Kāpiti Coast
DISTRICT COUNCIL
Me Huri Whakamuri, Ka Titiro Whakamua

Kāpiti Coast Water Conservation Report 2014/15

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Revision History

Revision Nº	Prepared By	Description	Date
1	Ben Thompson	Initial draft for review	15 July 2015
2	Ben Thompson	Final draft for issue to AMG	22 July 2015

Document Acceptance

Action	Name	Signed	Date
Prepared by	Ben Thompson		22 July 2015
Reviewed by	Martyn Cole		22 July 2015
Approved by	Sean Mallon		23 July 2015
on behalf of	Kāpiti Coast District Council		

1 Executive Summary

Kāpiti Coast District Council (Council) is committed to delivering a sustainable water management strategy and achieving the adopted water conservation targets. This Water Conservation Report has been prepared to document the progress towards those targets in the 2014/15 and sets out works planned in the future to achieve and maintain water use targets.

This report covers the three water supplies managed by Council; Ōtaki Supply, Waikanae Supply (servicing, Waikanae, Paraparaumu and Raumati (WPR)) and Paekākāriki Water Supply. The '2010 Water Conservation Plan' identifies seven action areas. These are being actively delivered and include:

- Council leadership
- Better data, better results
- Reducing leakage in water supplies
- Regulation
- Financial Incentives
- Education
- Technical innovation

1.1 Key water conservation activates in 2014/15

In 2014/15 Kāpiti Coast District Council has focused on

- Implementing water use management improvements
- Continued support to the community with the new volumetric water charges;
- Continued assistance to the districts residents to reduce water use and repair leaks;
- Monitoring network performance and targeted leak location and repair activities;

1.2 Water use reduction 2014/15

Despite the 2014/15 summer being drier than 2012/13, there was significant reduction in peak demand compared with last year and a 26% reduction in peak demand compared with 2012/13 (before water meter readings or charging commenced). On average across the district peak water use has fallen to 437 lpd with WPR meeting the 490 lpd target and Ōtaki making good progress towards it. A large leak in Paekākāriki caused a dramatic increase in water use. The leak is now repaired and Council expects Paekākāriki to achieve the target next year. Table 1 shows the peak day demand as litres per person per day (lpd) for each water supply.

Year	Ōtaki	WPR	Paekākāriki	District-wide
2011/2012	870	549	517	588
2012/2013	848	554	683	590
2013/2014	805	534	496	557
2014/2015	574	409	740	437
	On target	Target met	Further work required	Target met

Table 1 Downward trends in peak water demand as litres per person per day for each Kāpiti supply

Figure 1 highlights the dramatic drop in demand sustained since the decision to introduce water meters.

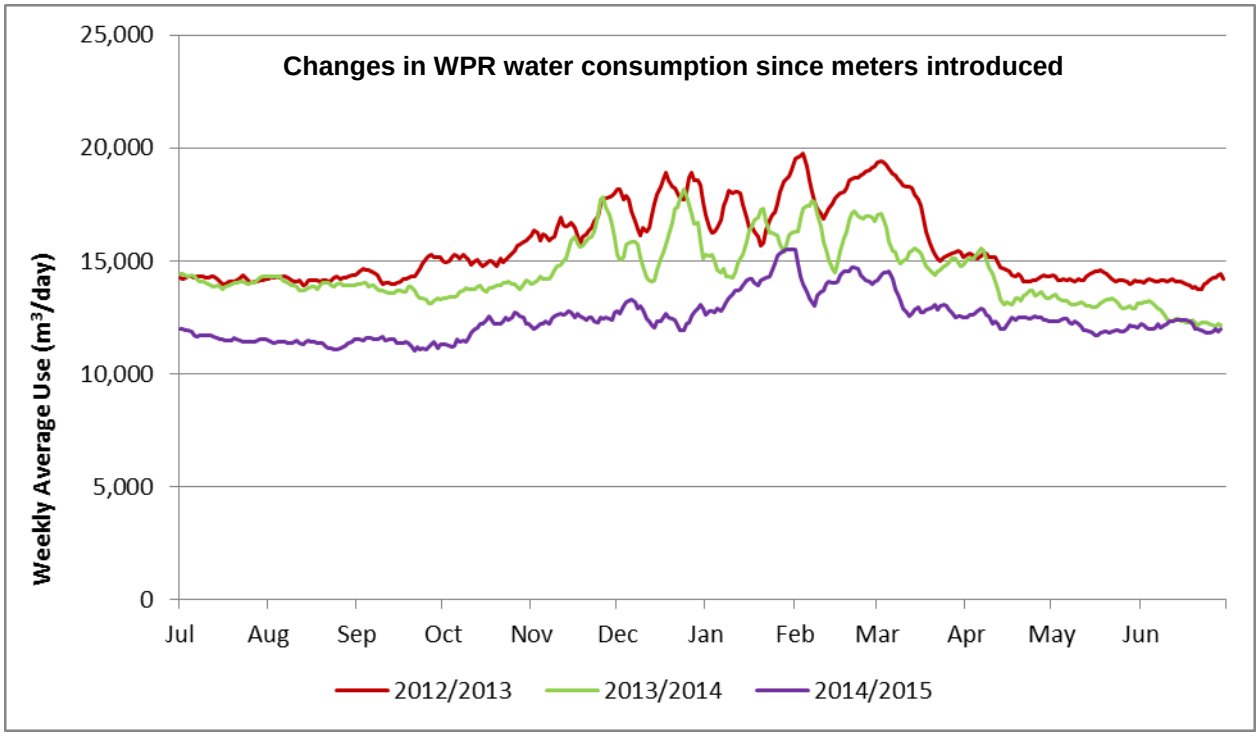

Figure 1 WPR water demand for the last three years has changed with the installation of water meters and new metered charging in place

Table 2 shows how the number of days exceeding trigger-points for water restrictions dropped considerably. In 2014/15 no daily use from WPR exceeded the trigger for stage one water restrictions (18,000m^3/day).

