Kāpiti Coast
DISTRICT COUNCIL
Me Huri Whakamuri, Ka Titiro Whakamua

Kāpiti Coast Water Conservation Report 2019/20

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Revision History

Revision N°	Prepared By	Description	Date
1	Ben Thompson	Draft for issue to AMG	07/08/20
2	Ben Thompson	Final version including AMG comments	28/08/20

Document Acceptance

Action	Name	Signed	Date
Prepared by	Ben Thompson		28/08/20
Reviewed by	Martyn Cole		28/08/20
Approved by	Sean Mallon		28/08/20
on behalf of	Kāpiti Coast District Council		

Executive Summary

Overview

Kāpiti Coast District Council (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 2019/20
- 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 2020/21.

This report covers the three water supplies managed by Council; Ōtaki Supply, Waikanae Supply (servicing, Waikanae, Paraparaumu and Raumati (WPR)) and Paekākāriki Water Supply.

Key water conservation activities in 2019/20

In 2019/20 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 2019/20

At a District level, peak demand stayed below the 490 lpd target. The WPR supply met the 490 lpd target while Ōtaki and Paekākāriki 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
Result 2019/20	Not Reached	Target met	Not reached	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.

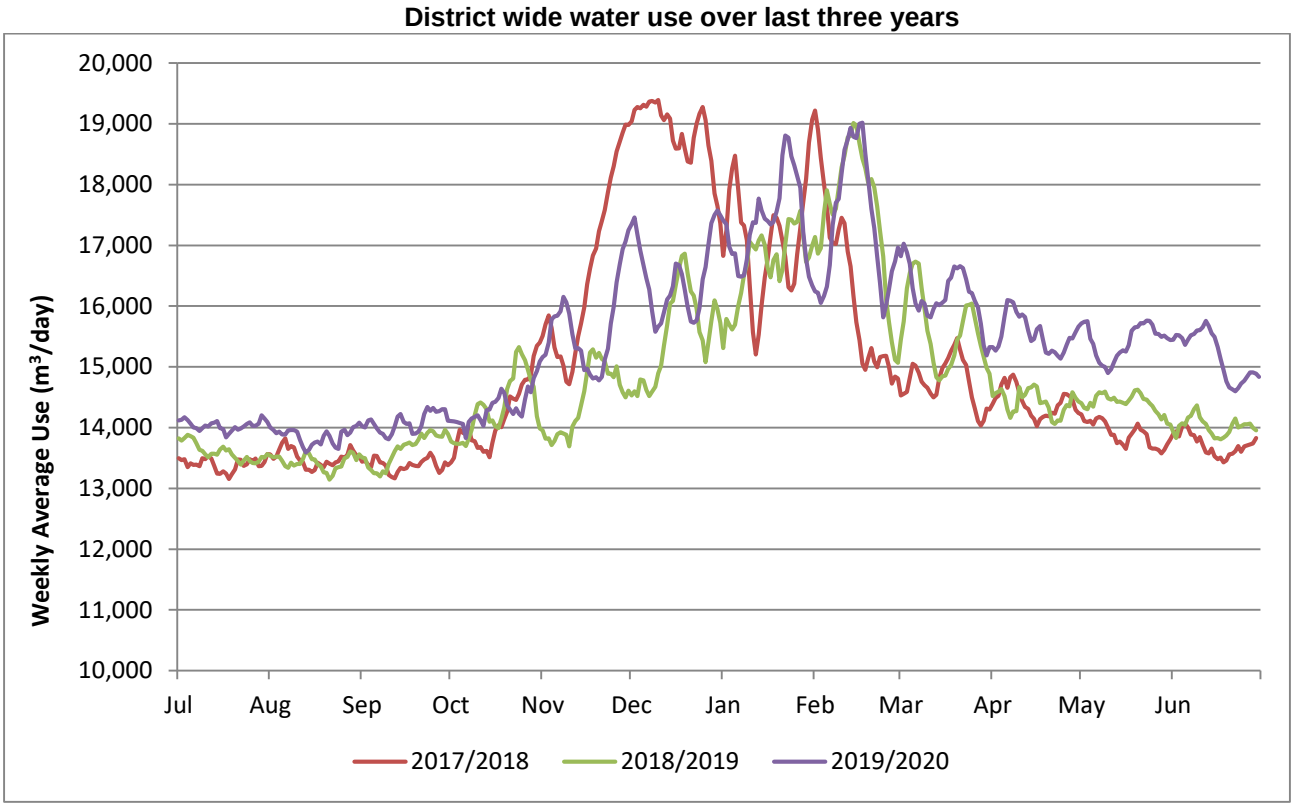

Figure one. Comparing the District water demand for the last three years

Investigating and repairing public and private leaks

Council prioritised four zones for leak detection and repair, with three zones in Waikanae and the Paekākāriki network. The investigations covered 74.2km, 17.6% of the 421.3km of water networks, excluding the Hautere Scheme.

