

11 October 2022

[REDACTED]

Sent via email to: [REDACTED]

Dear [REDACTED]

#### REQUEST FOR OFFICIAL INFORMATION –RELEASE OF INFORMATION

We refer to your official information request dated 12 September 2022. You requested the answers to the following questions from the Queenstown Lakes District Council (QLDC):

- Please supply the information requested within the attached document with this request - “New Zealand urban water pricing” under the Local Government Official Information and Meetings Act (LGOIMA).
- This document outlines the rationale for our research project and details our specific requests for the data and information required to conduct this work.

Water Supply	<ul style="list-style-type: none"><li>• Type and number of water sources used, for example storage dams, river extraction, groundwater aquifers etc.</li><li>• Number of households serviced from each source</li><li>• Population serviced from each source</li><li>• Volume of water available/produced at each source</li><li>• The fixed costs of water supplied per meter cubed or per litre</li><li>• The variable and/or marginal costs of water supplied per meter cubed or per litre and any details on how these are calculated</li><li>• Storage capacity where storage is used</li><li>• The proportion of recycled water (if any)</li><li>• The proportion of leakage if any (loss in transit from suppliers to water consumers)</li></ul>
Water Demand	<ul style="list-style-type: none"><li>• Volume of water consumption from each source for household, industry, and commercial use</li><li>• Number of households using water tanks and retention tanks</li><li>• Information on the dates and restrictions imposed on households during any recent periods of low supply or drought (especially how much water restrictions could reduce the consumption)</li><li>• Information on how much water demand varies between drought years and wet years</li></ul>

<p>Metering</p>	<ul style="list-style-type: none"> <li>• Have water meters been installed for all water users?</li> <li>• Are water meters in use for all water users?</li> <li>• Have smart meters been installed for any water users, how many, and are there any plans for installing smart meters in the near future?</li> </ul>
<p>Water charges and pricing</p>	<ul style="list-style-type: none"> <li>• How are water charges structured? <ul style="list-style-type: none"> <li>○ No charge</li> <li>○ Flat rate or charge</li> <li>○ Volumetric pricing (price per unit)</li> <li>○ Dynamic or scarcity pricing (price per unit changes based on available supply)</li> <li>○ A combination of the above (for example, volumetric charging only for use in excess of a specified amount)</li> </ul> </li> <li>• Details on fixed and variable charges for water users, and whether these differ for household and commercial water use</li> <li>• Details on whether a separate charge is used for water coming in and water going out</li> <li>• When was water pricing introduced?</li> <li>• Information on the rationale for introducing pricing (or the rationale for not using pricing) the goals of water service provision, and the goal of water pricing</li> <li>• Who sets the water pricing? Is long run marginal cost (LRMC) pricing being used?</li> <li>• The number of water users in each pricing scheme (if there are more than one)</li> <li>• Volume of water consumption under each pricing scheme</li> <li>• Do household, commercial, and industry water users pay different prices per unit of water? If so, what are these prices?</li> </ul>
<p>General institutional conditions</p>	<ul style="list-style-type: none"> <li>• Information on any incentives in place for households to collect rainwater</li> <li>• Information on any financial assistance for low-income households</li> <li>• Information on any co-governance considerations, such as whether there is engagement and input from local iwi in the decision-making process of water pricing</li> <li>• Evidence of monitoring and enforcement in cases where metering is not present</li> <li>• Example document of a bill sent to households and commercial water users</li> </ul>

## QLDC response

Please see our response below:

### WATER SUPPLY

Water Supply	<ul style="list-style-type: none"><li>• Type and number of water sources used, for example storage dams, river extraction, groundwater aquifers etc. <i>-Tabulated below</i></li><li>• Number of households serviced from each source <i>-Tabulated below</i></li><li>• Population serviced from each source <i>- Tabulated below</i></li><li>• Volume of water available/produced at each source <i>-Tabulated below</i></li><li>• The fixed costs of water supplied per meter cubed or per litre.</li><li>• The variable and/or marginal costs of water supplied per meter cubed or per litre and any details on how these are calculated.</li><li>• Storage capacity where storage is used <i>-Tabulated below</i></li><li>• The proportion of recycled water (if any) <i>-No water is recycled.</i></li><li>• The proportion of leakage if any (loss in transit from suppliers to water consumers) <i>- Tabulated in demand section below</i></li></ul>
--------------	---

