

# **Kāpiti Coast Water Conservation Report 2020/21**

**[FINAL]**



## Revision History

Revision N°	Prepared By	Description	Date
1	Ben Thompson	Draft for issue to AMG	13/08/2021
2	Tess Drewitt	Final following AMG review	16/03/2023

## Document Acceptance

Action	Name	Signed	Date
Prepared by	Ben Thompson, Water Services Coordinator	Version Endorsed by Preparer	13/08/2021
Reviewed by	Ramesh Sharma, Asset Manager WS & WW	Version Endorsed by Reviewer	13/08/2021
Approved by	S Mallon		23/03/2023
on behalf of	Kāpiti Coast District Council		



# Executive Summary

## Overview

Kāpiti Coast District Council (the Council) is committed to delivering a sustainable water management strategy and achieving the adopted water conservation target. This Water Conservation Report has been prepared to:

- Document performance against the 490 litres/person/day (lpd) peak water target and water conservation management activities in 2020/21
- Meet the reporting requirements of the consents governing the operation of River Recharge with groundwater scheme
- Set out the proposed water conservation work programme for 2021/22.

This report covers the three water supplies managed by the Council; Ōtaki Supply, Waikanae Supply (servicing, Waikanae, Paraparaumu and Raumati (WPR)) and Paekākāriki Water Supply. The report does not include the Hautere Water Supply due to no current water conservation reporting requirements.

## Key water conservation activities in 2020/21

In 2020/21, Kāpiti Coast District Council focused on:

- Continued use of water meter-based charging to encourage efficient water use
- Continued assistance to the District's residents to reduce water use and repair leaks
- Monitoring network performance and targeted leak location and repair activities.

## District peak water met 490 lpd again in 2020/21

At a District level, peak demand stayed below the 490 lpd target. The WPR and Paekākāriki supply met the 490 lpd target while Ōtaki did not, due to undetected leakage. Table one shows the peak day demand as litres per person per day (lpd) for each water supply and District-wide.

Year	Ōtaki (lpd)	WPR (lpd)	Paekākāriki (lpd)	District-wide (lpd)
2013/14	777	532	486	557
2014/15	554	406	726	437
2015/16	511	404	475	420
2016/17	491	353	403	369
2017/18	613	411	588	439
2018/19	547	391	625	414
2019/20	554	380	709	411
2020/21	559	374	463	398
<b>Result 2020/21</b>	Not Reached	Target met	Target met	Target met

Table one. Comparing peak daily demand for each water supply and the Kāpiti Coast District

Figure one highlights the increasing demand during the warmer months, and the sustained higher use during and after Covid 19 lockdown.

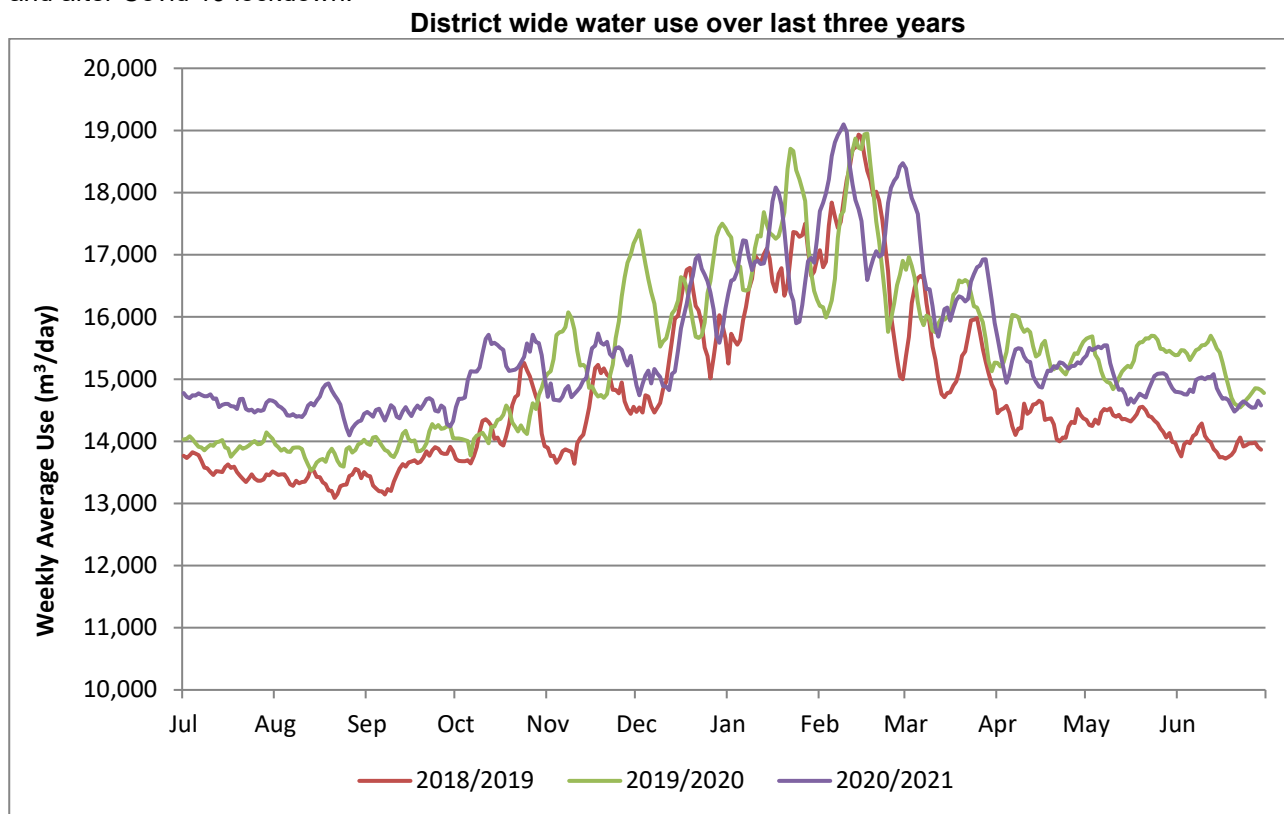


Figure 1. Comparing the District water demand for the last three years

## Investigating and repairing public and private leaks

The Council prioritised four zones for leak detection and repair, with two zones in Waikanae and three zones in Otaki. The investigations covered 84.9km, 20.1% of the 422.3km of water networks, excluding the Hautere Scheme.

The key highlights included:

- Paekākāriki network stabilised.
- No major leaks in zones found. Repairs made no noticeable change in night flows.
- Water meter-based charging continued to encourage people to repair their leaks. Over 2020/21, the Council gave 326 property owners a credit for repairing their leaks (up 9% from 2019/20).

## Estimated water loss higher in 2020/21 than 2019/20

There was limited success in reducing leakage across the District. This year we will redo the drone sweeps across the Otaki and Waikanae, followed up by on the ground surveys.

The Council uses the Waterloss Benchmark approach to estimate water loss for our water supply schemes. Table two summarises the estimated daily water loss for the District over the last three years. Results for each scheme are set out in section four of this report.