The key highlights included:

- Council identified the large leak in Paekākāriki. A lateral had sheared off the water main.
- Apart from in Paekākāriki, Council found no major leaks in zones investigated. Repairs made no noticeable change in night flows.
- Over 92% of repaired leaks in network were identified by the community calling in.

Water meter based charging continued to encourage people to repair their leaks. Over 2019/20, Council gave 296 property owners a credit for repairing their leaks.

Estimated water loss higher in 2019/20 than 2018/19

Covid disrupted the leak detection and repair programme, where some leaks were not repaired until June 2020.

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.

	2017/18	2018/19	2019/20
Peak day	20,865 m^3/day or 439 lpd	20,371 m^3/day or 414 lpd	20,367 m^3/day or 411 lpd
Average day	14,946 m^3/day or 311 lpd	14,735 m^3/day or 302 lpd	15,397 m^3/day or 311 lpd
Current Annual Water Loss	2,838 m^3/day +/- 12.6%	2,440 m^3/day +/- 14.7%	3039 m^3/day +/- 11.9%
International Leakage Index (ILI)	2.04 (B Band)	1.88 (A Band)	2.25 (B Band)

Table two. Comparing performance of Council water supplies

The International Leakage Index (ILI) grading 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. Scores around 2 indicate a good balance between leakage management efforts and opportunity for leak reduction. Higher scores indicate potential further work is needed and lower scores suggest further leak management may be uneconomic. Appendix 2 provides more detail on ILI.

Work programme for 2020/21

Council's focus for 2020/2021 will be on:

- Locate and repair leaks in prioritised water zones. Continue trialling drone technology
- Monitor programme to track bursts and repair costs for each scheme, network or water zone
- Develop a water network renewal programme based risk condition and performance information available to inform the next long term plan.
- 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 $1,405,400 of funding is available in 2019/20 for activities associated with water conservation and demand management.

Contents

1 Introduction and overview

The Kāpiti Coast Water Conservation Report documents whether Council met the peak water use 490 litres/person day target and discusses efforts in reducing private and public leakage over the 2018/19 financial year. Section four discusses how effective 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 Council did over 2018/19 and section six discusses the work planned for 2019/20.

This report covers three water supply schemes managed by 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 demand for water 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, Council recognized households, schools and businesses and Council itself each play their 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

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 – Council needs to demonstrate throughout its own activities that is walking the talk. 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 water being used and lost, 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 – Council uses the District Plan to require new homes meet the 490 lpd target. The Water Supply bylaw to manage summer demand, water pricing and minimising wastage.
- Financial Assistance – Council offers an "interest free" targeted rate for households to install rainwater or greywater systems to offset public water use. Also offers rates support for hardship.
- Education – 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 – Council recognised the importance of new ideas and technology in assisting local businesses and residents save water.

2 Consent requirements

A number of consents held by 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 am annual water conservation report for the Paekākāriki Supply but 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 the submission of an annual Water Conservation Report to the Manager by 30th August each year. The annual Water Conservation Report shall be made available to the public on the Kāpiti Coast District Council website by 30th August each year. The annual Water Conservation Report shall report on the year 1st July to 30th June inclusive, and includes Table 3 to assist in assessing 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 increases 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 three. Condition 25 of consent WGN130103 [35974]

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

Condition 11 requires Council to prepare an annual report on the water conservation measures that were 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 Council to prepare an annual report on the water conservation measures that were 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 2019/20

3.1 District peak water use target met for 2019/20

The Kapiti Coast community met the District level peak water target without Council introducing water restrictions. With the District in lock down, average daily demand increased from 14,735 m^3/day to 15,397 m^3/day, while peak use decreased from 20,371m^3/day to 20,367m^3/day.