Year	Days greater than 18,000 m^3/day	Days greater than 20,000 m^3/day	Days greater than 21,000 m^3/day	Days greater than 22,000 m^3/day	Peak day consumption m^3/day
2011/2012	42	5	0	0	20,605
2012/2013	63	5	0	0	20,973
2013/2014	11	1	0	0	20,359
2014/2015	0	0	0	0	15,712

Table 2 Downward trend in high demand days in the WPR supply

Maintaining the networks, investigating and repairing leaks

Using the improvements in the water use reporting Council now routinely reviews trends in minimum night flows at District Meter Area (zones), network and at supply level. Using this information leak detection and location surveys in Paekākāriki and two other network areas in Waikanae were prioritised and completed in 2014/15. The investigations covered 65km, 14% of the 460km of water networks.

The repairs in Paekākāriki achieved an ongoing reduction in water use of an estimated 465m3/day (some 40% of the consumption at the time), while in Waikanae an estimated 206m3/day of estimated water loss has been identified. Repairs to public pipes were being completed at the time of writing and are expected to address 156m3/day of this figure. This gives a total expected reduction in leakage of 621m3/day when repairs are completed.

Council repaired 774 reported minor water leaks in 2014/15 with 532 of these were in the WPR supply area. It also replaced 975m asbestos cement mains, 563m of which was in Paraparaumu.

Of the 443 private leaks identified since meters were installed, 97% have been repaired with a 90% reduction in average daily water use. Council committed to providing residents with a six month grace period to complete leak repairs in 2014/15, which supported residents to focus on repairing leaks. More than 200 people who fixed leaks on their properties applied for credits on their water bills (for water loss via leaks). The Council retains the powers under the bylaw to address private leaks that haven't been resolved with 21 days of notification.

The repairs on the public pipes in 2014/15 have helped reduce public side leakage by 6%. Water metering has been a driver in identification of leakage and incentivising repair on the private side with an estimated overall reduction in daily private side water loss by 84%.

1.3 Work programme for 2015/2016

Council's focus for 2015/2016 will be on:

- Continued support of the community to use water wisely and providing assistance to the districts higher water users.
- Implement the remaining stages of the 2014 Water Use Management Review
- Initiating a water use review and reduction plan for Council water use.
- Continued monitoring of network performance and prioritise of leak location, repairs and renewals.

A total of $1.37 million of funding is available in 2015/16 for activities associated with the water conservation and demand management works.

Contents

2 Introduction and overview

Kāpiti Coast District Council (Council) is committed to delivering a sustainable water management strategy and achieving the adopted water conservation targets. This Water Conservation Report has been prepared to document the progress towards those targets in the 2014/15 and set out works planned in the future to achieve and maintain water use targets.

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

Kāpiti Coast District Council's key water use management documents are the 2003 Sustainable Water Management Strategy and 2010 Water Conservation Plan as described below.

2.1 Water Matters - Sustainable Water Management Strategy 2003

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.

None of the communities are likely to reach the final capacity of their catchment within the fifty years of this Strategy – if they make a conscious effort to reduce demand. However, by the end of the fifty year period, at current population growth levels and with a stringent demand management regime in place, Waikanae will have come close to the capacity of natural systems to deliver water. If the community fails to adapt its levels of water use then the limits will be reached much earlier. If that happens, the desired balance between residential growth and supporting local economy may not be as achievable.

The Strategy set a peak water target of 400 Litre/person/day by 2013/14, with an additional 75 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.

2.2 Kāpiti Coast Water Conservation Plan 2010

The Water Conservation Plan was designed to ensure Council 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.

The decision to implement water meter pricing in 2012 proceeded Council adopting the Water Conservation Plan in 2010. Water meters complement the activities outlined in the plan and provide more certainty that the 490lpd peak water target will be reached.

To reach the target, the Conservation Plan states it will be critical for Council, residents and business to each play a part.

Council has multiple roles in this, as a water supplier, reticulation network owner, a consumer of water as well as providing leadership and support to the community around finding ways to use water efficiently.

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.
- 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.

Figure 2 The Kāpiti Coast Water Conservation Plan includes the seven action areas

This report uses the action areas to describe and detail the work undertaken by Council over the 2014/15 year and planned work for the 2015/16 year.

3 Consent requirements

A number of consents held by Council, including those for the development and operation of the River Recharge with Ground Water scheme, have water conservation consent conditions. The relevant consent conditions that this report addresses are listed below.

Water Permit WGN050025 [32191] (Surrendered in October 2013) & Water Permit WGN050025 [32192]

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.

Water Permit WGN130103 [33250] Ground 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.