**Table 1: Type and number of water sources used**

Scheme	Water Source and Intakes	2020/21 Annual Water Abstraction (ML)	2021 Pipe length (km) Asset Value (2021 LTP)	Pipe Condition 75 <sup>th</sup> tile Age / Condition rating <sup>1</sup>	Demand Units <sup>2</sup>
Queenstown	Lake Wakatipu – Surface Water	4,843	205 km \$86 million	36 years 3.2	11,733
Wanaka	Lake Wanaka – Surface Water	3,519	258 km \$87 million	22 years 1.9	7,878
Arrowtown	Bore – Groundwater	988	41 km \$11.4 million	45 years 3.5	1,665
Lake Hayes Water	Bore – Groundwater	319	62km (length includes Lake Hayes Estate)	19 years 1.0	514
Shotover Country	Bore – Groundwater	698	23km \$34 million (incl. LHW)	8 years 0.3	1,983
Hawea	Bore – Groundwater	479	34km \$13 million	20 years 1.7	1,018
Arthurs Point	Bore – Groundwater	191	12km \$5.7 million	19 years 1.0	593
Glenorchy	Bore - Groundwater	206	11km \$3.7 million	26 years 2.2	282
Luggate	Bore - Groundwater	94	9km \$3.3 million	26 years 2.3	255
		<b>11,337</b>	<b>655km \$244 million</b>	<b>26 years 2.3</b>	<b>25,921</b>

<sup>1</sup> The pipe condition ratings and age are based on the number of pipe records and have not been adjusted for the length of each pipe. As at 2021.

<sup>2</sup> Demand units are the number of connections and adds the additional Pans (as per Council's rating methodology) and the Units titled apartments/hotels that sit under a parent property. Typically, residential demand units are the same as the number of residential properties/SUIPs (and the same for commercial). For accommodation properties the number of demand units is often greater than the number of SUIPs, for example each hotel room in a hotel property is considered a separate demand unit. The demand assumptions in the water demand forecasts were based on the demand units.



Schemes	Usually resident population	Peak day visitors	Total peak day population	Peak day visitors as % of peak day population	Average day visitors	Total average day population	Average day visitors as % of average day population
Queenstown	14,660	23,010	37,670	61%	8,890	23,550	38%
Wanaka	12,080	11,700	23,770	49%	2,900	14,980	19%
Shotover Country	5,480	2,520	8,000	32%	440	5,920	7%
Arrowtown	3,290	3,060	6,350	48%	780	4,070	19%
Hawea	1,720	1,330	3,060	44%	260	1,980	13%
Arthurs Point	1,410	1,400	2,810	50%	470	1,880	25%
Glenorchy	380	650	1,030	63%	240	620	38%
Luggate	600	340	950	36%	60	660	9%
Lake Hayes Water	400	350	750	47%	70	460	14%
<b>Totals</b>	<b>40,020</b>	<b>44,370</b>	<b>84,390</b>	<b>53%</b>	<b>14,110</b>	<b>54,130</b>	<b>26%</b>

Table 2: Estimated 2021 usually resident population and visitors for each scheme

Scheme	Combined built storage capacity (m <sup>3</sup> )	Combined operating capacity (m <sup>3</sup> )	Annual average demand 2020/21 (m <sup>3</sup> /day)	Peak day demand 2020/21 (m <sup>3</sup> /day)	Peak day ratio 2020/21
Arrowtown	1,450	1,305	2,706	4,305	1.6
Arthurs Point	1,020	918	523	1,128	2.2
Glenorchy	90	81	564	975	1.7
Hawea	1,040	936	1,311	3,145	2.4
Luggate	200	180	257	588	2.3
Lake Hayes Water	585	527	829	1,728	2.1
Shotover Country	1,000	900	1,912	5,625	2.9
Queenstown	17,452	15,707	13,268	19,065	1.4
Wanaka	5,698	5,128	9,244	25,080	2.7

