. Current minimum flows and allocation limits**

| River or stream    | Management point    | Minimum flow (L/sec) | Allocation limit L/sec |
|--------------------|---------------------|----------------------|------------------------|
| Porirua Stream     | Town centre         | 136                  | 45                     |
| Horokiri Stream    | Snodgrass           | 80                   | 27                     |
| Pauatahanui Stream | Gorge               | 86                   | 29                     |
| Duck Creek         | Bottom of catchment | 14                   | 4.5                    |

In the Porirua Whaitua there were eight resource consents for taking and using water when the pNRP was notified. These involve small or moderate amounts of water compared to relatively large

<sup>1</sup> Proposed National Environment Standard for Ecological flows and water levels. Published in March 2008 by the Ministry for the Environment. Publication No. 868

<sup>2</sup> [Defining Freshwater Management Units Te Awarua-o-Porirua](#). Ton Snelder & Tim Kerr, December 2016

water takes in other parts of the region (e.g. water takes for pasture irrigation). Since the pNRP was notified some new resource consents have been granted for the Transmission Gully roading project. These new takes are for testing aquifers (pumping tests); taking water from the Horikiri Stream, Pauatahanui Stream and Duck Creek for dust suppression; and taking groundwater (not directly connected to surface water) for dust suppression. The new water takes are all temporary and expire in March 2022 (i.e. they are for use during the roading project and it is not anticipated they will be needed beyond the construction period). They will not result in pNRP allocation limits being exceeded.

#### 4. Permitted water takes

The pNRP includes a general permitted activity rule for water takes. It allows 20m<sup>3</sup> of water per day to be taken without resource consent on a property greater than 20ha and 10m<sup>3</sup> per day to be taken on a property less than 20ha. Greater Wellington has no information for the Committee on how much water is currently being taken under the general permitted activity rule or what it is being used for. Anecdotally, it appears not many people are using the general permitted activity rule.

The take and use of water for domestic use and stock drinking is permitted under the Resource Management Act 1991 (RMA, s.14 (2)(b)). This means water for domestic use and stock drinking water are not controlled under the pNRP general permitted activity rule but are allowed to continue as of right, unless they can be shown to have an adverse effect on the environment. A recent report (Beca 2017)<sup>3</sup> on the amount of water taken in the Whaitua for stock and domestic use shows the actual amount of water used for these activities is a small proportion of the allocation limits. The report also estimated how much water could potentially be taken if the pNRP general permitted activity was used to its fullest possible extent. Potentially the amount of water that could be used under the general permitted activity rule is large (as proposed in the pNRP) for example, greater than the allocation limits for some of the main rivers. A discussion of material in the report is in Appendix 1 and a link to the full report is provided in Footnote 3.

The pNRP general permitted activity rule for taking water does not require permitted water takes to cease or reduce at minimum flows as required for consented activities. Requiring permitted activity water users to cease their takes at minimum flows is recommended; this would ensure equity with consented users and better protect instream values. However, water for reasonable domestic use and stock drinking water should continue below minimum flows to ensure the health needs of people and animals are met.

Regional plans across the country that have been reviewed since the National Policy Statement for Freshwater Management (2014) came into force have demonstrated a trend towards reducing the amount of water available through general permitted activity water takes. The amount now permitted in Canterbury from rivers the size of those in the Whaitua is 2m<sup>3</sup> per day. The recently adopted Auckland Plan permits 5m<sup>3</sup> to be taken per day. The Horizons One Plan has a higher amount of 15m<sup>3</sup> per day. The Ruamāhanga Whaitua Committee is currently considering a permitted activity amount of 5m<sup>3</sup> per day.

Water allocation of 10m<sup>3</sup> – 20m<sup>3</sup> per day in the pNRP is too permissive in the Porirua Whaitua and it is appropriate for the Committee to review the general permitted activity rule and decide how much

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<sup>3</sup> [Beca 2017, Modelling permitted surface water use in Te Awarua-o-Porirua Whaitua](#)

water is allowed to be taken without resource consent on properties in the Whaitua. A general permitted activity amount of 5m<sup>3</sup> per day per property is recommended.

## 5. Recommendations

1. The existing minimum flows and water allocation limits in the Te Awarua-o-Porirua Whaitua chapter of the proposed Natural Resources Plan are supported.
2. The proposed Natural Resources Plan general permitted activity rule is too permissive and should be replaced with a rule allowing up to 5m<sup>3</sup> of water to be taken and used per day on a property, with the condition that water is not taken below minimum river flows.

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*22/8/2017*

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## Appendix 1: Discussion of Beca 2017

BECA (2017) has carried out a desktop exercise to estimate the current level of water used for domestic supply, stock drinking and the maximum permitted takes allowed under the rules in the proposed Natural Resources Plan.

The results of this work are summarised for some catchments alongside flow monitoring data and the 'default' limits that are calculated for these sites (Table A1). This aims to help you get a sense of the scale of water taken for 'reasonable stock and domestic use', that available to be taken under the 'permitted take' rules and how that sits within the flow of the rivers.