Water Permit WGN130103 [33251] 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.

Table 3 Condition 25 of consent WGN130103[31993]

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;	5.2
c) Outcomes of any water conservation measures to reduce peak demand, including but not limited to water meters;	4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7
d) A discussion of any reduction in peak daily demand;	5.2
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.	7.3

4 Water conservation and demand management activities 2014/15

4.1 Council leadership

4.1.1 Informed community

The following the implementation of the district wide water meter project a new communications plan was prepared to broaden the understanding of the community about how water meters and the new volumetric charges related to the overall water supply solution and management strategy for Kāpiti.

The 2014/15 plan focused on:

- Broaden people's perspective from water meters to the wider water management strategy.
- Help people understand how the current projects fit into the delivery of Kāpiti's overall water management strategy so they can understand the reasoning for the projects.
- Inform people about the progress of these projects and outline the specifics of charges changing and the reasoning i.e. use a staged approach for communications.
- Deliver communications material which is simple and easy-to-read.
- Use a range of channels to communicate messages, including Water Updates, Facebook posts, rates flyers, emails and website information.

4.1.1.1 Water updates

With the charging in place, Council reduced the frequency to one a quarter. Including:

- July 2014 – understanding charges and metering
- August 2014 Saving money on water and your invoicing
- November 2014 Decreasing water use trends getting ready for summer and water savings
- February 2015 Work towards a sustainable water supply
- March 2015 Our summer use reductions what charges cover and river recharge progress
- June 2015 Summary of the years water use changes.

4.1.1.2 Council website and Facebook

Website Updates continues to be reviewed and updated as feedback from the community is received about the key areas of interest and concern. Council uses its **Facebook page** and posts updates to inform the community and identify and address public concerns.

The Council recently revamped the website platform to enhance the online tools for better communication.

Council made two videos on practical measures residents and businesses can do to save water. One was for savings in the home and the other was for savings in the garden. The videos are embedded on the Council website.

4.1.1.3 Elected members and Council staff

Elected members were briefed on water use changes and the development of water rates for 2015/16.

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.

4.1.1.4 2015 Sustainable Home and Garden Show

2015 Sustainable Home and Garden Show in March had over 3,000 people visit the event. The Council water tent focussed on water meters and answered many questions from the public. A working water meter display was a key attraction and water detective agency work sheets were a particular success with young and old alike. The bags to measure shower flow and Waterwise five minute shower timer giveaways were well received as was the free advice and explanations

Council water advice brochures have been tailored to different audiences and their needs. Posters and leaflets were developed and available at the show on a range of issues from "How much water will typical households use", "Locating your toby", "Water leaks", to "Waterwise gardens" and "Xeriscaping – low water gardens".

Informed community outcomes

- Wide range of platforms used to communicate with public
- Community had clear information to make decisions on improving their water use
- Information provided to broaden the communities understanding of water meters in the wider water strategy

4.1.2 Quality advice and information

4.1.2.1 Water Conservation Advisor (WCA)

Water Conservation Advisor offered free water conservation home visit service to offer advice (leaks and water use) and also replaced washers on leaking toilets and taps. The WCA visited 206 properties for advice and replacing washers and 180 for advice on fixing leaks during 2014/15.

4.1.2.2 Green Gardener

Green Gardener offered free garden advice to residents to create water efficient gardens via articles, workshops and demonstrations.

4.1.2.3 Ecodesign Advisor (EDA)

Offered free independent advice on new, proposed and existing homes and this year undertook:

- **205 home visits:** As part of the resident's whole home consultation, awareness was raised on water conservation. Typically, water conservation makes up 20% of the two hour consultation and covers:
    - Water use in kitchens, bathrooms, WC, laundries and gardens;
    - Water meters; and

- Promote the Targeted Rate Funding for grey water and rain water collection and use.

  Also provided free shower water flow rate bags, shower timers and WC water saving Gizmo where appropriate.

- **307 short contacts:** Residents asked specific questions about their homes. These included questions on residential water use. (See above)

- **13 presentations:** Delivered to community groups eg Probus, Rotary, Shows and professional groups eg Real Estate Agents, Building Designers, and Government Departments: The whole home review presentation includes residential water conservation, rain and grey water systems and reading of water meters.

4.1.2.4 Rental market advice

Rental market brochures are available rental properties to inform landlords and tenants from Council service centres.

4.1.2.5 Community and business groups

The 2014/15 summer was the first experienced under the new water charging regime. In other areas when water meters were introduced, residents looked for more water efficient products and ways to garden. The Council facilitated a forum with the local garden industry around water use in the garden. A range of initiatives emerged for the group to consider and Council is rechecking with the industry on their uptake.

4.1.2.6 Private water leak advice

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.

Quality advice and information outcomes

- Targeted residents and businesses with high water use to support them to fix leaks or reduce their use

- Targeted advice to the needs of specific sectors of the community

- Community water use awareness raised and residents informed of water use reductions actions and support available to them.

4.1.3 Reduce Council water use

Council provides a number of services for the local community requiring water. Council has made efforts to ensure it uses water efficiently.

4.1.3.1 New buildings and renovations

When Council builds new or renovates, it makes every effort to ensure water efficient appliances are installed and where possible the use of rainwater for toilet flushing and outdoor use. The Mazengarb soccer changing rooms for example utilising rainwater for all toilet flushing.

