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Report To: Rangitaiki River Forum
Meeting Date: 02 October 2013
Report From: Helen Creagh, Consents Manager

Upper Rangitaiki River Catchment Water Consents

Executive Summary

There are 43 water take and use consents in the Upper Rangitaiki River Catchment, with the majority being for agricultural irrigation.

75% of the water take and use consents are from surface water and 14 of the consents do not expire until 2026.

According to the Bay of Plenty Regional Water and Land Plan, current water take consents can continue (re-consented) or be transferred where there is no increase in rate or volume of take, new consents can be granted where flow is over 160 cubic metres per second in the Rangitaiki River.

The Regional Council are using the best current scientific methods to assess the efficient use of the water resource when determining resource allocation.

1 Recommendations

That the Rangitaiki River Forum under its delegated authority:

- 1 Receives the report, Upper Rangitaiki River Catchment Water Consents.**

2 Purpose

The purpose of this report is to:

- Summarise the water take and use consents in the Upper Rangitaiki River Catchment (above the Matahina Dam);
- To outline policy 69 of the Regional Water and Land Plan;
- To outline Regional Council's new efficiency model tool; and
- To outline standard monitoring conditions for water take and use consents.

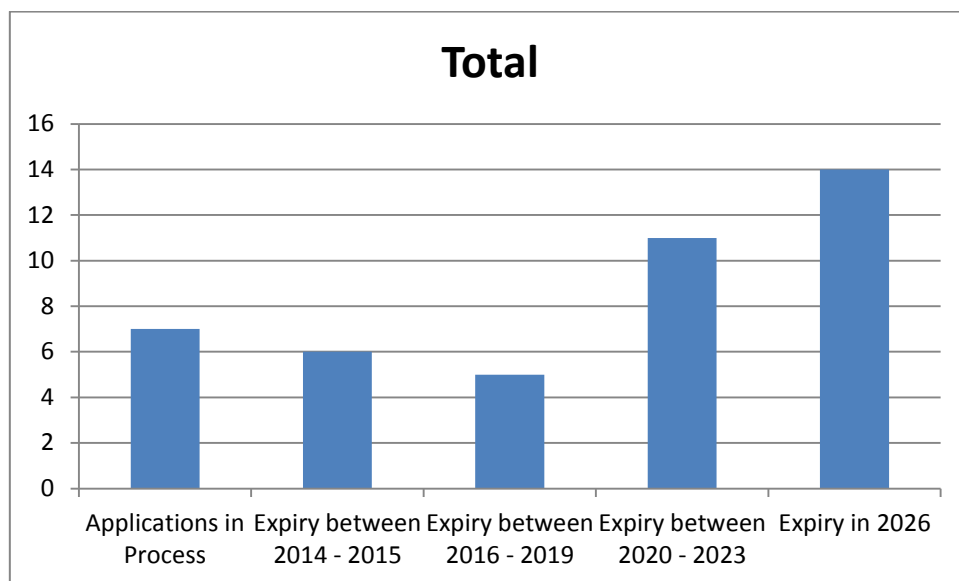
3 Current Consents

There are a total of 43 water take and use consents in the Upper Rangitaiki River Catchment. The table and graphs below show the details of these consents. Appendix 1-3 show the details in graphs 1-3 in map form.