	2018/19	2019/20	2020/21
<b>Peak day</b>	20,371 m <sup>3</sup> /day or 414 lpd	20,367 m <sup>3</sup> /day or 411 lpd	19,849 m <sup>3</sup> /day or 398 lpd
<b>Average day</b>	14,735 m <sup>3</sup> /day or 302 lpd	15,397 m <sup>3</sup> /day or 311 lpd	15,512 m <sup>3</sup> /day or 311 lpd
<b>Current Annual Water Loss</b>	2,440 m <sup>3</sup> /day +/- 14.7%	3039 m <sup>3</sup> /day +/- 11.9%	3360 m <sup>3</sup> /day +/- 10.9%
<b>International Leakage Index (ILI)</b>	1.88 (A Band)	2.25 (B Band)	2.51 (B Band)

Table 2: Comparing the performance of The Council water supplies

## Work programme for 2020/21

The Council's focus for 2021/2022 will be on:

- Locate and repair leaks in the Otaki and Waikanae networks with a mixture of drone technology and on the ground follow-ups.
- Implement a programme to track bursts and repair costs for each scheme, network or water zone
- Implement the water mains and laterals renewal programme based on risk conditions and performance information.
- Continued support of the community to use water, wisely
- Continue to analyse consumer water use to identify future reduction and education opportunities.

A total of \$1,859,500 of funding is available in 2021/22 for water conservation and demand management activities.

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# 1 Introduction and overview

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The Kāpiti Coast Water Conservation Report documents whether the Council met the peak water use 490 litres/person day target and discusses efforts to reduce private and public leakage over the 2020/21 financial year. Section four outlines how effective the Council was in reaching the peak demand and leak targets at a District level and for each water supply. Section five provides more detail on what the Council did over 2020/21, and section six discusses the work planned for 2021/22.

This report covers three water supply schemes managed by the Council; Ōtaki, Waikanae, Paraparaumu and Raumati and Paekākāriki.

## 1.1 Sustainable Water Management Strategy 2003 set the direction

The 2002 Sustainable Water Management Strategy sets out Kāpiti Coast District Council's vision for water management in the District over the next fifty years. Central to this Strategy is there is considerable room within each catchment within the next fifty years for further development. That potential is only there if water demand is reduced and there is careful management of water storage.

The Strategy set a peak water target of 400 Litre/person/day by 2013/14, with an additional 90 litres for leakage. To reach the target, the Council recognised households, schools and businesses, and the Council itself each play its part. This was subsequently revised by the water conservation plan and consent requirements.

## 1.2 Kāpiti Coast Water Conservation Plan 2010 mapped how to get there

The Council developed Water Conservation Plan to ensure it and the community reached the 490 litres per person (lpd) per peak day target by 2016. It contains a series of measures and tactics. No one initiative alone will help reach the target but by combining them, it is hoped the peak water target can be reached and sustained.

There are seven action areas in the plan:

- Council leadership – The Council needs to demonstrate throughout its activities that is walking the talk. The Council also recognised its role in supporting local residents and businesses with good information on saving water.
- Better data, better results – with better information on where the water is being used and lost, the Council can better target resources for better outcomes.
- Managing leaks in public networks and private property – fixing leaks provides more capacity for future generations.
- Regulation – The Council uses the District Plan to ensure new homes should meet the 490 lpd target. The Water Supply bylaw to manage summer demand, water pricing and minimising wastage.
- Financial Assistance – The Council offers an “interest-free” targeted rate for households to install rainwater or greywater systems to offset public water use. It also offers rates subsidy for hardship.
- Education – The Council recognised the importance of students of all ages understanding the importance of their water supply and the role water has in local life.
- Technical innovation – The Council recognised the importance of new ideas and technology in assisting local businesses, and residents save water.

## 2 Consent requirements

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A number of consents held by the the Council for the Paekākāriki, Waikanae and Ōtaki supplies have water conservation consent conditions. The relevant consent conditions that this report addresses are listed below.

### **Water Permit WGN130331 [32355] Paekākāriki Water Supply groundwater and surface take**

The Water Permit WGN130331 [3255] does not explicitly request an annual water conservation report for the Paekākāriki Supply, but the Council will provide the information to be consistent with the Waikanae and Ōtaki supply reporting.

### **Water Permit WGN130103 [35973] Waikanae Water Supply groundwater take**

Condition 4, requires the implementation of water conservation and water demand management measures referred to in section 1.3 of the *Assessment of Environmental Effects* (Appendix 1) that accompanied the application as necessary to achieve the reductions in water demand necessary to reduce maximum peak daily water demand to 490 litres per person per day for the Waikanae, Paraparaumu and Raumati supply area by 31 July 2016.

### **Water Permit WGN130103 [35974] Waikanae Water Supply surface water take**

Condition 4 requires the implementation of water conservation and water demand management measures referred to in section 1.3 of the *Assessment of Environmental Effects* (Appendix 1) that accompanied the application as necessary to achieve the reductions in water demand necessary to reduce maximum peak daily water demand to 490 litres per person per day for the Waikanae, Paraparaumu and Raumati supply area by 31 July 2016.

Condition 25 requires submitting an annual Water Conservation Report to the Manager by 30 August each year. The annual Water Conservation Report shall be made available to the public on the Kāpiti Coast District Council website by 30 August each year. The annual Water Conservation Report shall report on the year 1 July to 30 June inclusive and includes Table 3 to assist in assessing the report for compliance.

### **Water Permit WGN050025 [33147]**

Condition 15b requires reporting on measures undertaken to investigate, implement and manage water conservation methods to reduce water demand on the Kāpiti Coast, including the introduction of water meters, any increase in population, any reduction in peak daily water demand and the achieved results of these measures.

Conditions	Section in this annual report
a) Summary of the consent holder's progress towards achieving its water conservation target of 490 Litres/person/day;	Executive Summary
b) Details of peak summer daily use expressed as L/person/day;	3.1
c) Outcomes of any water conservation measures to reduce peak demand, including but not limited to water meters;	4.1 – 4.7
d) A discussion of any reduction in peak daily demand;	3.2
e) Details of any increases in population	6.1
f) Investigations and work completed to identify and fix leaking water pipes;	4.3
g) Details of any planned work to identify and fix leaking water pipes in the coming year.	5.3

Table 3:. Condition 25 of consent WGN130103 [35974]

#### **Water Permit WGN080379 [32187] Otaki Water Supply Tasman Road groundwater take**

Condition 11 requires the Council to prepare an annual report on the water conservation measures carried out over the previous summer. The report shall assess the effectiveness of the conservation measures and describe the proposed measures to be implemented over the coming summer period. The annual water conservation report shall be submitted to the Manager, Environmental Regulation, Wellington Regional Council by 31 November each year.

#### **Water Permit WGN080379 [32188] Otaki Water Supply Rangiuru Road groundwater take**

Condition 11 requires the Council to prepare an annual report on the water conservation measures carried out over the previous summer. The report shall assess the effectiveness of the conservation measures and describe the proposed measures to be implemented over the coming summer period. The annual water conservation report shall be submitted to the Manager, Environmental Regulation, Wellington Regional Council by 31 November each year.