4.1.3.2 Irrigating sportsfields and amenity areas

All major Council sportsfields are now irrigated with onsite bores not Council supplied water.

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.

4.1.3.3 Pay for the water used

Just as with other water users in the District, Council pays for the water it uses. This provides an incentive to use water efficiently and provides future opportunities for making a business case to invest in water saving technology or repair leaks.

Reduce Council water use outcomes

- Council is actively finding ways to increase the water use efficiency and minimise water leaks in assets it manages.

4.2 Better data, better results

4.2.1 Understanding water use

4.2.1.1 Water Use Management Scoping Exercise

Building on the April 2014 Water Use Management Review, Council commissioned CH2M Beca to undertake a Water Use Management Scoping exercise and set out a staged implementation plan to advance the management of water use improvements. The scoping report considered the following

- Objectives for Water Use Management
- Current Systems and Tools
- Requirements for Water Use Management
- Opportunities and Risks
- Priorities and Preliminary Project Plan

The priorities and preliminary project plan findings from the scoping are set out to follow.

Priorities

a. Short term needs

Council decided to move forward with WaterOutlook as a tool for reporting and tracking water use, including estimating water losses. Council's top priority was to compare water losses in the networks and zones, so that active leak detection work that is budgeted for 2014/15 could be arranged and targeted to the appropriate locations (ie, zones with the greatest level of leakage).

The first step using WaterOutlook for comparing the water losses in the zones, Council developed a zone minimum night flow report template based on existing Council spreadsheets and examples from other councils (e.g., South Taranaki). The template was finalised and implemented across all of the zones, enabling the zones to be compared and prioritised for leak detection and repairs.

The other two short term priorities were:

- year-on-year reporting of gross water use to better understand the impacts of water meters
- quarterly water balances using metering data to estimate water losses by June 2015.

b. Longer term

For the longer term (beyond June 2015) the priorities are a water loss reduction strategy, and the development, documentation and implementation of water use management policies, processes and

procedures.

Preliminary project plan

The following stages were identified with stages 1 to 3 having been substantively implemented.

- Stage 1: Scoping – the Stage 1 workshop and this report
- Stage 2: Pilot zone night flow reporting
- Stage 3: Comparison of zones by night flow
- Stage 4: Pilot zone water use and water balance reporting
- Stage 5: Reporting implementation
- Stage 6: Water use procedures
- Stage 7: Water loss reduction programme

Water Use Management Scoping Exercise outcomes

- Clarity and agreement on the objectives for Water Use Management
- A clear understanding of the various Requirements Opportunities and Risks
- An agreed understanding of the intended role for each system and tool
- An agreed set of priorities and a staged implementation plan to achieve the objectives.

An example of the outcome of the Current Systems and Tools assessment is shown in Figure 3.

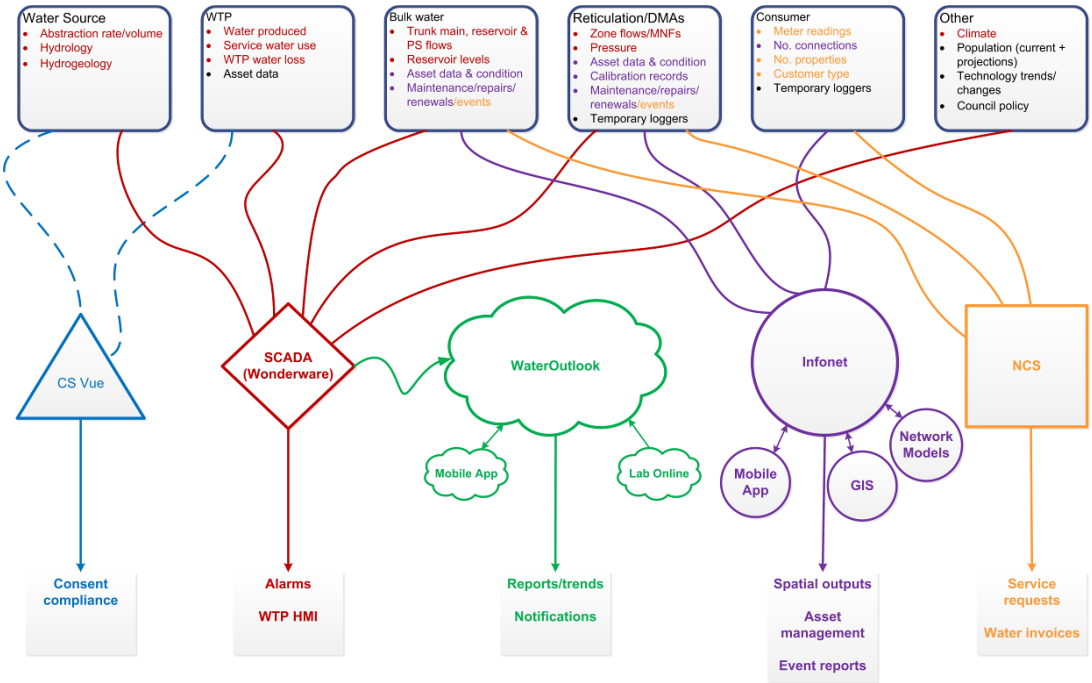

Figure 3 Council's Water Use Management Systems

4.2.2 Zone Metering – minimum night flow monitoring

Implementation of stages 2 and 3 of the Water Use Management Scoping Project Plan have delivered the piloting and rollout of the minimum night flow reporting for all 19 DMAs across the district. Council now gets weekly reports on the minimum night flows (MNF) for each water supply and zones. Figure 4 provides an example of the report, with weekly and 90 days graphs showing trends in MNF.