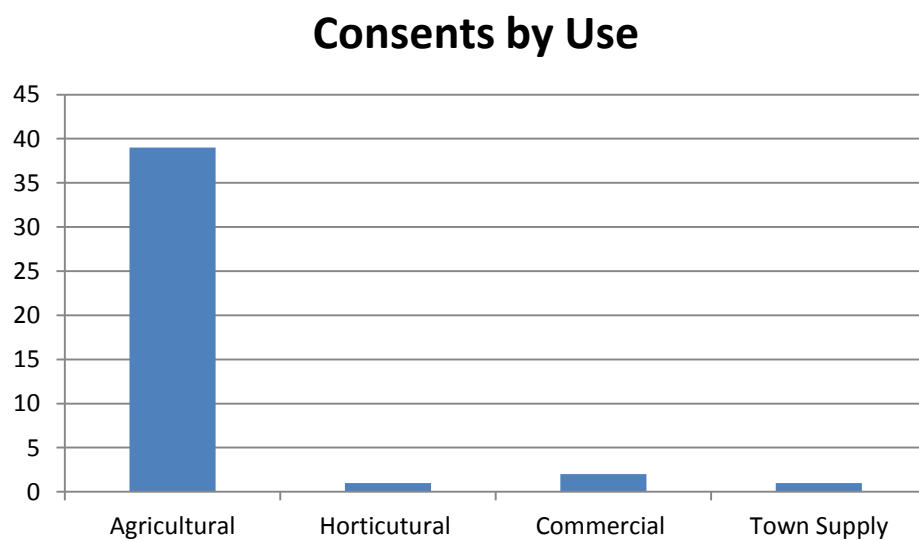
Table 1

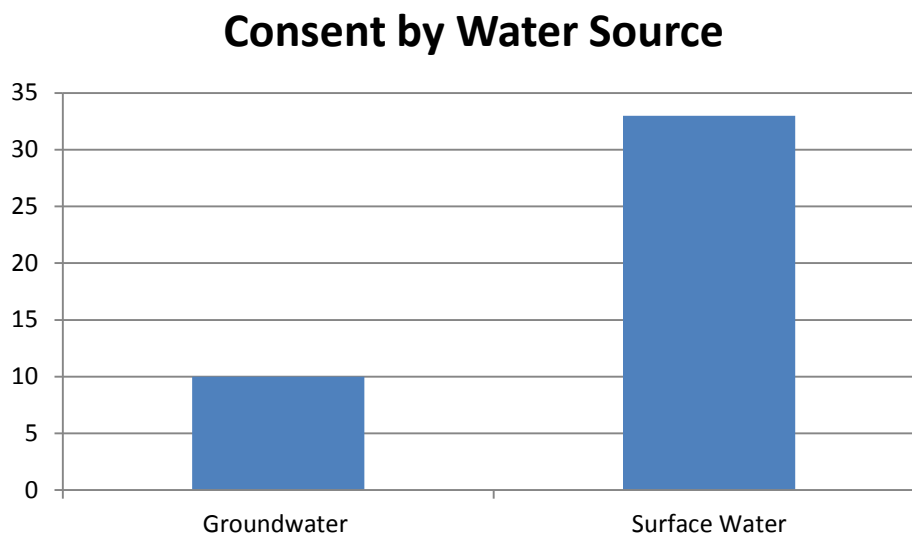
	Agricultural	Horticultural	Commercial	Town Supply	Total
Expiry in 2026	10	1	2	1	14
Expiry between 2020 - 2023	11	0	0	0	11
Expiry between 2016 - 2019	5	0	0	0	5
Expiry between 2014 - 2015	6	0	0	0	6
Applications in Process	7	0	0	0	7
Totals	39	1	2	1	43

Graph 1



Graph 2



Graph 3

The majority of consents are for irrigation on dairy farms, with only 4 out of the 43 current consents not for this purpose. The fourteen (14) consents which expire in 2026 were granted before the Resource Management Act (RMA) came into effect in 1991. The remainder of consents expire over the next ten (10) years. 75% of the consents are to take water from a stream or river.

4 Regional Water and Land Plan

Policy 69 (copy in Appendix 4) of the Regional Water and Land Plan outlines the policy for water allocation on surface water bodies where there are existing Hydroelectric Power Schemes. The Wheao, Aniwhenua and Matahina dams are included in policy 69 on the Rangitaiki River.

In summary policy 69 stipulates the following when assessing water take and use consents in these areas:

- Existing (current) surface and ground water take consents will be allowed to continue;
- Transfer of existing water take consents is provided for;
- There is to be no increase in rate or volume of water taken from ground or surface water in the catchment;
- Consent for water harvesting can be granted when flow over the Matahina dam is over 160 cubic metres per second (160,000 litres per second).

5 Efficiency Assessment

All water take consent applications are assessed for the efficient use of the resource. The Regional Council has been working with Plant and Food Research NZ, developing a programme using the most up to date scientific data.

This program is called SPASMO-IR (Soil Plant Atmosphere System Model – Irrigation), which uses the following parameters to assess the water required for irrigation, for a specified crop on a specified property.

Parameters:

- Climate data (data from NIWA climate stations from 1972 – 2012);
- Soils on the property (from national soils data base);
- Crop (Pasture, kiwifruit, Avocados);
- Efficiency of the irrigation system;
- Probability.

The applicant's location, soil type, crop and proposed water take volumes are entered in to SPASMO – IR and an efficiency value of 80% and a probability of 90% are used.

80% efficiency is used for the design of irrigations systems as a minimum requirement for varying types of sprinkler system¹. A 90% probability is used which means that nine out of every ten years, the irrigation amount will be sufficient to meet the crop's requirements.

This is an example of a consent recently granted in Te Puke for a 28 ha Gold Kiwifruit orchard.