Table 3 Current reservoir storage capacities by scheme 2021

## WATER DEMAND

Water Demand	<ul style="list-style-type: none"><li>• Volume of water consumption from each source for household, industry, and commercial use.<ul style="list-style-type: none"><li>- <i>QLDC has limited data on demand by land use, as water metering is not in place. Some metering trials have taken place in small parts of Queenstown in order to gain an understand of typical use. These assumptions have been used to determine residential and non-residential use in the water balance table below.</i></li></ul></li><li>• Number of households using water tanks and retention tanks.<ul style="list-style-type: none"><li>- <i>This is not recorded as they would be privately owned.</i></li></ul></li><li>• Information on the dates and restrictions imposed on households during any recent periods of low supply or drought (especially how much water restrictions could reduce the consumption).<ul style="list-style-type: none"><li>- <i>No recent or frequent water restrictions.</i></li></ul></li><li>• Information on how much water demand varies between drought years and wet years.<ul style="list-style-type: none"><li>- <i>Graphed below.</i></li></ul></li></ul>
--------------	--





	Supply Area	Units	Arrowtown (excl Millbrook)	Arthurs Point	Glenorchy	Hawea	Lake Hayes	Luggate	Shotover Country	Queenstown	Wanaka
	Unauthorised Consumption (0.1% of Water Supplied)	m <sup>3</sup> for Period	828	191	206	479	319	94	698	4,843	3,519
	Customer Meter Under-registration (2.0% of Billed Consumption)	m <sup>3</sup> for Period	11,104	3,315	2,175	7,011	4,170	1,439	9,512	75,549	63,588
	Apparent Losses		11,932	3,506	2,381	7,490	4,489	1,533	10,210	80,392	67,108
	<b>Real Losses</b>										
	Current Annual Real Losses (CARL)	m <sup>3</sup> for Period	256,791	20,614	93,818	118,344	104,211	20,212	208,885	961,039	255,340
	Unavoidable Annual Real Losses (UARL)	m <sup>3</sup> /annum	43,949	20,943	6,327	39,887	30,296	9,211	42,263	320,390	232,499
	Infrastructure Leakage Index (ILI)		5.8	1.0	14.8	3.0	3.2	2.2	4.9	3.0	1.1
	Leakage Band		C	A	D	B	B	B	C	B	A
	TOTAL	Billed									
	Unbilled Authorised Consumption	Unbilled									
	Apparent Losses	Apparent Losses									
	Current Annual Real Losses (CARL)	Current Annual Real Losses (CARL)									
	Total Production	litres/conn /day	1,352	877	1,980	1,282	2,003	976	964	1,127	1,217
	Share of Production										
	Residential Consumption	%	46%	60%	38%	54%	56%	73%	61%	41%	55%
	Non-Residential Consumption	%	18%	27%	11%	17%	0%	0%	7%	36%	35%
	Losses	%	33%	13%	47%	27%	35%	24%	32%	22%	10%

## Dry years

The 2017/18 summer was the driest summer over the past eight years, with NZ Drought Index values in the "Drought" level. The past three summers have only briefly been categorised as dry. The annual demand profile for the Queenstown scheme below for the same three years shows the impact of a dry year has on overall demand and seasonal demand.