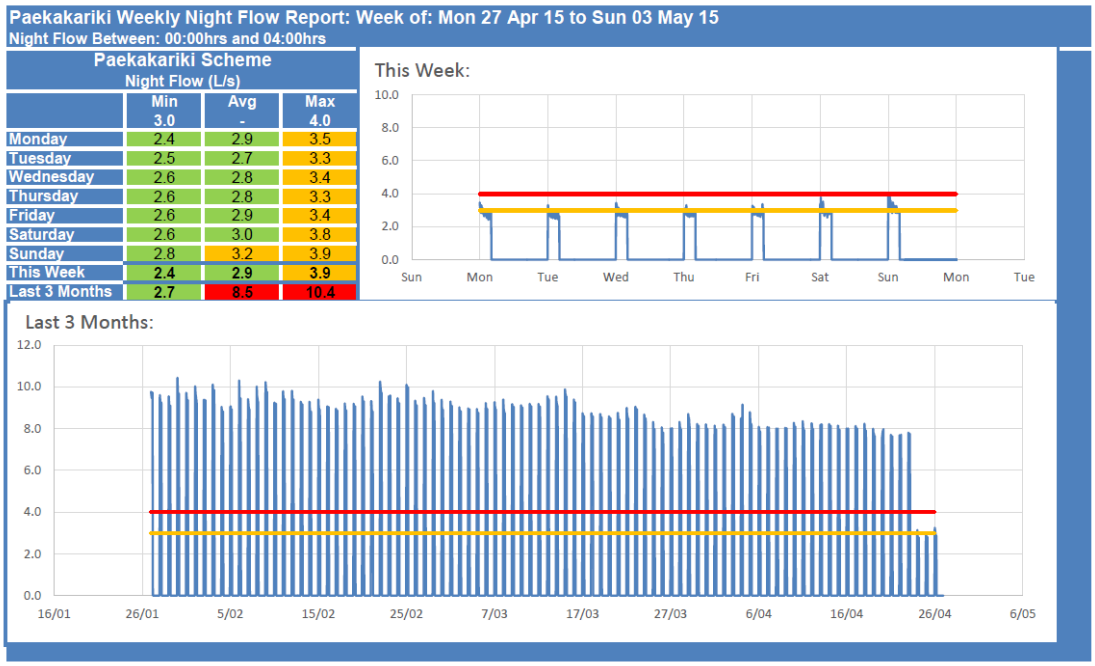

Figure 4 The Paekākāriki report shows the new Council template for reporting weekly MNF performance of each zone, network or water supply

Figure 5 shows how each MNF report includes a schematic to show zones in the network being monitored.

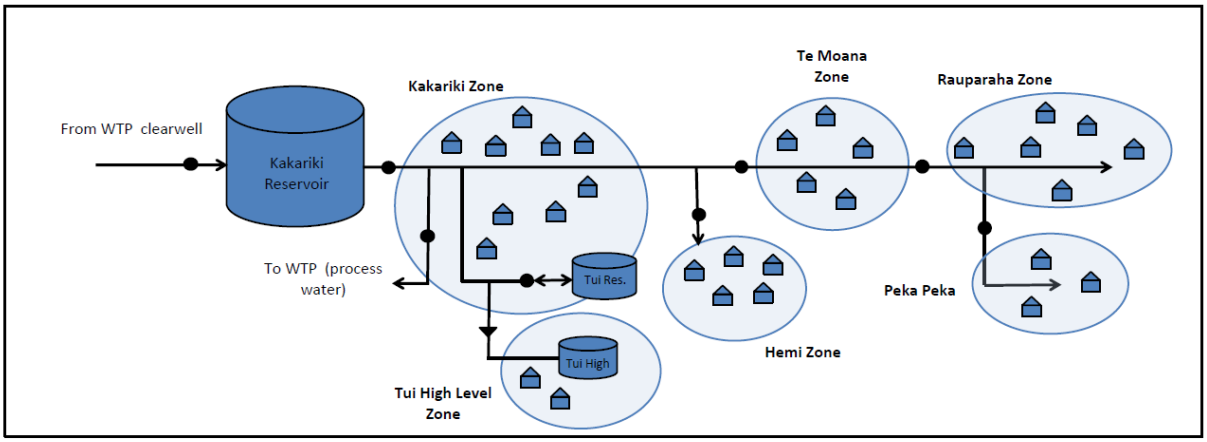

Figure 5 Wateroutlook schematic from the Waikanae MNF report

Zone Metering Outcomes

- Assess the MNF trends in each zone and water supply
- Identify prioritises for targeted leak detection and repair

- Assess effectiveness of leak repair work

4.2.3 Using water meter data for modelling and water balance calculations

Council is now reading water meters on a rolling three month cycle, with a third of the meters being read each month. The read routes for water meters have been aligned with district meter areas so that the information can be used in future water balance calculations at the zone level.