SPASMO-IR assessment

The nearest climate station is SN31056, which is 6.5 km away and is representative of the environmental conditions experienced at the applicant's location. The crop type is Kiwifruit gold. The soil on the property is Te Puke Sandy Loam.

¹ Irrigation New Zealand, Irrigation Code of Practice and Irrigation Design Standards, March 2007.

Assessment mm/hectare

SPASMO IRRIGATION ALLOCATION TOOL - Version 3.0

Input data

Consent number Irrigated area [ha]

Water source ☒ Groundwater ☐ Surface water Weekly Volume [mm]

Climate station ETo [mm/yr] Rainfall [mm/yr]

Lat Long Western Bay Of Plenty District

Crop type Crop T [mm/yr] Soil E [mm/yr]

Soil Type	Area (ha)	TAW (mm)	PAW (mm)
Soil Type 1 <input type="text" value="TePuke_sandy_loam"/>	<input type="text" value="28"/>	<input type="text" value="259"/>	<input type="text" value="144"/>
Soil Type 2 <input type="text"/>	<input type="text" value="0.0"/>	<input type="text"/>	<input type="text"/>
Soil Type 3 <input type="text"/>	<input type="text" value="0.0"/>	<input type="text"/>	<input type="text"/>

Seasonal Irrigation requirements [mm/y]

Oct	Nov	Dec	Jan	Feb	Mar
<input type="text" value="27"/>	<input type="text" value="94"/>	<input type="text" value="105"/>	<input type="text" value="156"/>	<input type="text" value="136"/>	<input type="text" value="73"/>
Apr	May	Jun	Jul	Aug	Sep
<input type="text" value="32"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>

Maximum Weekly Irrigation requirement [mm/week]

Maximum Annual Irrigation requirement [mm/y]

Output Controls


Probability level [%]


Application efficiency

Change output units
☐ [m3]
☒ [mm]

Disclaimer: While every effort has been made to ensure scientific rigour in the development of this tool, neither Bay of Plenty Regional Council nor the Plant and Food Research Institute Ltd, or their staff or Directors, accept responsibility or liability for the outcomes of the software nor to the uses for which the outcomes will be put

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Assessment volume for Area

SPASMO IRRIGATION ALLOCATION TOOL - Version 3.0

Input data

Consent number Irrigated area [ha]

Water source ☒ Groundwater ☐ Surface water

Weekly Volume [m3]

Climate station ETo [mm/yr] Rainfall [mm/yr]

Lat Long Western Bay Of Plenty District

Crop type Crop T [mm/yr] Soil E [mm/yr]

Soil Type 1	Area (ha)	TAW (mm)	PAW (mm)
<input type="text" value="TePuke_sandy_loam"/>	<input type="text" value="28"/>	<input type="text" value="259"/>	<input type="text" value="144"/>
Soil Type 2	Area (ha)	TAW (mm)	PAW (mm)
<input type="text"/>	<input type="text" value="0.0"/>	<input type="text"/>	<input type="text"/>
Soil Type 3	Area (ha)	TAW (mm)	PAW (mm)
<input type="text"/>	<input type="text" value="0.0"/>	<input type="text"/>	<input type="text"/>

Seasonal Irrigation requirements [m3/mon]

Oct	Nov	Dec	Jan	Feb	Mar
<input type="text" value="7580"/>	<input type="text" value="26365"/>	<input type="text" value="29507"/>	<input type="text" value="43850"/>	<input type="text" value="38129"/>	<input type="text" value="20698"/>
Apr	May	Jun	Jul	Aug	Sep
<input type="text" value="9053"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>

Maximum Weekly Irrigation requirement [m3/week]

Maximum Annual Irrigation requirement [m3/y]

Output Controls

Probability level [%]


Application efficiency


Change output units ☒ [m3] ☐ [mm]

Disclaimer: While every effort has been made to ensure scientific rigour in the development of this tool, neither Bay of Plenty Regional Council nor the Plant and Food Research Institute Ltd, or their staff or Directors, accept responsibility or liability for the outcomes of the software nor to the uses for which the outcomes will be put

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The use of SPASMO – IR allows the Regional Council to more accurately allocate water on a scientific basis and provides for efficient use of the water resource. This is more efficient compared to past methods which did not restrict annual allocation of water from a resource.

6 Standard Monitoring Conditions

Appendix 5 shows the water use monitoring conditions included in consent conditions for all new water take and use consents granted. The conditions require a water meter to be installed which is accurate, for daily water use to be recorded and the data supplied to the Regional Council on a monthly basis. This allows the Regional Council to understand the true amount of water being taken and used from water catchments.