**Table A1 – Summary of estimates for catchments with flow gauging sites. All units are litres per second (L/s)**

|                           | Desktop estimates         |                     |                                    | Proposed Natural Resources Plan rules |                               | Latest observations |
|---------------------------|---------------------------|---------------------|------------------------------------|---------------------------------------|-------------------------------|---------------------|
|                           | Estimated residential use | Estimated stock use | Maximum permitted use <sup>1</sup> | Minimum flow <sup>2</sup>             | Allocation limit <sup>3</sup> | 7 day MALF          |
| <b>Porirua Stream</b>     | 1.21                      | 0.50                | 39.47                              | 136                                   | 45                            | 151                 |
| <b>Horokiri Stream</b>    | 1.42                      | 0.74                | 30.32                              | 80                                    | 27                            | 89                  |
| <b>Pauatahanui Stream</b> | 1.98                      | 1.50                | 47.57                              | 86                                    | 29                            | 96                  |
| <b>Duck Creek</b>         | 0.02                      | 0.82                | 4.86                               | 14                                    | 4.5                           | 15                  |

<sup>1</sup> Calculated if all properties took the maximum amount allowed within the rule. This allows for 20m<sup>3</sup> per day for properties greater than 20 hectares, and 10m<sup>3</sup> per day for properties less than 20 hectares.

<sup>2</sup> Based on 90% of 7 day MALF

<sup>3</sup> Based on 30% of 7 day MALF.

Table A1 demonstrates that 'reasonable domestic and stock use' estimates are a small fraction of what could theoretically be taken if everyone took the amount permitted within the rules of the proposed Natural Resources Plan. There is no clear pattern whether domestic or stock drinking is the greater amount of estimated use in a particular catchment.

Results for other catchments show similar patterns of estimated 'reasonable domestic and stock use' being a relatively small fraction of 'maximum permitted use', and no clear pattern of domestic or stock being the dominant use in a particular catchment.

The relevant flow statistics and derived 'default' management constraints show that the estimated 'reasonable domestic and stock use' amounts are relatively small and the maximum permitted use is large in relation to these.

### Anticipated scenario changes

The Committee's scenarios are expecting an increase in rural lifestyle property, particularly in the Pauatahanui and Horokiri catchments. The estimated population in those catchments will increase by around 50% from current and the number of lifestyle properties will approximately double.

These changes might increase the amount of ‘reasonable domestic use’ by a small amount and increase the amount of maximum permitted take by a larger amount. For example, if a 10 hectare property with 3 residents on it were subdivided into 5 2 hectare lots with 15 residents, the ‘residential use’ would increase from 600 litres per day (<0.01 l/s) to 4,500 litres per day (0.05 l/s) and the permitted take amount would increase from 10,000 litres per day (0.12 l/s) to 50,000 litres per day (0.58 l/s).

### Alternative options for permitted takes

The information from the desktop study has also allowed us to explore what some alternative approaches to setting ‘permitted takes’ might mean for the maximum permitted use. These are again presented for those catchments with flow monitoring sites (Table A2). The alternatives presented are for rates of 10, 5, 2 or 1 cubic metres per day for any sized property that is not connected to the reticulated water supply.

**Table A2 – Estimates of alternative permitted take volumes. All units are litres per second (L/s)**

|                           | Current option |                  |                       | Alternative options |             |              |              |
|---------------------------|----------------|------------------|-----------------------|---------------------|-------------|--------------|--------------|
|                           | Minimum flow   | Allocation limit | Maximum permitted use | 10m3 per day        | 5m3 per day | 2 m3 per day | 1 m3 per day |
| <b>Porirua Stream</b>     | 136            | 45               | 39                    | 36                  | 18          | 7            | 1            |
| <b>Horokiri Stream</b>    | 80             | 27               | 30                    | 26                  | 13          | 5            | 4            |
| <b>Pauatahanui Stream</b> | 86             | 29               | 48                    | 43                  | 22          | 9            | 3            |
| <b>Duck Creek</b>         | 14             | 4.5              | 5                     | 4                   | 2           | 0.9          | 0.4          |

### Technical notes

The BECA report is a desktop exercise and has made certain assumptions to estimate usage.

One of the first steps in the methodology is to estimate and distribute the numbers of people and livestock across properties in each catchment. This has made use of a number of datasets and assumptions. We have compared these estimates with other estimates of population and livestock numbers, including the population estimates from social impact assessment prepared for the CMP and the livestock numbers reported in the Statistics New Zealand Agricultural Production Survey for Porirua City. The BECA report estimates around 10% less residential population than the social impact assessment report for similar areas and estimates around 10-15% more livestock.

The next step is to assume usage rates for people and various livestock. These rates are from previous studies of this nature:

- People – 300 litres per day
- Beef – 45 litres per day
- Sheep and deer – 7 litres per day

The catchment totals are for if everyone took all water from the streams. This is unlikely to be the case, for example, some proportion of houses are likely to have rain tanks, so the use is likely to be

somewhat lower than estimated here. We do not have information to estimate the proportion of dwellings likely to use rain tanks versus surface water.

The amount of water estimated for permitted takes is a theoretical maximum if all properties drew the full amount. Anecdotally, this is unlikely to be the case and the use is likely to be significantly lower than the maximum, however, we do not have information to quantify this.