In 2014/15 Council used the consumer meter readings in the development of the 2015/16 revenue water projections. This calculation has been used in conjunction with the annual demand recorded in Wateroutlook to provide the basis for the 2014/15 water balance calculation. This provides an indication of the level of water loss in each supply and results shown in section 4.3.1.

Over 2015/16 Council will be investigating how to improve this process further including automation of the calculation to the NZ Waterloss Benchmark standard.

4.3 Reducing leakage in water supplies

4.3.1 Finding and repairing leaks on the public side of reticulation network

4.3.1.1 Leak investigations

Council used the water management reporting systems established in the first half of the year to target leak detection activities. Three areas were prioritised for investigation and leak detection and location surveys in Paekākāriki and two other network areas were then undertaken. The investigations covered 65km, 14% of the 460km of water networks.

Paekākāriki results

Council noticed the minimum night flows (MNF) steadily increasing in the Paekākāriki Supply. Council commissioned a network wide acoustic leak sweep. The leak sweep covered over 19km of Paekākāriki's network and 782 private connections were checked for signs of leakage.

The initial network survey identified a number of minor leaks. Having eliminated the network as the source of major leakage staff subsequently located a damaged lateral off a trunk main that was leaking at an estimated rate of 432m^3/day; over 40% of the then Paekākāriki daily consumption.

These leaks were promptly fixed and water use for Paekākāriki has dropped back to normal. Paekākāriki is the oldest network in the district and has also recently undergone pipe renewal works in Ames Street, Wellington Road and Ocean Road. Figure 4 on page 9 shows the dramatic drop in MNF flow once the leak was repaired on 23 February 2015.

Waikanae results

In the Waikanae the Kakariki Zone and Hemi Zone both showed signs of increasing MNF and they ranked the highest for further investigation. The Waikanae acoustic sweep covered over 45km of the network and checked 1911 private connections for signs of leakage.

The surveys have identified 29 suspected leaks totalling an estimated 206m^3/day. To the end of June 2014 11 laterals have been repaired. The remaining leaks are being repaired in 2015/16. Council is working with property owners to repair the private leaks.

Summary of results

Table 4 summarises the issues identified by the leak investigations.

	WPR Network		Paekākāriki Network		
Issues Identified, reductions made	Amount of Issues Identified	Estimated Water-loss (m^3/day)	Amount of Issues Identified	Estimated Water-loss (m^3/day)	Overall Total (m^3/day)
Lateral	15	140	2	465	605
Hydrant	2	6	0	0	6
Valve	4	10	0	0	10
Private leak	8	50	3	12	62
Estimated total water lost		206		477	683
Impact of repairs		79		465	544
Remaining loss for repair in 2015/16		127		12	139

Table 4 Summary of leak investigations and repair for 2014/15

4.3.1.2 Reactive and planned renewal work undertaken by Council

Table 5 shows the reactive and planned renewal work undertaken by Council in 2014/15 on the public networks to resolve leaks as they arose, as well as planned renewals.

Activity undertaken	Reactive or planned	Ōtaki Network	WPR Network	Paekākāriki Network	District Total*
Repair hydrant	Reactive	3	7	0	10
Replace hydrant	Reactive	3	24	0	27
Repair main	Reactive	1	2	0	3
Repair main - asset failure	Reactive	5	17	6	28
Replace mains	Planned	0	1 (563m)	1 (412m)	2 (975m)
Repair valve	Reactive	3	8	0	11
Replace valves	Reactive	2	3	0	5
Repair toby	Reactive	5	26	1	32
Replace toby	Reactive	59	89	10	158
Repair lateral	Reactive	38	71	8	117
Repair lateral - asset failure	Reactive	66	235	16	317
Replace lateral	Reactive	7	49	8	64
Total		192	532	50	774
* Doesn't include Hautere Water Supply					

Table 5 Reactive maintenance on the each network over the 1 July 2014 – 30 June 2015 period.

4.3.2 Finding and repairing private leaks

At the time of the report, Council had 443 private leaks on record from when meters were first installed. As stated in the 2013/14 report, Council used a variety of tools to encourage property owners to fix their leaks including, trial reads, home visits, providing a local plumbing directory, etc. Then as the new charging begun, property owners had a financial incentive to fix their leaks.

Council compared the two most recent readings with the trial read period 01/01/2104 and 01/07/2014. Over 97% had fixed their leaks and achieved an overall 90% reduction in water use.

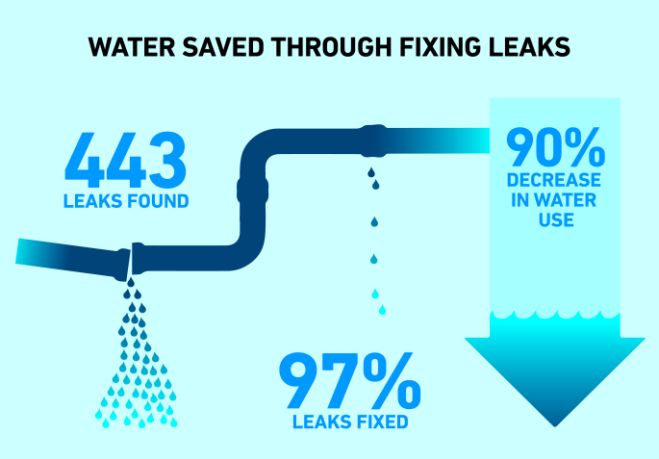

Figure 6 Savings made through fixing private leaks

Finding and repairing leak outcomes:

- The systematic approach to the prioritisation of DMA leakage control activities implemented
- 3 of the 19 zones, 14% of the network length surveyed for leakage.
- 97% of private leaks identified during meter installation now fixed.
- 667 m3/day of estimated leakage identified through leak surveys.
- 544 m3/day of estimated leakage repaired after leak surveys.
- Current Annual Water Loss (Council Networks) for each supply benchmarked for future comparison

4.4 Regulation

4.4.1 Council's District Plan water demand management requirements

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.