## 3 Peak day and water loss performance for 2020/21

### 3.1 District peak water use target met for 2020/21

The Kapiti Coast community met the District level peak water target without the Council introducing water restrictions. The recent growth and higher network losses meant average daily demand increased from 15,397m<sup>3</sup>/day to 15,512m<sup>3</sup>/day, while peak use decreased from 20,367m<sup>3</sup>/day to 19,849m<sup>3</sup>/day.

Table four shows the gross daily peak water use for 2020/21 and the preceding five years for the three water supplies. While the Council reached the target for the District, WPR and Paekākāriki supply, unresolved water loss in Ōtaki caused the peak demand to exceed the 490 targets. Section 4.2 provides more detail on the performance of each water supply.

Year	Ōtaki	WPR	Paekākāriki	District-wide
2013/14	777	532	486	557
2014/15	554	406	726	437
2015/16	511	404	475	420
2016/17	491	353	403	369
2017/18	613	411	588	439
2018/19	547	391	625	414
2019/20	554	380	709	411
2020/21	559	374	463	398
<b>Result 2020/21</b>	Not Reached	Target met	Target met	Target met

Table 4: Peak consumption for each water supply for the last three years

### 3.2 How will the Council report water supply performance over 2020/21?

This section sets out more detail for each supply, including:

- A graph comparing daily demand for last three years
- Average and peak daily demand in cubic meters per day (m<sup>3</sup>/day) and litres/person/day (lpd)
- Number of days the supply was over the 490 lpd target
- The Current Annual Water Loss (CARL) is the amount of water lost through leakage for the year as a daily amount (results by supply available for the first time this year)
- The International Leakage Index (ILI) grading of the supply. ILI is the ratio between the amount of water lost for the year and the annual amount of unavoidable water loss. The lower the ratio, the better performing the network is for water loss. Appendix 2 provides more detail on ILI.
- The World Bank Institute performance band and their recommended actions for that band.

### 3.2.1 District-wide results for last three years

- 490 litre/person/day peak target met
- Public side leaks increased

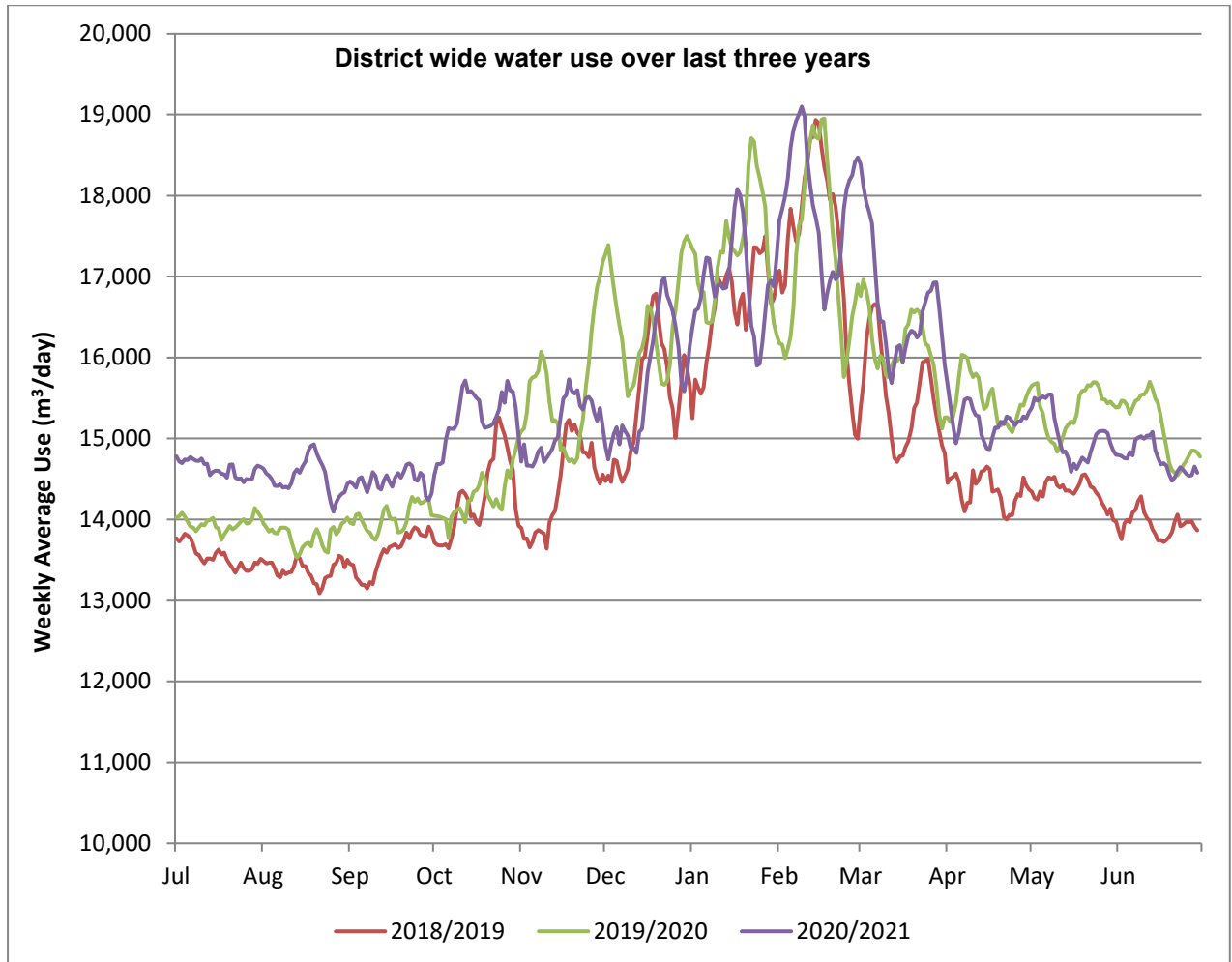


Figure two. Changes in District-wide water demand for the last three years

	2018/19	2019/20	2020/21
<b>Peak day</b>	20,371 m³/day or 414 lpd	20,367 m³/day or 411 lpd	19,849 m³/day or 398 lpd
<b>Average day</b>	14,735 m³/day or 302 lpd	15,397 m³/day or 311 lpd	15,512 m³/day or 311 lpd
<b>Current Annual Water Loss</b>	2,440 m³/day +/- 14.7%	3039 m³/day +/- 11.9%	3360 m³/day +/- 10.9%
<b>International Leakage Index (ILI)</b>	1.88 (A Band)	2.25 (B Band)	2.51 (B Band)

Table five. Compares performance of the Council water supplies for last three years

### 3.2.2 Ōtaki Water Supply

- 490 litre/person/day peak target not met
- Public side leaks increased.
- The Council will resweep Otaki over October/November 2021.