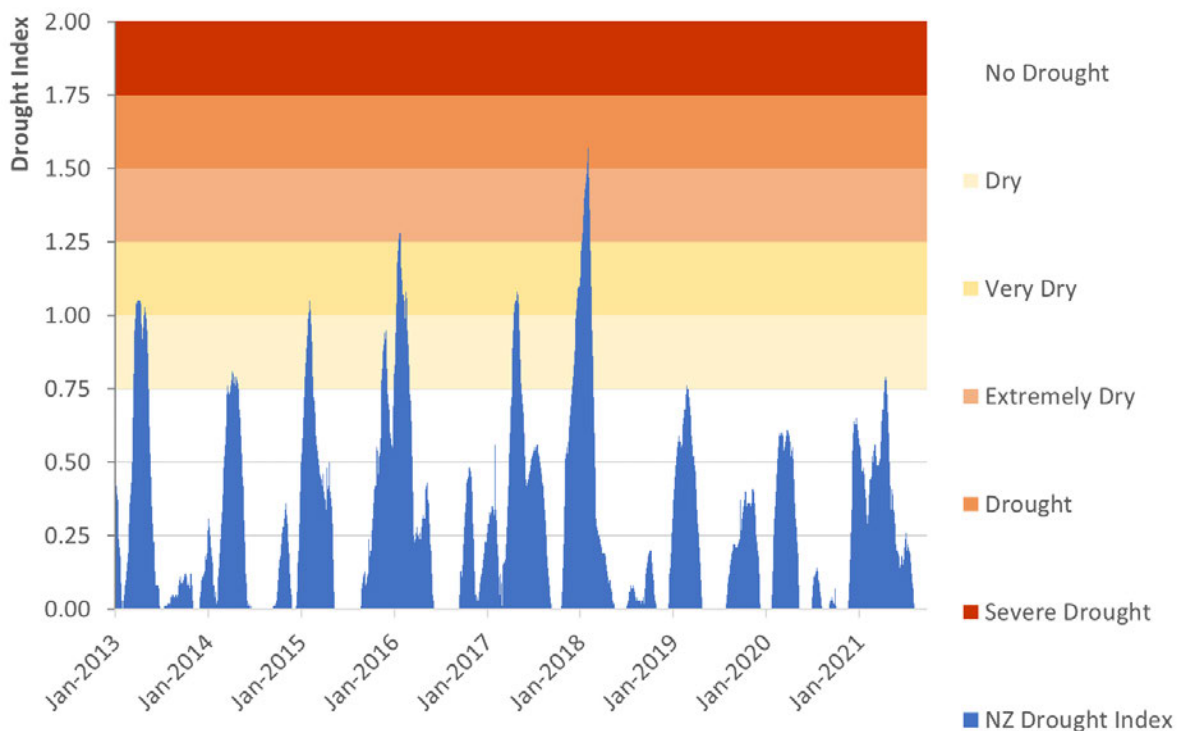
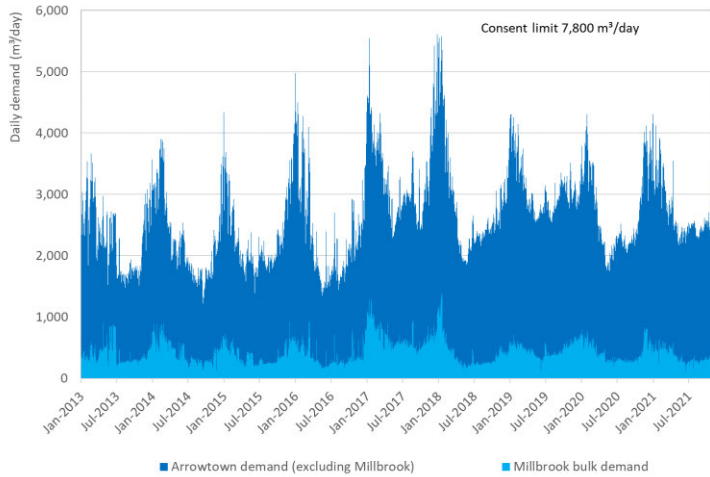
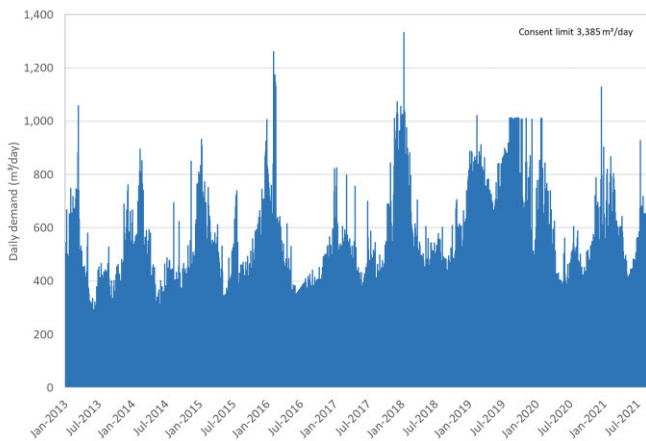