These requirements flatten any peak demands arising from outdoor use from new homes being built.

District Plan water demand management outcomes:

- Council approved about 130 District Plan compliant homes across the District over the 2014/15 period.

4.5 Financial Incentives

4.5.1 Credit due to fixing private leaks

Council provided a six month grace period for property owners to fix their leaks. When property owners provided evidence of fixing their leak, the owners were not charged for the water lost to leaks. The aim was to provide additional time to prepare, budget and fix their leaks.

Over 200 property owners made an application for a credit on their water account. In total nearly 70,000m^3 was wavered or $66,336 in total.

Leak credit outcomes:

- 200+ properties fixed leaks and sought a credit for water lost due to the leak.

4.5.2 Hardship grants

Council offered three schemes to support residents on limited income to assist residents in financial hardship.

- The Hardship Grant provides up to $300 of rates remission
- One off High Cost Grant provides up to $300 to be put towards unexpected costs. This includes repairing leaks.
- Vulnerable Families remission provides a grant towards the cost of water for low income households with four or more dependents. These households would pay the same as a household with three dependents.

4.5.3 Interest free rates payback scheme

Council offers a $5000 targeted rate for residents to install a rainwater tank or greywater system for outdoor irrigation. 40 properties have taken up the offer in 2014/15. A total of $161,686 of the $217,350 funding available has now been committed.

Interest free rates payback outcome:

- 40 properties took up the offer over the 2014/15 period.

4.6 Education

Water Education Service provided curriculum units and facilitator support for Early Childhood Education, Primary Schools and Colleges wanting to explore water supply and conservation as a topic.

Council developed a water audit tool to assist schools better manager their water use. This will be rolled out in 2015/16.

Education outcome:

- Local students and their families had the opportunity to learn about water conservation and water metering.

4.7 Fostering innovation

While no grants will be available, 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 use results 2014/15

5.1 Changes in water use

A substantive change in the water use both average and peak has been achieved in 2014/15. Sharp changes in the water demand started around April 2014 at the start of trial readings when people began to have information about their specific water use and the indicative cost for that water under the new charging regime. This reduction continued through the winter and as spring and summer began typical seasonal increases were subdued. In a summer that had only the third of rain from last year the peak demand remained markedly reduced.

Figure 7 shows the significant reduction in water use that occurred over 2014/15 as a result of the new charging regime. While 2014/15 was drier than 2013/14, the reduction in average daily demand across the district was ***3,400m^3/day***. Figure 8 shows how demand changed for WPR.

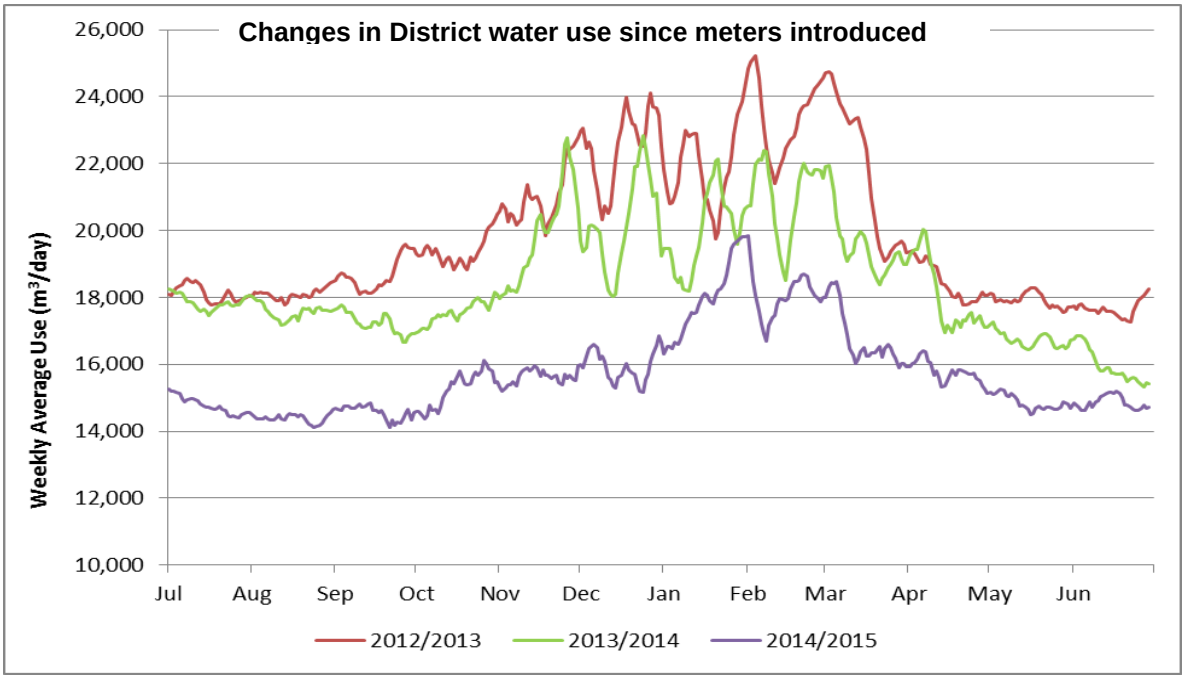

Figure 7 District wide water demand for the last three years has changed with the installation of meters and new metered charging in place