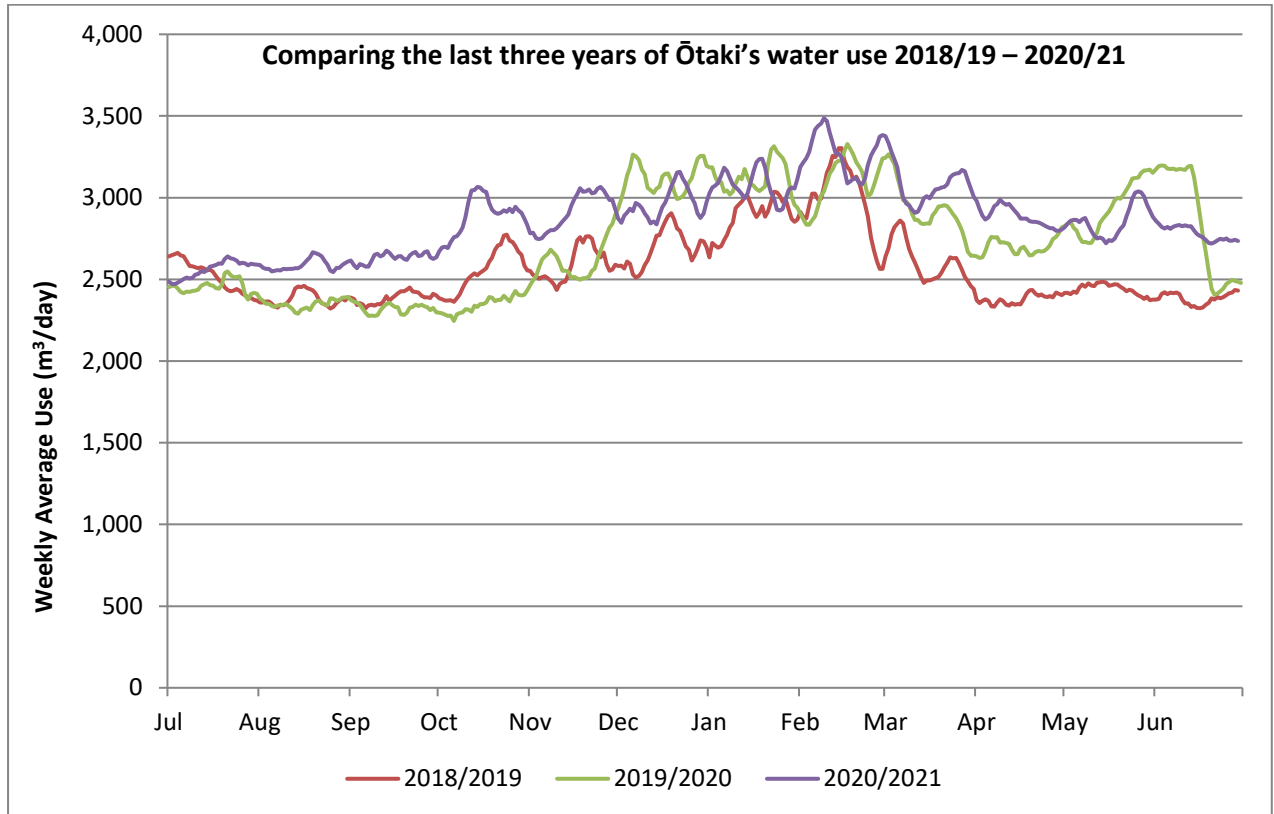


Figure three. Changes in the Ōtaki Scheme over the last three years. Note the impact of the increased water loss

Ōtaki Supply	2018/19	2019/20	2020/21
<b>Peak day</b>	3,489 m³/day 547 lpd	3,570 m³/day 554 lpd	3,626 m³/day 559 lpd
<b>Days over 490lpd target</b>	17	59	41
<b>Average day</b>	2,566 m³/day 402 lpd	2,734 m³/day 424 lpd	2,876 m³/day 443 lpd
<b>Current Annual Water Loss</b> (2017/18 is base year)	632 m³/day +/- 8.8%	801 m³/day +/- 7.1%	812m³/day +/- 7.1%
<b>International Leakage Index (ILI)</b> (2017/18 is base year)	2.65 (B band) Possibilities for further improvement	4.17 (C band) Poor leakage, intensify reduction efforts	4.23 (C band) Poor leakage, intensify reduction efforts