Table four shows the gross daily peak water use for the three water supplies for 2019/20 and the preceding five years. While the Council reached the District and WPR target, leaks in Ōtaki and Paekākāriki caused the peak demand to exceed the 490 target. 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
Result 2019/20	Not Reached	Target met	Not reached	Target met

Table four. Peak consumption for each water supply for last three years

3.2 How did each water supply perform over 2019/20?

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^3/day) and litres/person/day (lpd)
- Number of days the supply was over the 490 lpd target
- The Current Annual Water Loss (CARL) which 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 Districtwide results for 2018/19

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

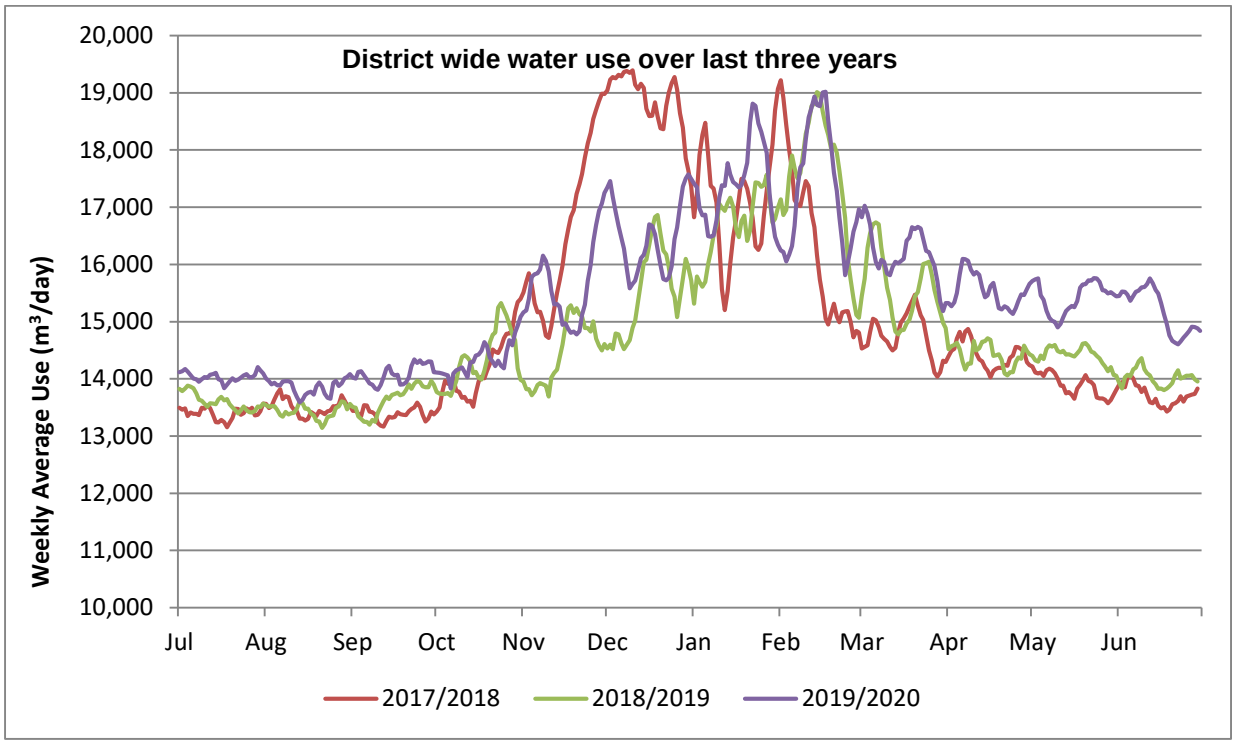

Figure two. Changes in District-wide water demand for the last three years

	2017/18	2018/19	2019/20
Peak day	20,865 m^3/day or 439 lpd	20,371 m^3/day or 414 lpd	20,367 m^3/day or 411 lpd
Average day	14,946 m^3/day or 311 lpd	14,735 m^3/day or 302 lpd	15,397 m^3/day or 311 lpd
Current Annual Water Loss	2,838 m^3/day +/- 12.6%	2,440 m^3/day +/- 14.7%	3039 m^3/day +/- 11.9%
International Leakage Index (ILI)	2.04 (B Band)	1.88 (A Band)	2.25 (B Band)

Table five. Compares performance of 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.
- Council will look at sweeping Otaki in late 2020 or early 2021.