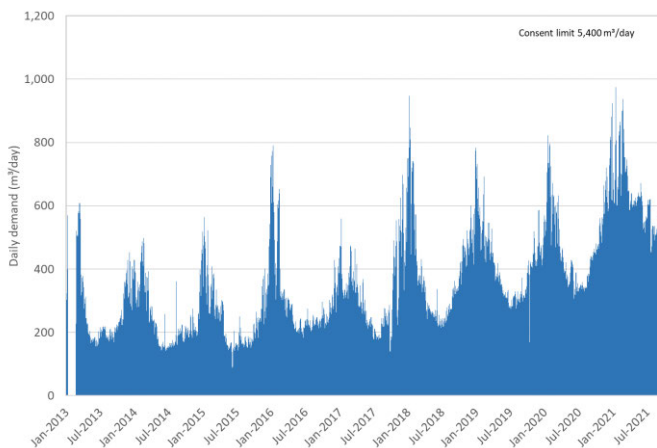
Figure 1 Queenstown Lakes District New Zealand Drought Index from 2013 to 2021



**Figure 2: Arrowtown water abstraction from 2013 to 2021**



**Figure 3: Arthurs Point water abstraction from 2013 to 2021**

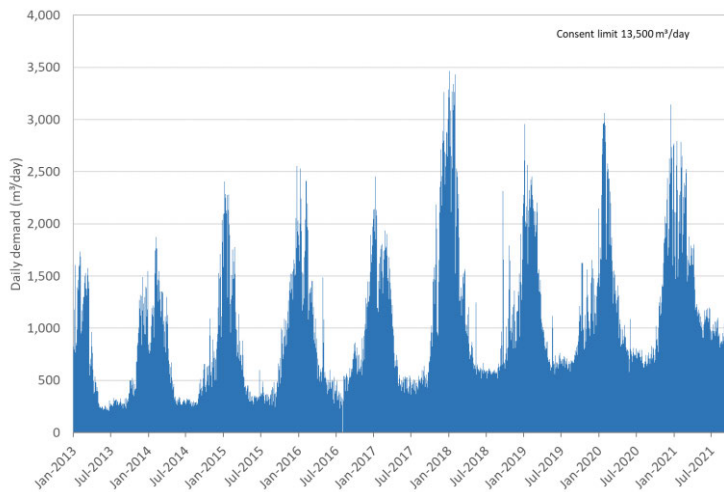


**Figure 4: Glenorchy water abstraction from 2013 to 2021**

The combined daily Arrowtown abstraction (from bore and well) is shown in Figure 2, along with the daily demand from the bulk connection to Millbrook resort. The graph shows that Millbrook is a significant customer with higher summer than winter demands due to irrigation. Millbrook typically represents about 15% to 20% of the Arrowtown abstraction on an annual average basis, and up to 30% to 35% daily.