Table six. Comparing performance of Ōtaki water supply for last three years

### 3.2.3 Waikanae/Paraparaumu/Raumati Water Supply

- 490 litre/person/day peak target met
- No requirement for water restrictions

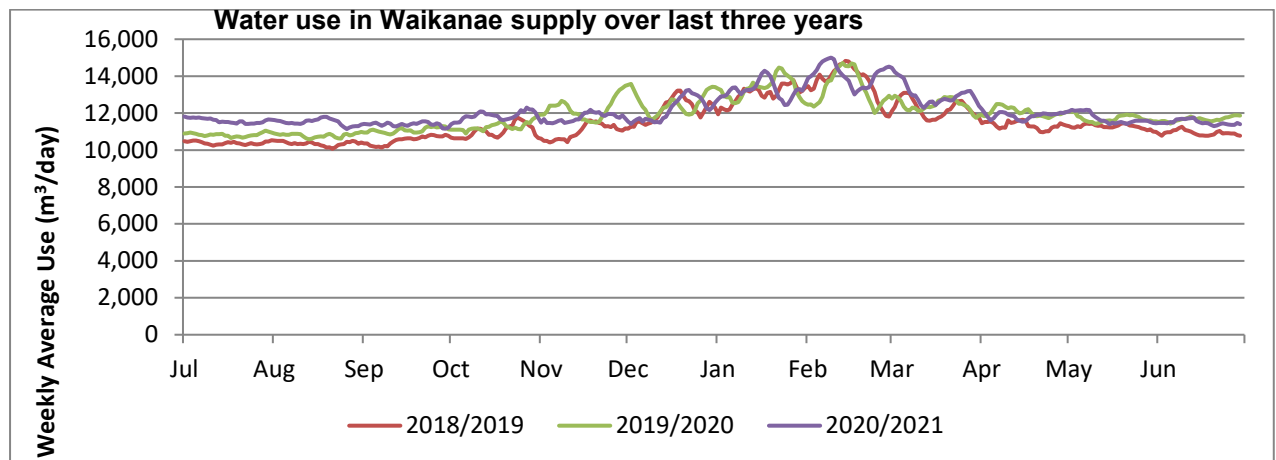


Figure 4: Changes in the WPR water demand for the last three years

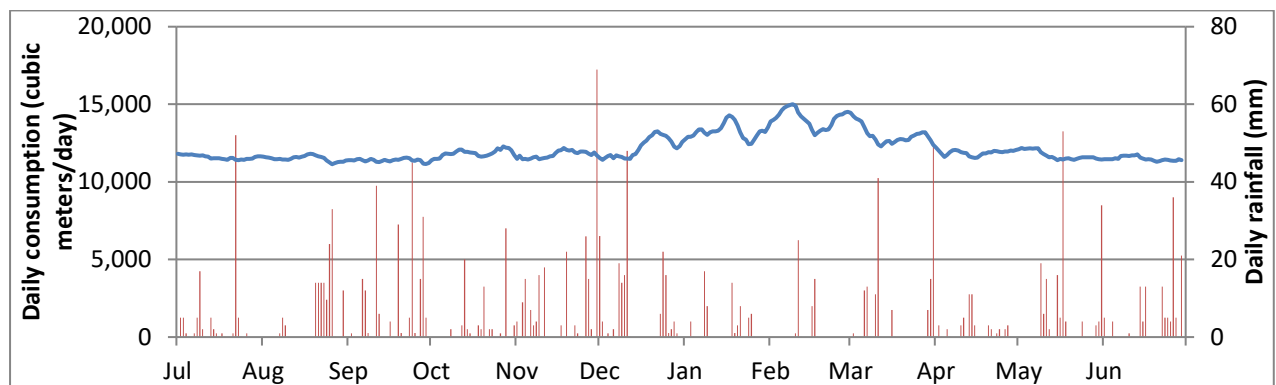


Figure 5: Rainfall impacts on WPR water demand

The current annual water loss increased by 546m³/day. The Council will sweep the entire Waikanae network to isolate and reduce the increasing leakage.

WPR Supply	2018/19	2019/20	2020/21
<b>Peak day</b>	16,102 m³/day 391 lpd	15,768 m³/day 380 lpd	15,630 m³/day 374 lpd
<b>Days over 490lpd target</b>	0	0	0
<b>Average day</b>	11,492 m³/day 279 lpd	11,946 m³/day 288 lpd	12,137 m³/day 291 lpd
<b>Current Annual Water Loss</b> (2017/18 is base year)	1225 m³/day +/- 23.7%	1859 m³/day +/- 15.7%	2399 m³/day +/- 12.3%
<b>International Leakage Index (ILI)</b> (2017/18 is base year)	1.15 (A band) Further loss reduction may be uneconomic	1.57 (A band) Further loss reduction may be uneconomic	2.18 (B band) Opportunity for improvements

Table 7: Compares performance of WPR water supply for last three years

### 3.2.4 Paekākāriki Water Supply

- 490 litre/person/day peak target met
- No requirement for water restrictions
- Water supply stable over 2020/21.

This year peak demand stayed under the 490lpd peak target. Also, the base water loss remained steady, with water demand in July 2020 being similar to June 2021. The leakage remained lower over 2020/21, compared to 2019/20.

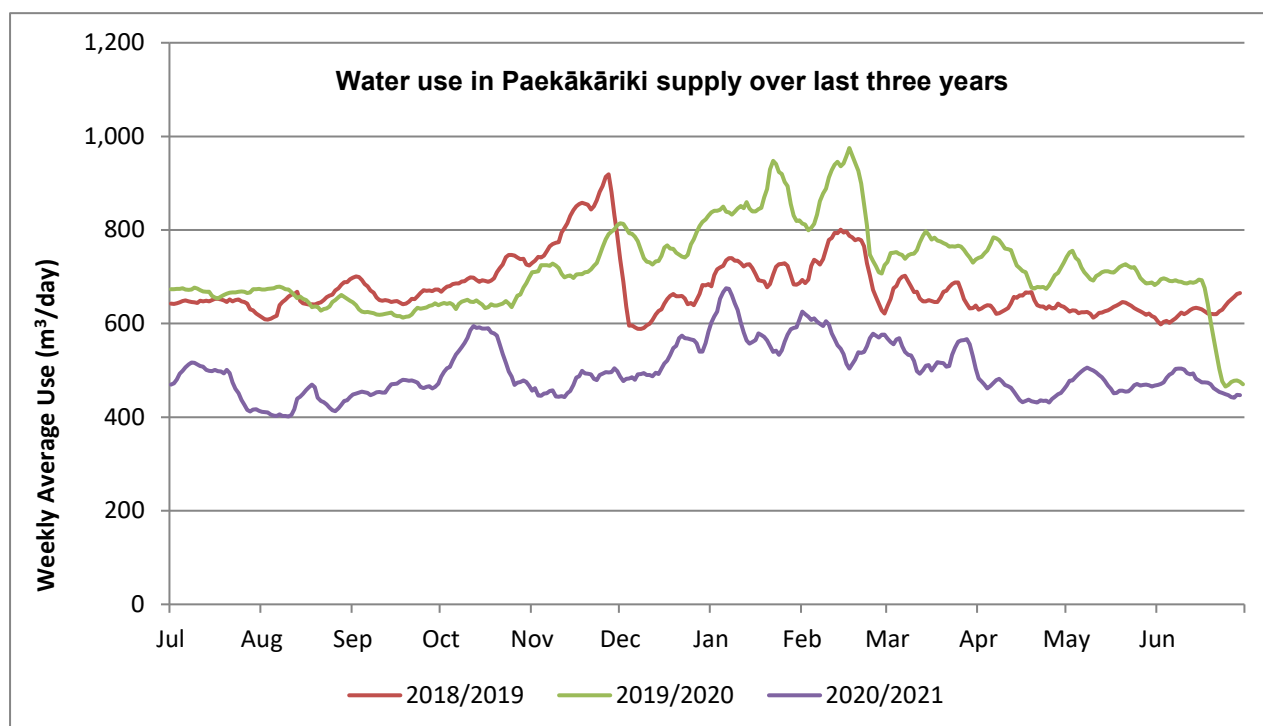


Figure 6: Changes in the Paekākāriki Supply water demand for the last three years

Paekākāriki	2018/19	2019/20	2020/21
<b>Peak day</b>	1014 m³/day 625 lpd	1134 m³/day 709 lpd	731 m³/day 463 lpd
<b>Days over 490lpd target</b>	29	76	0
<b>Average day</b>	677m³/day 418 lpd	717m³/day 448 lpd	499m³/day 316 lpd
<b>Current Annual Water Loss</b> (2017/18 is base year)	327 m³/day +/- 3.8%	370 m³/day +/- 3.4%	132m³/day +/- 9%
<b>International Leakage Index (ILI)</b> (2017/18 is the base year)	7.46 (C band) Poor leakage, intensify reduction efforts	8.29 (D band) Very inefficient use of water and leak detection critical	2.74 (B band) Potential for improvement

Table 8: Compares performance of Paekākāriki water supplies for last three years



## 4 Water conservation and demand management activities 2020/21

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### 4.1 Council leadership

#### 4.1.1 Keeping the community informed

Over 2020/21, the Council continued keeping the community informed through its usual channels.

##### **Informed community outcomes**

- Wide range of channels used to communicate with the public
- The community had clear information to make decisions on improving their water use
- The Council contacted residents with suspected leaks promptly

##### **4.1.1.1 Keeping the community informed via online resources**

The Council uses its website and Facebook page to inform the community and answer any question raised by the community. The website contains a range of resources, including:

- How to locate a leak
- How to read the water meter and monitor water use
- Good garden practice to create a water efficient garden

##### **4.1.1.2 Ensure frontline staff had up to date information**

Customer services staff remain critical to answering residents queries. As the front face of the Council, its important customer services is able to field people's queries efficiently as they are received.