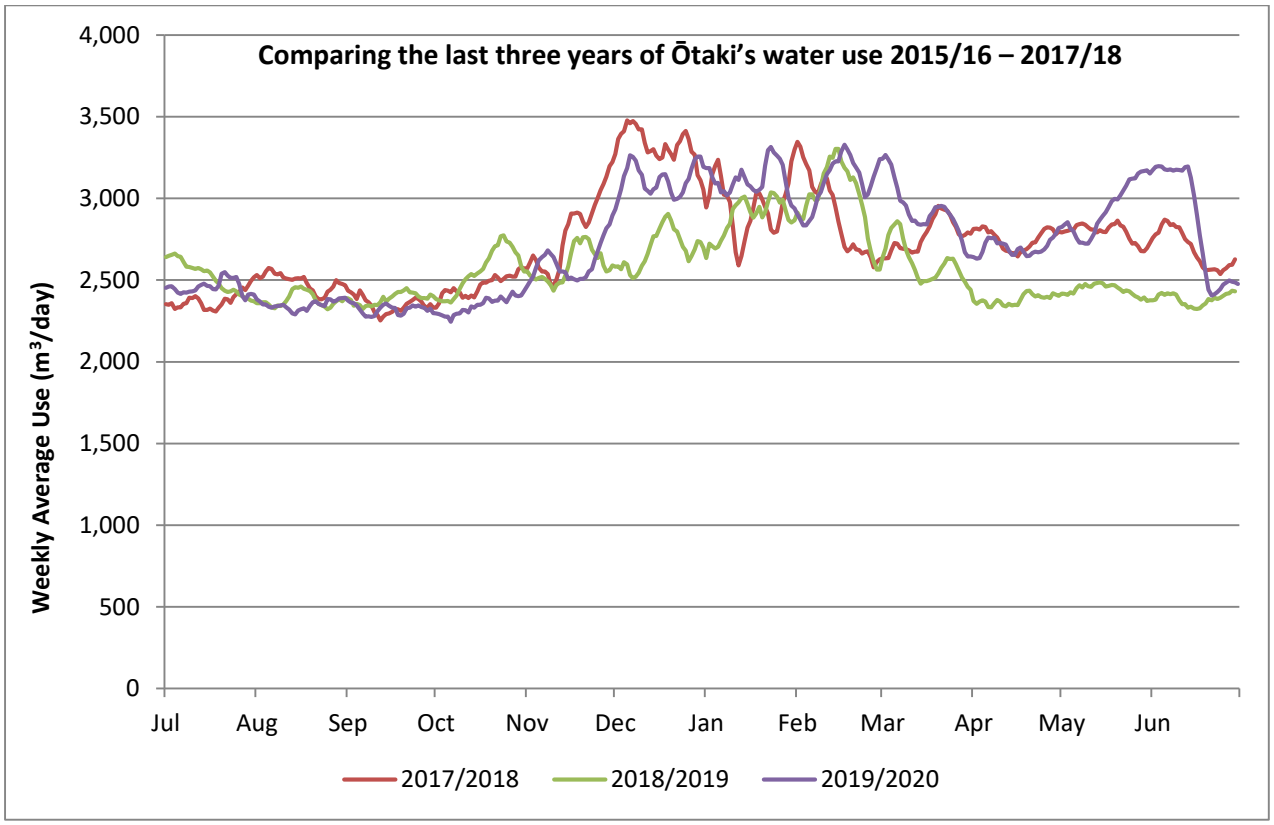

Figure three. Changes in the Ōtaki Scheme over the last three years. Note the impact of the increased water loss

Ōtaki Supply	2017/18	2018/19	2019/20
Peak day	3,780 m^3/day 613 lpd	3,489 m^3/day 547 lpd	3,570 m^3/day 554 lpd
Days over 490lpd target	61	17	59
Average day	2,723 m^3/day 442 lpd	2,566 m^3/day 402 lpd	2,734 m^3/day 424 lpd
Current Annual Water Loss **(2017/18 is base year)**	764 m^3/day +/- 7.5%	632 m^3/day +/- 8.8%	801 m^3/day +/- 7.1%
International Leakage Index (ILI) **(2017/18 is base year)**	3.22 (B band) Possibilities for further improvement	2.65 (B band) Possibilities for further improvement	4.17 (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