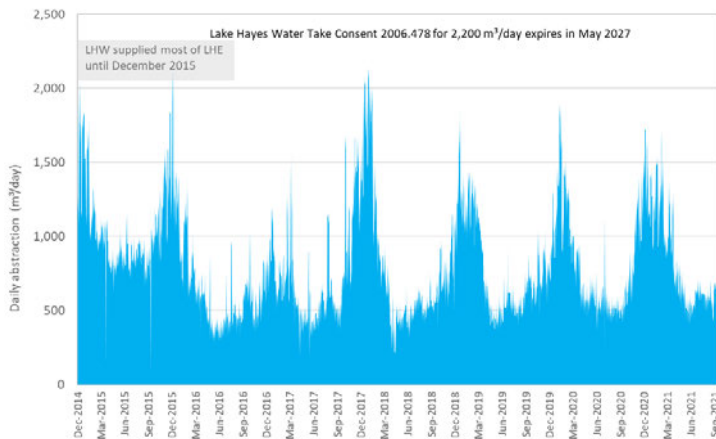
The historical daily abstraction from the Arthurs Point bore is shown in Figure 3 through to September 2021. Seasonal changes in demand are evident on the graph, with the highest peak summer demands occurring during the hot and dry summers of 2015/16 and 2017/18. The smaller peaks that occur in winter could be due to visitors for the ski season. The winter of 2019 had unusually high demands followed by the winter of 2021.

The historical daily abstraction from the Glenorchy bore is shown in **Figure 4**. Seasonal changes in demand are evident on the graph, with the highest peak summer demands occurring during the hot and dry summers of 2015/16 and 2017/18, as well as the most recent 2020/21 summer. The baseline winter demands have increased year-on-year from 2018 to 2021 which could be due to leakage and/or growth.



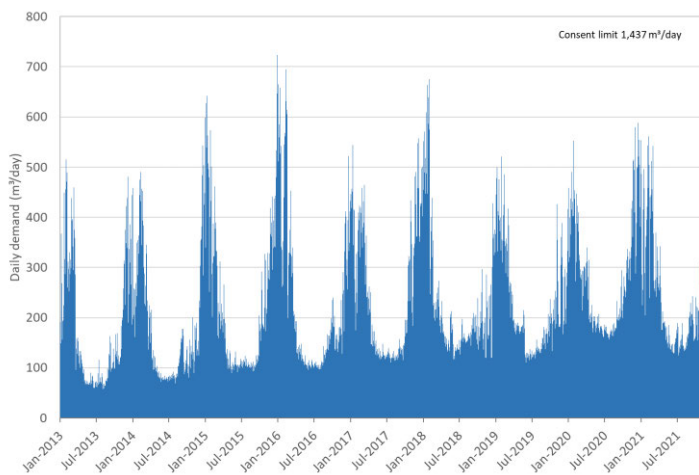
**Figure 5: Hawea combined water abstraction from 2013 to 2021**

The historical daily abstraction from the Hawea bores is shown in **Figure 5** through to May 2017. Seasonal changes in demand are evident on the graph, with the highest demands occurring during summer. Hawea shows a higher ratio of summer to winter demands than most of the other schemes.



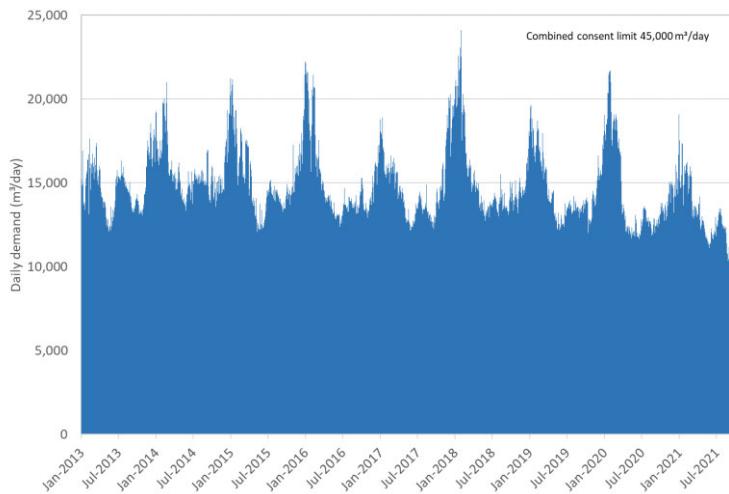
**Figure 6: Lake Hayes bore water abstraction from 2014 to 2021**

The historical daily abstraction from the Lake Hayes Water bore (supplying the area around Lake Hayes) is shown in **Figure 6**. The Lake Hayes Water scheme includes some very large rural and commercial customers, with several customers having an annual average demand over 10 m<sup>3</sup>/day. The graph clearly shows the additional supply provided to LHE up until December 2015. The downturn in international tourists since March 2020 has had little impact on the water demands in this scheme.