##### **4.1.1.3 Water Conservation Advisor (WCA)**

After each water meter reading cycle, the WCA investigated any property using more than 2,000 litres/day for possible leaks, misreads or high use. The council sends a leak notice to any property with a leak.

In addition to the advice offered through the water conservation advisor service, a directory of local plumbers (including advice from consumer affairs on engaging a tradesman) was publicly available and included with all leak notifications.

The Council is also investigating any properties with reads that do not change. The Council replaced any faulty meters.

#### 4.1.2 The Council is managing water use efficiently in its assets

##### **Reduce the Council water use outcomes**

- Report tool in place to identify opportunities to fix leaks or replace inefficient fixtures.
- The Council uses shallow groundwater for irrigating most of the parks across the District
- Future proof new buildings to be water efficient

##### **4.1.2.1 Council monitors water use at its properties**

The Council has a number of properties it owns, manages on behalf of other government agencies or leases to businesses or community groups.

The Council uses a water use database to monitor consumption on its properties. The Property Group and Community Service Group receive updates after each reading cycle on water use from each property. The data helps prioritise any maintenance needed, such as repairing leaks or replacing inefficient toilets or taps.

#### **4.1.2.2 Making new buildings and renovations more water-efficient**

When the Council builds new or renovates, it makes every effort to install water-efficient appliances where possible the use of rainwater for toilet flushing and outdoor use.

#### **4.1.2.3 Minimise public water use on sports fields and amenity areas**

All major the Council sports fields use onsite bores as a preferred source of water for irrigation.

The Council selects summer hardy plants for much of its amenity planted areas and concentrates annuals around town centre areas. This reduces the amount of water needed in areas with high pedestrian activity.

## **4.2 Better data, better results**

### **4.2.1 Understanding trends in water use and leakage**

#### **Better data, better results outcomes**

- Monitored and prioritised zones for leak detection and repair
- Targeted zones based on ILI leakage performance
- Monitored water consumption at the property level. Notified owners if they had a suspected leak.

#### **4.2.1.1 Undertake weekly monitoring of leaks across District networks and supplies**

The Council uses a weekly minimum night flow “traffic light report” to assess the performance of each network at a District Metered Area (zone) level.

Each week, the automated report provides feedback on the ILI performance in each zone, where:

- Anything lower than an ILI score of 3 is green
- Anything between 3 and 4 is yellow
- Anything higher than 4 is red.

The Council bases the grading on the World Bank’s leak management bands shown table nine. In October, the Council reviewed the performance of each zone and selected those with consistently high ILI for leak detection. Any network with a grade higher than 2 has opportunities for future improvements.

Band	ILI Range	Guideline description of Real Loss Management Performance Categories
A	<2.0	Further loss reduction may be uneconomic unless there are shortages; careful analysis is needed to identify cost-effective leak management
B	2.0 to <40	Possibilities for further improvement consider pressure management, better active leakage control, better maintenance
C	4.0 to <8.0	Poor Leakage management, tolerable only of plentiful cheap resources; even then, analyse level and nature of leakage, intensify efforts
D	8.0 or more	Very inefficient use of resources, indicative of poor maintenance and system condition in general, leakage reduction programs imperative and high priority

Table 9:. World Bank Institute Bands for Leak Management in Developed Countries

Figure 7 shows three examples from the Waikanae network. In this example, if the results remained unchanged, then Kakariki would be selected for leak investigation, Hemi may if budget permitted, and Te Moana would be left alone.



Figure 7. Examples of how the Council grades a zone's performance week to week

#### 4.2.1.2 Undertake water balance reports for all water supplies

The Council uses the annual WaterNZ Benchloss tool to each water supply to show:

- Daily water loss
- International Leak Index grade and World Bank Band for leak management

- World Bank's recommendations for further improvement

#### **4.2.1.3 Monitoring water use at the property level**

The Council uses a reporting tool to analyse water use by the customer, zone, network and District. The Council uses the tool to:

- identify properties with potential leaks or faulty meters
- understand consumption by user type (such as households, schools, motels etc.)
- feed annual water use into the water balance model to determine annual water lost through leaks.

### **4.3 Finding and repairing public and private leaks**

Over 2020/21, the Council informed properties with suspected leaks and investigated 17.6% of the District's three major supplies for leaks.

#### **Finding and repairing leak outcomes:**

- Five of the 19 zones investigated, 20.1% of the network length surveyed for leakage.
- It was too cold for the drone surveying
- The Council reviewed how planning around replacing assets causing leak issues

#### **4.3.1 Results from planned 2020/21 leak detection**

The Council prioritised four zones for leak detection and repair, with three zones in Waikanae and the Paekākāriki network. The investigations covered 84.9km, 20.1% of the 422.3km of water networks, excluding the Hautere Scheme.

#### **4.3.2 Reactive renewal work undertaken by the Council**

Table 10 shows the reactive work undertaken by the Council in 2020/21 on the public networks to resolve leaks as they arose. The Council noted a five per cent (5%) decrease in laterals repaired or replaced from 2019/20.

#### **4.3.3 Finding and repairing private leaks**

After each billing cycle, the Council assesses the water accounts for any properties using more than 2000 litres/day, or have experienced a 40% increase in water consumption for the quarter. The Water Conservation Advisor visits the properties to assess if there is a leak, a misread or legitimate high use.

If there is a leak, the Council sends the property owner a leak notification letter to fix the issue within 21 days, a directory of local plumbers who can help and a credit due to water loss application form (invites the property owner to apply for a credit on their water account if they fix the leak in a timely manner).

Activity undertaken	2019/20 District Total	2020/21 District Total
Repair or replace damaged or leaking hydrants	23	25
Repair or replace damaged or leaking valves	13	8
Repair or replace damaged or leaking manifolds	26	185
Repair or replace damaged or leaking laterals	409	390
Repair or replace damaged or leaking mains	36	52
<b>Total interventions</b>	<b>507</b>	<b>660</b>

Table 10. Reactive leak maintenance on each network over the 1 July 2020 – 30 June 2021 period

#### 4.3.4 The Council reviewed current public-side leak management programme

The Council efforts over 2020/2021 were to ensure the 2021 Water Supply AMP includes budgets for a lateral replacement programme, and pressure management upgrades.

Section 5.3.3 provides more detail on the Council's aims from 2021/22 and the following ten years.

## 4.4 Regulation

#### 4.4.1 How many new homes were built this year?

The Council approved 274 District Plan compliant homes across the District water zones over the 2020/21 period.

Since 2008, the Council has required all new homes with an on-demand connection to the Council water supply to include one of:

- 10,000 litre of rainwater storage to supply the toilets and outside taps. When the rainwater level falls below 1,000 litres, mains water will top up the tank at a rate of 600 litres/day.
- A greywater diversion device and a 4,000 litre of rainwater storage to supply the toilets and outside taps. When the rainwater level falls below 1,000 litres, mains water will top up the tank at a rate of 600 litres/day.
- An alternative solution that demonstrates it can achieve the reduced peak water use targets.