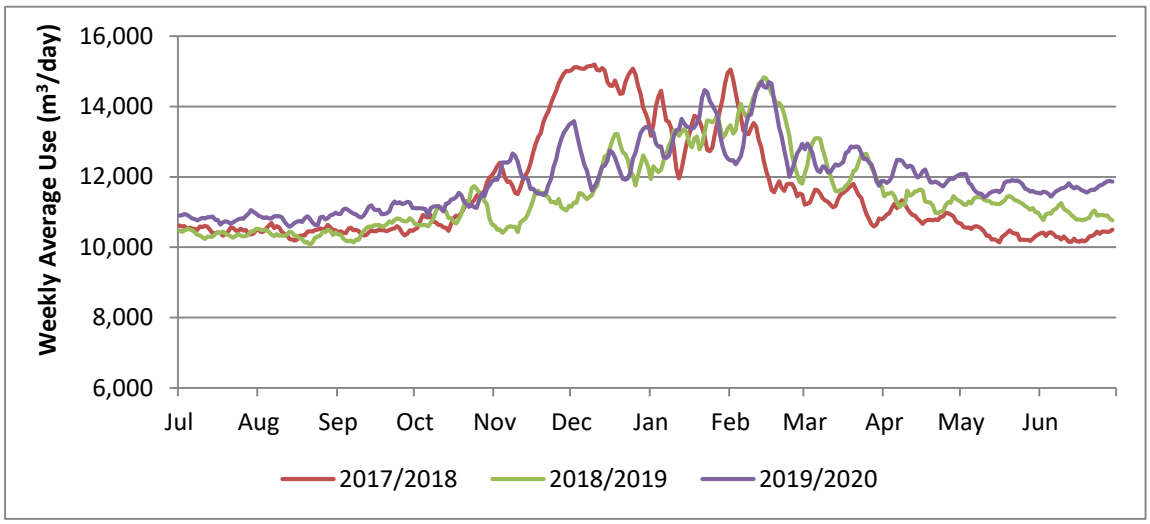

Figure four. Changes in the WPR water demand for the last three years

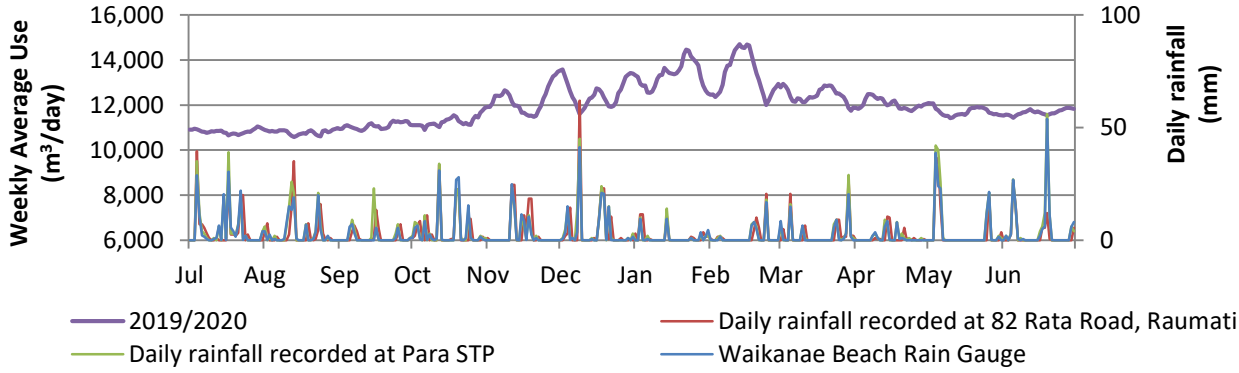

Figure five. Changes in the WPR water demand for the last three years

The current annual water loss increased by 634m³/day. Water use increased by 454m³/day on average per day, as a result of the Covid 19 lockdown and more people working from home after lock down lifted.

WPR Supply	2017/18	2018/19	2019/20
Peak day	16,365 m³/day 411 lpd	16,102 m³/day 391 lpd	15,768 m³/day 380 lpd
Days over 490lpd target	0	0	0
Average day	11, 597m³/day 291 lpd	11, 492 m³/day 279 lpd	11, 946 m³/day 288 lpd
Current Annual Water Loss **(2017/18 is base year)**	1813 m³/day +/- 15.9%	1225 m³/day +/- 23.7%	1859 m³/day +/- 15.7%
International Leakage Index (ILI) **(2017/18 is base year)**	1.65 (A band) Further loss reduction may be uneconomic	1.15 (A band) Further loss reduction may be uneconomic	1.57 (A band) Further loss reduction may be uneconomic

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

3.2.4 Paekākāriki Water Supply

- 490 litre/person/day peak target not met
- No requirement for water restrictions
- Found the large leak
- Further leak investigation needed for 2019/20.

The small size of the Paekākāriki network makes overall demand sensitive to leaks. During 2019/20, one leak contributed to over 200m^3/day in lost water.

Over 2019/20, Council undertook the following steps to find the leak:

- Swept the state high way section of the water network – no leaks
- Interrogated water use through transmission gulley – within acceptable band
- Trialled drone leak detection technology – some leaks found but not large

The drone technology caused a stir with community and was discontinued with 85% of network completed. The leak was found by the depot in the 15% remaining. A long copper lateral had sheared off the main.

Due to its location on the state highway coupled with the lockdown, the leak was not repaired until mid-June. Council is satisfied that it has found and repaired the leak causing issues in Paekākāriki.