Scott Mahupuku
Consents Officer

for Consents Manager

24 September 2013

APPENDIX 1

Map 1 Water Takes By Expiry Date



Map 1: Consents by Expiry Date

Upper Rangitaiki Water Take Consents

GIS-467331-1
Printed: 24/09/2013

Consent Expiry Date

- 2014 - 2015 ● 2020 - 2023 ● 2024 - 2026



APPENDIX 2

Map 2 Water Takes By Water Use



APPENDIX 3

Map 3 Water Takes By Water Source



Map 3: Consents by Water Source
Upper Rangitaiki Water Take Consents

Consent Water Source
● Groundwater



APPENDIX 4

Bay of Plenty Regional Water and Land Plan policy 69

Bay of Plenty Regional Water and Land Plan

Policy 69

To manage water allocation on surface water bodies where there are existing Hydroelectric Power Schemes listed in Schedule 11 in accordance with the following, until resource consents for the existing Hydroelectric Power Schemes come in for replacement:

Table 14 – Water Allocation on Surface Water bodies with Hydroelectric Power Schemes

	Hydroelectric Power Scheme as listed in Schedule 11	Water Allocation Management
(a)	Kaimai	<p>(i) Upstream of the:</p> <ul style="list-style-type: none"> • McLaren Falls Dam on the Wairoa River, including Mangakarengorengo River and Tributaries, Opuiaki River and tributaries (including Ngatuhua, Awakotuku and Mangaonui Streams), Mangapapa River and tributaries; and • Dam and intake structure on the Omanawa River; and • Dam on the Ruakaka Stream; and • Points on Tributary streams 1, 2 and 3 of the Wairoa River where they intersect the Ruahihi Canal, <p>water allocation held by existing consent holders (other than the power scheme owner) will be recognised until the consent expires.</p> <p>(ii) There is no more surface water available for allocation from the following areas:</p> <ul style="list-style-type: none"> • Upstream of the McLarens Falls Dam on the Wairoa River, including Mangakarengorengo River and tributaries, Opuiaki River and tributaries (including Ngatuhua, Awakotuku and Mangaonui Streams), Mangapapa River and tributaries; • Upstream of the dam and intake structure on the Omanawa River; • Upstream of the dam on the Ruakaka Stream; • Upstream of the points on tributary streams 1, 2 and 3 of the Wairoa River where they intersect the Ruahihi Canal; <p>unless the water flow in the rivers and streams are above the levels allocated to the power scheme owner.</p> <p>(iii) On the Wairoa River between the McLarens Falls Dam and the Ruahihi Power Station, surface water will be allocated in accordance with Policy 66(a). Any water released from the dam above the required discharge flow is available for reallocation under Policy 66(b) while fully accounting for recreational use between the McLaren Falls Dam and the State Highway 29 Bridge, and where the proposed users recognise that the additional flow is subject to the operating regime used by the hydroelectric power scheme owner.</p> <p>(iv) On the:</p> <ul style="list-style-type: none"> • Wairoa River downstream of the Ruahihi Power Station; • Omanawa River downstream of the dam and intake structure; • Ruakaka Stream downstream of the dam; • Mangakarengorengo River between the diversion structure and McLarens Falls Dam; • Opuiaki River and tributaries (including Ngatuhua, Awakotuku and Mangaonui Streams) between the diversion structures and McLarens Falls Dam; • Mangapapa River between the diversion structure and McLarens Falls Dam; <p>surface water will be allocated in accordance with Policy 66(a).</p>