## 4.5 Financial Incentives

#### 4.5.1 Encouraging people to fix their leaks

**Three hundred twenty-six (326) property owners** received credits on their water account for fixing leaks. The Council credited a total of \$197,621.81 for leaks repaired.

Property owners can apply for a credit on their water account if they can provide evidence of fixing their private leak. Successful applicants were not charged for the water lost to leaks. The aim was to encourage property owners to fix their leaks.

#### 4.5.2 Providing financial support to those in need

Over 2020/21, the Council offered three schemes to support residents on a limited income to assist residents in financial hardship:

- **One thousand one hundred sixty-six (1166) households** obtained the Rates Assistance Rates Remission (which provides up to \$300 towards rates).
- **Seventeen (17) households** obtained a Rates Temporary Financial **Assistance** Rates Remission for significant costs related to water costs (which provides up to \$300 towards significant costs causing financial hardship).
- **Six households** obtained a water rate remission on their water account. The Water Rate Remission for Vulnerable Households relating to high water use provides a rates remission towards the cost of water for households with **two** or more dependents who receive the Working for Families Tax credit and meet other criteria.

#### 4.5.3 Interest-free rates payback scheme to install rainwater tanks

Four properties obtained a targeted rate to install a rainwater tank. The Council offers a \$5,000 targeted rate for residents to install a rainwater tank or greywater system for outdoor irrigation.

### 4.6 Education

The Council has education resources on the website and water testing kits available for schools to use. Staff are available to talk with the school when requested.

### 4.7 Fostering innovation

The Council continued its “open for business” approach to companies developing new technology by providing feedback on any designs shown or legislation that may apply.

## 5 Water Conservation and Demand Management Activities 2021/22

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### 5.1 Council leadership

#### 5.1.1 Keeping the community informed

##### 5.1.1.1 Continue using website and Facebook page to keep people informed

The Council will ensure it keeps the information current and up to date on water. The Council's Facebook page and other channels will be used to inform the community and identify and answer any questions from the public.

##### 5.1.1.2 Elected members and the Council staff will be kept up to date

Elected members and the Council staff will continue to be kept up to date with developments in water.

#### 5.1.2 Providing advice to the community on saving water

Water Conservation Advisor will continue providing the free water conservation home visit service to offer advice (leaks and water use).

### **5.1.3 Reduce the Council water use**

The Council will monitor and continue to seek ways to reduce water use at properties under its control using the information provided by water metering.

## **5.2 Better data, Better results**

### **5.2.1 Zone metering**

The Council will continue monitoring minimum night flows and prioritise leak detection by a zone's snapshot International Leakage Index grade.

### **5.2.2 Reporting water use and water leaks**

The Council will provide a water balance on water used and lost over the year at the District and Supply level.

## **5.3 Reducing leakage in water supplies**

### **5.3.1 Finding and repairing leaks on the public side of the reticulation network**

Using information from the water-use monitoring and reporting tool, the Council will monitor zones weekly to prioritise zones for leak investigation and repairs. Otaki will be an important focus for 2021/22, and monitoring Paekakariki night flows for any return of the high leakage rates.

### **5.3.2 Finding and repairing private leaks**

The Council will continue proactively reviewing the latest billing data for signs of leakage and approaching property owners early if an issue is identified.

The Council will use its Water Supply Bylaw to request property owners to fix their private leaks within 21 days of notification. Property owners will still be able to apply for a credit on their water account due to fixing the leak. All identified leaks will be actively monitored, and outstanding leakage pursued.

### **5.3.3 Embedding a Lateral leakage reduction programme**

Table 11 outlines the activities for reducing lateral leakage the Council will undertake over the next three years, over ten years and over a thirty-year time period.

Target date	Activity undertaken
<b>Years one to three</b>	Set a baseline for service requests and minimum night flows to monitor the benefits of pressure management
	Implement improved data collection and analysis of service requests and renewals
	Implement a new approach to reactive repairs and develop a rider mains policy
	Replace Galvanised Iron pipe in the District Metered Areas (DMAs) subject to pressure management
	Investigate pressure Management for the three DMAs with the highest Benefit-Cost Ratios (BCR) - Kāpiti Road, Rauparaha Road, Te Moana Road
	Commence proactive renewals of galvanised iron, polybutylene (Dux) and PVC in the highest priority DMAs (Otaki Beach, Paekakariki, Hemi Street, Kakariki Reserve)
<b>Years four to ten</b>	Assess the cost and benefit of widening the pressure management network to other DMAs, and implement if practicable
	Broaden the proactive renewals programme to replace a wider range of pipe materials, locations and age
<b>Years 11 to 30</b>	Staged renewal programme based on lateral age and condition
	Tying into mains renewal programmes and other works
	Laterals to be replaced as necessary as part of wider mains replacement programme

Table 11. Lateral Leakage Reduction Programme

## 5.4 Regulation

### 5.5.1 The Council's District Plan water demand management requirements

There will be no change over 2021/22.

## 5.5 Financial Incentives

### 5.5.1 Interest-free rates payback scheme

There are no changes expected with this activity, and \$165,000 of funding has been allocated for 2021/22.

### 5.5.2 Rates relief

Over 2021/22, the Council will continue providing financial assistance to those in need. The following remissions will be available:

- Rates Temporary Financial Assistance Remission provides up to \$300 towards significant one-off costs causing financial hardship. This includes repairing leaks. There is a total of \$25,000 available for 2021/22.



- The Rates Assistance Rates Remission provides up to \$300 of rates remission. Combined with the Water Rates Remission, there is a total of \$ 240,467 available for 2021/22.
- Water Rate Remission for Vulnerable Households provides rate remissions towards the cost of water for households with two or more dependents who receive the Working for Families Tax credit and meet other criteria.

## 5.6 Education

The Council will continue providing water education resources for local schools.

## 5.7 Fostering innovation

The Council will continue its “open for business” approach to companies developing new technology by providing feedback on any designs shown or legislation that may apply.

## 5.8 Investing in water demand management and leak reduction for 2021/22

Table 13 outlines the key funding allocations for water conservation and leak management work for 2021/22.

Activity	District-wide budget for 2021/22
Keeping community informed	\$ 95, 000
The targeted rate for rainwater or greywater systems	\$ 165, 000
Financial assistance	\$ 265, 437
Water Meter Management	\$ 259, 000
Leak detection	\$ 54, 000
Reticulation maintenance and repair	\$ 529, 000
Planned and unplanned renewals	\$ 492, 000
<b>Total</b>	<b>\$ 1, 859, 437</b>

Table 12. Planned expenditure for 2021/22 for water demand management and leak reduction

# 6 Population changes

## 6.1 Population figures

The Council uses the New Zealand Census “Usual Resident Population” data for population calculations. In the inter-Census years, the Council uses population estimates developed for the Council’s 2015 Long Term Plan. To calculate the per capita consumption, the census area units are overlaid with the water supply area boundaries and populations allocated to DMAs and Water supply schemes.