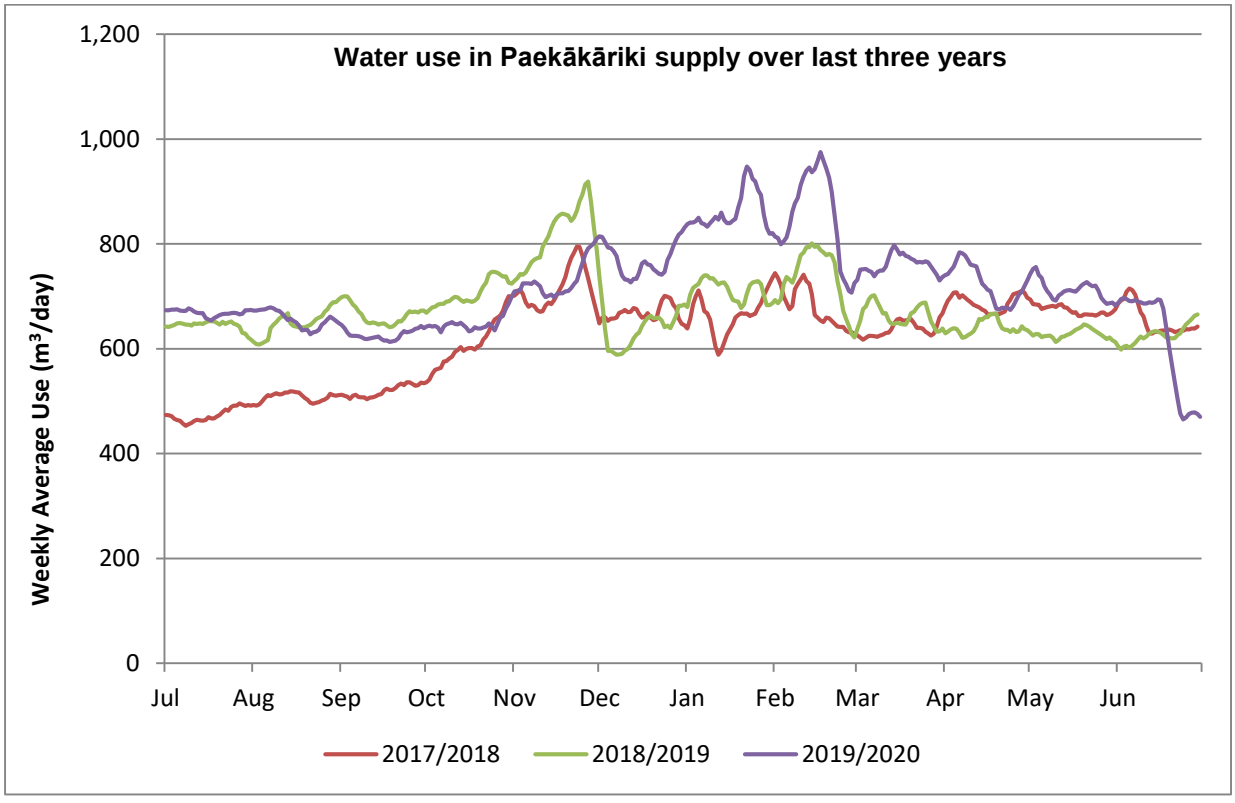

Figure six. Changes in the Paekākāriki Supply water demand for the last three years

Paekākāriki	2017/18	2018/19	2019/20
Peak day	927 m^3/day 588 lpd	1014 m^3/day 625 lpd	1134 m^3/day 709 lpd
Days over 490lpd target	10	29	76
Average day	625m^3/day 397 lpd	677m^3/day 418 lpd	717m^3/day 448 lpd
Current Annual Water Loss **(2017/18 is base year)**	256 m^3/day +/- 4.3%	327 m^3/day +/- 3.8%	370 m^3/day +/- 3.4%
International Leakage Index (ILI) (2017/18 is base year)	4.92 (C band) Poor leakage, intensify reduction efforts	7.46 (C band) Poor leakage, intensify reduction efforts	8.29 (D band) Very inefficient use of water and leak detection critical

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

4 Water conservation and demand management activities 2019/20

4.1 Council leadership

4.1.1 Keeping the community informed

Over 2018/19 Council continued keeping the community informed through its usual channels.

Informed community outcomes

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

4.1.1.1 Keeping community informed via online resources

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 Council its important customer services is able to field people's queries efficiency 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 publically available and included with all leak notifications.

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

4.1.2 Council managing water use efficiently in its Council assets

Reduce Council water use outcomes

- Report tool in place to identify opportunities to fix leaks or replace inefficient fixtures.
- 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

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

Council uses a water use database to monitor consumption on Council 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 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 Council sports fields use onsite bores as preferred source of water for irrigation.

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 to 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

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.