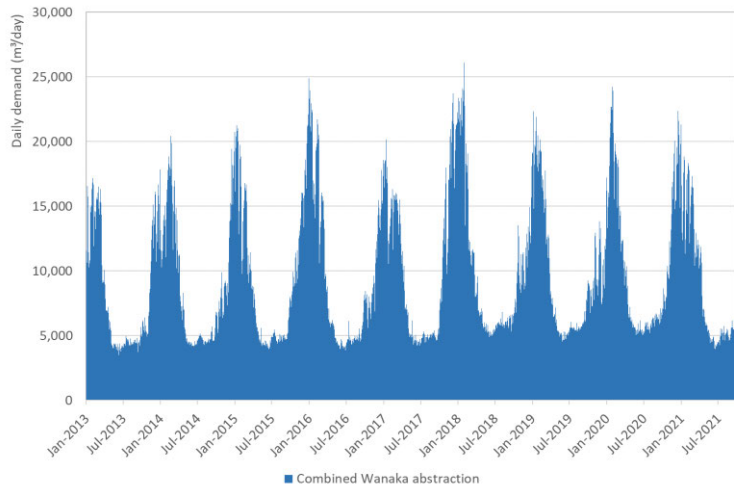
**Figure 7: Luggate combined water abstraction from 2013 to 2021**

The historical daily abstraction from the Luggate bores is shown in **Figure 7**. Seasonal changes in demand are evident on the graph, with the highest demands occurring during the hot and dry summers of 2015/16 and 2017/18. Luggate shows a higher ratio of summer to winter demands than most of the other schemes which indicates higher outdoor water use in summer. Winter demands appear to also be increasing year-on-year.



**Figure 8: Queenstown combined water abstraction from 2013 to 2021**

The combined historical daily abstraction from the Queenstown intakes is shown in **Figure 8** through to May 2017. Queenstown has the lowest ratio of summer to winter demands than any of the other schemes. This could be due to leakage, but high commercial demand and year-round visitors is also expected to be a significant cause. The baseline winter demand appears to show a slight decreasing trend.



**Figure 9: Wanaka combined water abstraction from 2013 to 2021**

The combined historical daily abstraction from the Wanaka intakes is shown in **Figure 9**. Wanaka has a high ratio of summer to winter demands which indicates significant outdoor use in summer. The lack of international visitors since March 2020 does not appear to have had much impact on Wanaka's daily demands apart from lower peak demands mid-week during the summer.

## METERING

Metering	<ul style="list-style-type: none"><li>• Have water meters been installed for all water users?<ul style="list-style-type: none"><li>- <i>Not universally. The only water meters installed that may be used to monitor usage are at Luggate and Lake Hayes.</i></li></ul></li><li>• Are water meters in use for all water users?<ul style="list-style-type: none"><li>- <i>No.</i></li></ul></li><li>• Have smart meters been installed for any water users, how many, and are there any plans for installing smart meters soon?<ul style="list-style-type: none"><li>- <i>Yes, smart meter trials in Glenorchy and Luggate. Approximately 350 meters are being installed this year. Data to be used for monitoring only at this stage. The data will be used to develop a business case for metering across the district.</i></li></ul></li></ul>
----------	--

### Metered Users

The Luggate scheme and the Lake Hayes Water scheme have a longer dataset of metered customer demands. Many of the Lake Hayes metered customers are large rural-residential properties. The Luggate data is a mix of restricted and on demand supplies. The restricted connections in Luggate often use significantly less than the on-demand supply as they are supplied additional non-potable water from an irrigation scheme).