	Hydroelectric Power Scheme as listed in Schedule 11	Water Allocation Management
		Any water released from the scheme or dam is available for allocation under Policy 66(b) where the proposed users recognise that the additional flow is subject to the operating regime used by the hydroelectric power scheme owner.
(b)	Wheao	<p>(i) Upstream of the:</p> <ul style="list-style-type: none"> • Rangitaiki Intake structure on the Rangitaiki River; and • Wheao Intake structure on the Wheao River; and • Flaxy Dam on Flaxy Creek, <p>water allocation held by existing consent holders (other than the power scheme owner) will be recognised until the consent expires.</p> <p>(ii) There is no more surface water, or groundwater connected to surface water bodies, available for allocation from the following areas:</p> <ul style="list-style-type: none"> • Rangitaiki River and tributaries above the Rangitaiki Intake structure; • Wheao River and tributaries above the Wheao Intake structure; • Flaxy Creek and tributaries above the Flaxy Dam; <p>Unless the river flow into Lake Matahina is greater than 160 cubic metres per second (160,000 litres per second).</p>
(c)	Aniwhenua	<p>(i) Upstream of the Aniwhenua dam, water allocation held by existing consent holders (other than the power scheme owner) will be recognised until the consent expires.</p> <p>(ii) There is no more surface water or groundwater connected to surface water bodies, available for allocation from the Rangitaiki River and tributaries above the Aniwhenua Dam unless the river flow into Lake Matahina is greater than 160 cubic metres per second (160,000 litres per second).</p>
(d)	Matahina	<p>(i) Upstream of the Matahina dam, water allocation held by existing consent holders will be recognised until the consent expires.</p> <p>(ii) There is no more surface water or groundwater connected to surface water bodies, available for allocation from the Rangitaiki River and tributaries above the Matahina Dam unless the river flow into Lake Matahina is greater than 160 cubic metres per second (160,000 per second).</p> <p>(iii) Water downstream of the Matahina dam will be allocated in accordance with policy 66(b) where the proposed users recognise that the additional flow is subject to the operating regime used by the hydroelectric power scheme owner.</p>
(e)	Karaponga	<p>(i) Upstream of the Karaponga dam, water allocation held by existing consent holders (other than the hydroelectric power scheme owner) will be recognised until the consent expires.</p> <p>(ii) There is no more surface water available for allocation from the Karaponga Stream and tributaries above the Karaponga dam.</p> <p>(iii) Water downstream of the Karaponga dam will be allocated in accordance with Policy 66(a). Any additional water released from the dam above the required discharge flow from the dam is available for allocation under Policy 66(b) where the proposed users recognise that the additional flow is subject to the operating regime used by the hydroelectric power scheme owner.</p>

Note:

- Existing consented surface water and shallow groundwater takes, and transfers of such consents in the areas specified in Policy 69 will be allowed to continue. However, there will be no increase in the rate or volume of surface water and shallow groundwater allocated upstream of the Hydroelectric Power Schemes listed in Policy 69, except for water harvesting where river flows are greater than the levels already allocated to the Hydroelectric Power Scheme.

APPENDIX 5

Water use monitor conditions

1 Water Use Monitoring

- 1.1 The consent holder shall install a water meter on the bore head prior to the exercise of this consent. The water meter shall:
- (a) meet the Resource Management (Measuring and Reporting of Water Takes) Regulations 2010 (see Advice Note 8);
 - (b) be installed and maintained in accordance with manufacturer's specifications, and to the satisfaction of the Bay of Plenty Regional Council;
 - (c) be installed at a location that will ensure the entire water take is measured;
 - (d) be sealed and as tamper-proof as practicable;
 - (e) be suited to the qualities of the water it is measuring (such as temperature, algae content and sediment content);
 - (f) be able to be fitted with a recording device; and
 - (g) be able to measure both cumulative water abstraction and the instantaneous rate of take to an accuracy of $\pm 5\%$.
- 1.2 The water meters shall be verified by a suitably qualified operator within the first year of the consent being granted. Verification by a suitably qualified operator must also be performed at least every five years thereafter, or as requested by the Chief Executive of the Regional Council or delegate. Within one month of verification being undertaken, the consent holder shall provide appropriate evidence of calibration to the Regional Council (see Advice Note 1).
- 1.3 All practicable measures shall be taken to ensure that the water meters and recording device are fully functional at all times. All malfunctions of the water meters shall be reported to the Bay of Plenty Regional Council within 24 hours of observation and appropriate repairs undertaken as soon as practicable following observation of malfunction (see Advice Note 1).
- 1.4 Staff of the Regional Council shall be allowed access to the water meters for the purpose of compliance monitoring.
- 1.5 The consent holder shall keep a daily record for each well of the following information:
- Hours pumped;
 - Abstraction rate (litres per second);
 - Quantity of water taken (cubic metres per day);
 - Purpose of the water take; and
 - If no water is taken, the volume shall show zero (0) cubic metres.
- Such records shall be available for inspection by Regional Council staff.
- 1.6 Unless otherwise stated in writing by the Chief Executive of the Bay of Plenty Regional Council or delegate, electronic copies of the water records required by condition 6.5 shall be sent to the Regional Council by the tenth day of each month (or next working day if it falls on the weekend) for the preceding month, for the duration of this consent, in a format specified by the Regional Council.
- 1.7 The consent holder shall ensure that no later than 31 July of every year for the duration of the consent that the Bay of Plenty Regional Council has been sent a complete record of all criteria required by 6.5 for the period between 1 July and 30 June of the preceding year.