Council bases the grading on the World Bank's leak management bands shown table nine. In October, 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 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 nine. World Bank Institute Bands for Leak Management in Developed Countries

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

4.2.1.2 Undertake water balance reports for all water supplies

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

Council uses a reporting tool to analyse water use by customer, zone, network and District. 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 2019/20 Council informed properties with suspected leaks and investigated 17.6% of the District's three major supplies for leaks.

Finding and repairing leak outcomes:

- Four of the 19 zones investigated, 17.6% of the network length surveyed for leakage.
- Council found the source of the large leak in Paekākāriki
- Council reviewed how planning around replacing assets causing leak issues

4.3.1 Results from planned 2019/20 leak detection

Council prioritised four zones for leak detection and repair, with three zones in Waikanae and the Paekākāriki network. The investigations covered 74.2km, 17.6% of the 421.3km of water networks, excluding the Hautere Scheme. The study identified 39 leaking assets needing attention. While important, the leak investigations were only a snap shot of leakage and made up 8% of the assets identified over the year. The majority arose from calls from the community.

4.3.2 Reactive renewal work undertaken by Council

Table 10 shows the reactive work undertaken by Council in 2019/20 on the public networks to resolve leaks as they arose. The Council noted a 13% decrease in laterals needing repair or replacing from 2018/19.

4.3.3 Finding and repairing private leaks

After each billing cycle, 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 high legitimate 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	2018/19 District Total	2019/20 District Total
Repair or replace leaking hydrants	28	23
Repair or replace leaking valves	18	13
Repair or replace leaking manifolds	70	26
Repair or replace leaking laterals	468	409
Repair or replace leaking mains	53	36
Total interventions	**637**	**507**

Table 10. Reactive leak maintenance on each network over the 1 July 2019 – 30 June 2020 period

4.3.4 Council reviewed current public-side leak management programme

Council commissioned a study to assess the information available on managing the level of water loss in the networks. The purpose of the study is to develop a more informed renewals programme. The following actions were further investigated in 2019/20:

- Council developing a proactive lateral replacement programme based on material and expected remaining life (lateral is the section of pipework connecting a property to the water supply). Laterals have been shown to be a weak point for leakage in a network.
- Council developing a baseline of lateral repair numbers and costs, and monitor these after implementing pressure management and proactive renewals.
- Council implements pressure management over 3 years, starting with Te Moana Zone.

Section 5.3.3 provides more detail on Council's aims from 2020/21 and the following ten years.