## WATER CHARGES AND PRICING

Water charges and pricing	<ul style="list-style-type: none"><li>• How are water charges structured? See rating approach over page.<ul style="list-style-type: none"><li>○ No charge</li><li>○ Flat rate or charge</li><li>○ Volumetric pricing (price per unit)</li><li>○ Dynamic or scarcity pricing (price per unit changes based on available supply)</li><li>○ A combination of the above (for example, volumetric charging only for use in excess of a specified amount)</li></ul></li><li>• Details on fixed and variable charges for water users, and whether these differ for household and commercial water use. <i>N/A</i></li><li>• Details on whether a separate charge is used for water coming in and water going out <i>N/A</i></li><li>• When was water pricing introduced? <i>N/A</i></li><li>• Information on the rationale for introducing pricing (or the rationale for not using pricing) the goals of water service provision, and the goal of water pricing <i>N/A</i></li><li>• Who sets the water pricing? Is long run marginal cost (LRMC) pricing being used? <i>N/A</i></li><li>• The number of water users in each pricing scheme (if there are more than one) <i>N/A</i></li><li>• Volume of water consumption under each pricing scheme <i>N/A</i></li><li>• Do household, commercial, and industry water users pay different prices per unit of water? If so, what are these prices? <i>N/A</i></li></ul>
---------------------------	---



## Rating

QLDC currently rate for water using a mix of targeted rates. Refer to our 2021 Long Term Plan and Revenue and Financing Policy for how this is calculated.

The purpose of this activity is to provide reliable, high quality water supplies for domestic and commercial consumers and for fire fighting purposes. The Council has provided water schemes in Queenstown, Arrowtown, Glenorchy, Lake Hayes, Arthurs Point, Wanaka, Hawea, Albert Town and Luggate.

ACTIVITY	FUNDING PRINCIPLES			
	Distribution of Benefit (user pays)	Period of Benefit (Intergenerational Equity)	Extent of Action/Inaction (Exacerbator Pays)	Cost/Benefit of Seperate Funding
Water Supply	High	High	Med	High

This activity is largely private good in nature and the Council recognises that the best way of recovering cost would be via volumetric charges and water meters. However, the costs of introducing such a system are seen as prohibitive at present, and this activity will therefore be funded 40% from the Targeted Uniform Rate (Water) which will be charged to all serviceable properties in the nature of a supply charge and 60% from a Targeted Water Rate based on capital value and applied on a scheme basis to all properties connected to the public water supply.

ACTIVITY	ECONOMIC BENEFIT ASSESSMENT			FUNDING TARGETS		FUNDING MECHANISM	
	Private	Public	Exacerbator	Private	Public	Private	Public
Water Supply	90%	10%	0%	100%	0%	Targeted Uniform Rate (water) / Targeted CV Rate (water)	–

Figure 10 Water Supply funding assessment – 2021 Revenue and Financing Policy

## GENERAL

General institutional conditions	<ul style="list-style-type: none"><li>• Information on any incentives in place for households to collect rainwater.<ul style="list-style-type: none"><li>- <i>None in place.</i></li></ul></li><li>• Information on any financial assistance for low-income households.<ul style="list-style-type: none"><li>- <i>N/A No water pricing in place.</i></li></ul></li><li>• Information on any co-governance considerations, such as whether there is engagement and input from local iwi in the decision-making process of water pricing.<ul style="list-style-type: none"><li>- <i>N/A - No water pricing in place. Engagement on funding models is via the Rev and Fin Policy of the Long-Term Plan Process.</i></li></ul></li><li>• Evidence of monitoring and enforcement in cases where metering is not present.<ul style="list-style-type: none"><li>- <i>QLDC 3-Waters bylaw impacts responsibilities on households to not use water excessively and address leaks.</i></li></ul></li><li>• Example document of a bill sent to households and commercial water users.<ul style="list-style-type: none"><li>- <i>N/A</i></li></ul></li></ul>
----------------------------------	--

We trust this response satisfactorily answers your request.

Kind Regards,



Poonam Sethi

Governance and Official Information Advisor