The Council now enlists.ID to provide population projections. . It used a similar process to estimate population by overlaying their forecasts over the water supply boundaries.

Table 13 shows the population figures for each supply and the District.

Population source	Year	Ōtaki	WPR combined	Paekākāriki	District Total
Sum of 2013 zone population estimates from Census 2013 Usually Resident Population aligned to zone boundaries	2012/13	5,986	37,899	1,691	45,576
2013 to 2018 linear interpolation	2013/14	6,022	38,281	1,668	45,971
2013 to 2018 linear interpolation	2014/15	6,059	38,663	1,645	46,366
2013 to 2018 linear interpolation	2015/16	6,095	39,045	1,622	46,761
2013 to 2018 linear interpolation	2016/17	6,131	39,427	1,598	47,156
Sum of 2018 zone population projections using 2015 LTP projections	2017/18	6,167	39,809	1,575	47,551
.ID population forecasts	2018/19	6,384	41,201	1,622	49,207
.ID population forecasts	2019/20	6,443	41,482	1,599	49,524
.ID population forecasts	2020/21	6,493	41,750	1,580	49,823
.ID population forecasts	2021/22	6,544	42,043	1564	50,151

Table 13. Population numbers connected to each water supply

## 6.2 Calculating per capita water consumption

The flow meters for reservoirs and zones report to the Council's SCADA system, where flows are recorded and daily totals calculated. The Council calculates the daily per capita water consumption by dividing the daily reading by population to give an average water litres/person/day. This is recorded for the Ōtaki, Waikanae, Paraparaumu and Raumati networks, for WPR as a whole and Paekākāriki.

## 7 Bibliography

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- Water Use Management Procedures Manual, CH2M Beca and M & P Consulting, May 2016
- Lateral Leakage Reduction Programme, CH@M, November 2019
- Who uses less water? Dual supplied vs standard supplied homes, M & P Consulting, May 2020
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# Appendix 1 Assessment of Environmental Effects

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## 1.3 Meeting Water Conservation Targets

Council is implementing the Water Matters Strategy and working towards improving water conservation across the district. The district has historically been a high water consumer in comparison with other districts. The intention is to stabilise daily WPR consumption at 490 litres per person per day (L/person/day), which includes an allowance for water losses. This allowance is for unaccounted water lost from the reticulation, including unauthorised connections and loss through leaks from reservoirs, supply pipes, and connections.

RRwGW has been designed to deliver a peak of 490 L/person/day to an estimated population of between 53,120 and 65,940 by 2060.

"Litres per person per day" is a common measure but does not mean that all of this water is used by individuals at home. The measure is an average figure for all users, including homes, businesses, industry, schools, hospitals, Council facilities, fire fighting, etc.

Peak daily use across the WPR area currently stands at around 590 L/person/day. Within the WPR area, the peak use averages around 550 L/person/day (Paraparaumu/Raumati) and around 720 L/person/day (Waikanae). These usage figures include water losses.

The importance of water conservation has been an ongoing theme during the community consultation for this project, with both Council and the community raising a range of methods to achieve lower consumption rates of drinking water. Council's water conservation initiatives go hand-in-hand with the water supply project. Council has a wide range of conservation initiatives for reducing demand, from the Green Plumber and the Green Gardener services; the Eco Design Advisor; the Kāpiti Coast Sustainable Home and Garden Show, the Summer On The Coast programme, Plan Change 75 (requiring a water tank/ grey water system for any new or relocated dwelling), education in local schools, water metering and financial incentives that provide loans for installation of non-potable water systems. Water metering is a critical element of Council's conservation strategy.

The conservation target of 490 L/person/day forms a fundamental design assumption for the Kāpiti Water Supply Project. Council believes it is an important and realistic target and has implemented a range of measures to help ensure 'water wasters' and inefficient users of drinking water are mindful of the need to reduce consumption and use water wisely. However, should the target not be achieved by 2016, the benefit of the RRwGW scheme is that its staged delivery can be brought forward if required. Council is committed to seeing its water supply infrastructure and associated consents as part of a long-term framework for water abstraction, environmental monitoring and responsible management of the district's water resource.

## Appendix 2 Infrastructure Leakage Index Water Losses:

There has been considerable thought given to water network performance measures, which is captured in Water New Zealand's Water Loss Guidelines 2010.

Extract from Water New Zealand's Water Loss Guidelines 2010 –Page 17

Since the early 1980s, it has been recognised that percentages are unsuitable for assessing the operational efficiency of management of real losses (leakage and overflows) in distribution systems. This is because the calculated percentages are strongly influenced by the consumption of water in each system and variations in that consumption. Non-Revenue Water expressed as a per cent by volume of Water Supplied, although traditionally widely used, also suffers from similar significant problems to % Real Losses when used as a PI. Appendix C provides more information on this topic in the context of the range of consumption data in New Zealand.

Extract from Water New Zealand's Water Loss Guidelines 2010 –Page 18

Around 2005, the IWA Performance Indicators Task Force began to consider the need to select the most appropriate PIs not only on the basis of Function (Financial, Operational, etc), but also to distinguish (Ref. 8) between:

- **Metric benchmarking** – for more demanding comparisons between Water Suppliers
- **Process benchmarking** –for setting targets and ongoing monitoring of progress towards those targets.

The 2008 Benchloss NZ manual recommends that:

- **Infrastructure Leakage Index (Op 29)** is preferable for **Metric** benchmarking, as it takes account of differences in system specific key parameters (mains length, number of service connections, customer meter location, average pressure)
- **Litres/service connection/day (Op 27) or kl/km of mains/day (Op 28) (depending upon service connection density)** is preferable for **Process** benchmarking of progress towards reaching target for reductions in Real Losses of a specific Water Supplier

The Infrastructure Leakage Index calculates the ratio between current annual real losses (m<sup>3</sup>/year) and unavoidable annual real losses (m<sup>3</sup>/year) as defined in the Water New Zealand's Water Loss Guidelines 2010. While it can be a bit tricky to explain the concept of ILI calculation, the World Bank Institute leakage management bands give a clear measure of loss management performance for water networks.

Extract of band descriptions from Water New Zealand's Water Loss Guidelines 2010 –Page 18

**Table 2.3 World Bank Institute Bands for Leakage Management in Developed Countries**

Band	ILI Range	Guideline Description of Real Loss Management Performance Categories for Developed Countries
A	< 2.0	Further loss reduction may be uneconomic unless there are shortages; careful analysis needed to identify cost-effective leakage management
B	2.0 to < 4.0	Possibilities for further improvement; consider pressure management, better active leakage control, better maintenance
C	4.0 to < 8.0	Poor leakage management, tolerable only if plentiful cheap resources; even then, analyse level and nature of leakage, intensify reduction efforts
D	8.0 or more	Very inefficient use of resources, indicative of poor maintenance and system condition in general, leakage reduction programs imperative and high priority