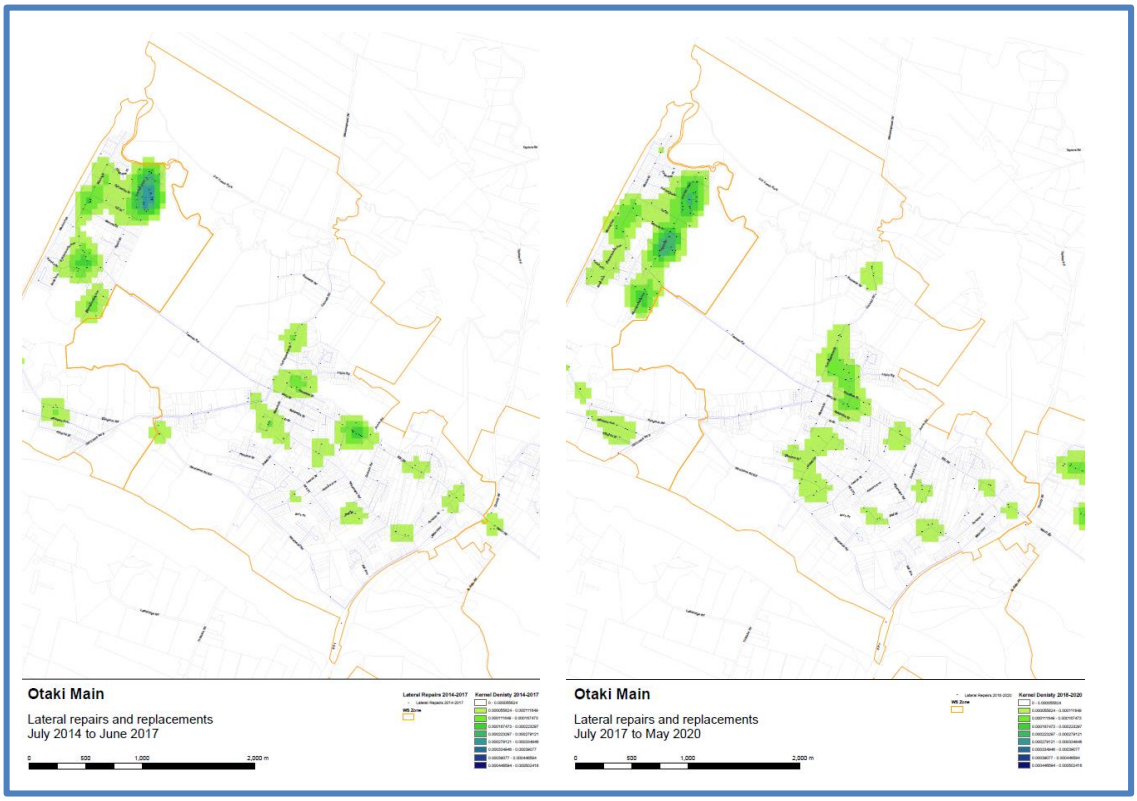

Figure eight. Example of analysis under taken to establish current levels of lateral repairs and identify areas for potential lateral replacements. The deeper the colour, the higher concentration of repairs.

4.4 Regulation

4.4.1 How much water do we save by having onsite supplies on private property?

Council paired 714 households of either dual or standard supplied households to see how the water consumption differed. Council compared the household water use records for 2015-2019 to see how water consumption differed between the two groups. Did having a rainwater tank or rainwater/greywater combo reduce the amount of water consumed by a household?

When comparing the 347 pairs, dual supplied homes used 20% less water than a standard single source household. On average, the sample dual supplied households used 179m^3/year, while the sampled singled supply households used 223m^3/year. This is around 44 m^3/year of reduced demand/newly built households.

4.4.2 How many new homes built this year?

Council **approved 194 District Plan compliant homes** across the District water zones over the 2019/20 period.

Since 2008, Council has required all new homes with an on demand connection to 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

296 property owners received credits on their water account for fixing leaks. Council credited a total of $163,477.37 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 2019/20, Council offered three schemes to support residents on limited income to assist residents in financial hardship:

- **1119 households** obtained the Rates Assistance Rates Remission (which provides up to $300 towards rates).
- **13 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).
- **9 household** 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

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

4.6 Education

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

4.7 Fostering innovation

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 2019/20

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

Council will ensure it keeps the information current and up to date on water. 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 Council staff will be kept up to date

Elected members and 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 Council water use

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

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 reticulation network

Using information from the Wateroutlook monitoring and reporting tool, Council will monitor zones weekly to prioritise zones for leak investigation and repairs. Otaki will be an important focus for 2020/21, as well as monitor Paekakariki night flows for any return of the high leakage rates.

5.3.2 Finding and repairing private leaks

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

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 pursed.

5.3.3 Embedding a Lateral leakage reduction programme

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

Target date	Activity undertaken
Years one to three	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, polybutelene (Dux) and PVC in the highest priority DMAs (Otaki Beach, Paekakariki, Hemi Street, Kakariki Reserve)
Years four to ten	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
Years 11 to 30	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 Council's District Plan water demand management requirements

There will be no change over 2019/20.

5.5 Financial Incentives

5.5.1 Interest free rates payback scheme

No changes expected with this activity and $165,000 of funding has been allocated of 2020/21.

5.5.2 Rates relief

Over 2020/21, Council will continue providing financial assistance to those in need. The following remissions will be available in 2020/21:

- Rates Temporary Financial Assistance Remission provides up to $300 to towards significant one off costs causing financial hardship. This includes repairing leaks. There is a total of $25,000 available for 2020/21.
- The Rates Assistance Rates Remission provides up to $300 of rates remission. Combined with the Water Rates Remission, there is a total of $ 183,488 available for 2020/21.
- 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

Council will continue providing water education resources for local schools.

5.7 Fostering innovation

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 2019/20

Table 13 outlines the key funding allocations for water conservation and leak management work for 2019/20.

Activity	District-wide budget for 2019/20
Keeping community informed	$ 90, 000
Targeted rate for rainwater or greywater systems	$ 165, 000
Financial assistance	$ 208, 400
Water Meter Management	$215, 000
Leak detection	$ 55, 000
Reticulation maintenance and repair	$ 607, 000
Planned and unplanned renewals	$ 265, 000
Total	**$ 1,405,400**

Table 12. Planned expenditure for 2020/21 for water demand management and leak reduction

6 Population changes

6.1 Population figures

Council uses the New Zealand Census “Usual Resident Population” data for population calculations. In the inter-Census years, Council uses population estimates developed for 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.

Council now enlists .ID to provide population projections. .ID 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

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 Councils SCADA system were flows are recorded and daily totals calculated. 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

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 performance measures for water networks and this 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 1980's 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 individual system, and variations in that consumption. Non-Revenue Water expressed as a % 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 (m3/year) and unavoidable annual real losses (m3/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 the calculation of ILI 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