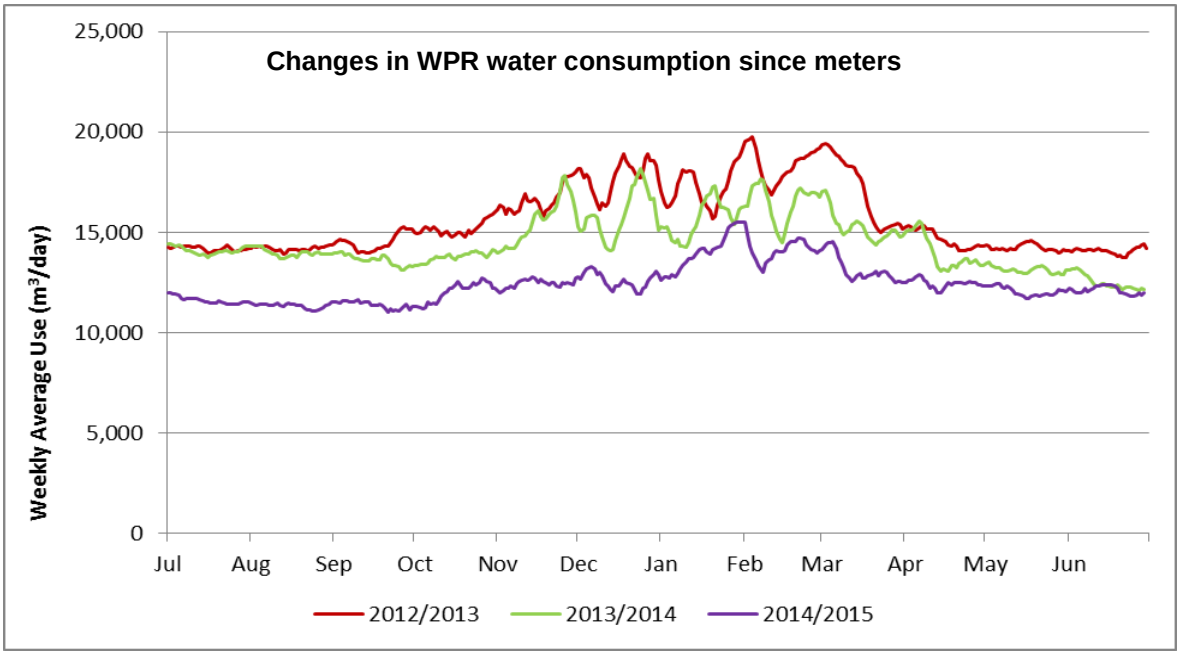

Figure 8 The WPR water demand for the last three years has changed with the installation of meters and new metered charging in place

5.1.1 Estimated water loss for 2014/15

Council used NZ Waterloss Benchmark to calculate the water loss. Table 6 shows the 2012/13 (revised) and 2014/15 water loss estimates and reductions across the District. The table compares the Current Annual Real Loss (CARL) for the public-side leakage and Customer Side Leakage (CSL) for private supply pipe leakage for the District.

Water losses	2012/13 (revised) (m^3/day[1])	2014/15 (m^3/day[1])	Water Loss Reduction (m^3/day[1])	Water Loss Reduction
Current Annual Real Losses	3,900	3,680	220	6%
Customer Side Leakage	3,580	560	3,020	84%
Total Real Water Losses	7,480	4,235	3,245	43%

Table 6 Progress made in reducing water loss across the District since 2012/13

Water metering has been a driver in identification of leakage and incentivising repair on the private side with an estimated 84% reduction in private daily water loss. The repairs undertaken on the public side in 2014/15 have helped reduce the rate of leakage by 6%. The estimated total real water loss by supply can be seen in table 7 below.

Water Supply	2012/13 (m^3/day[1])	2014/15 (m^3/day[1])
Ōtaki	2,090	1,190
WPR	5,160	2,920
Paekākāriki	230	125
Total	7,480	4,235

Table 7 Change in total water loss estimate by supply since 2012/13

The total water loss estimate for 2012/13 was 7,480 m^3/day. Council can now separate actual use recorded by metered connections from water supplied into each network and arrive at a more accurate Current Annual Real Loss figure for the year. The CARL for the District for 2014/15 was 3680 m3/day. Using this figure the 2012/13 allocation of the water loss to public and private side leakage was revised giving a more accurate measure of public and customer losses in 2012/13.

[1] Rounded to nearest 10 m^3/day

5.2 Peak water use

Figure 9 shows peak water use has declined and on average across the District has reached 437 lpd, a 26% reduction from 2012/13 before water meter readings or charging commenced.

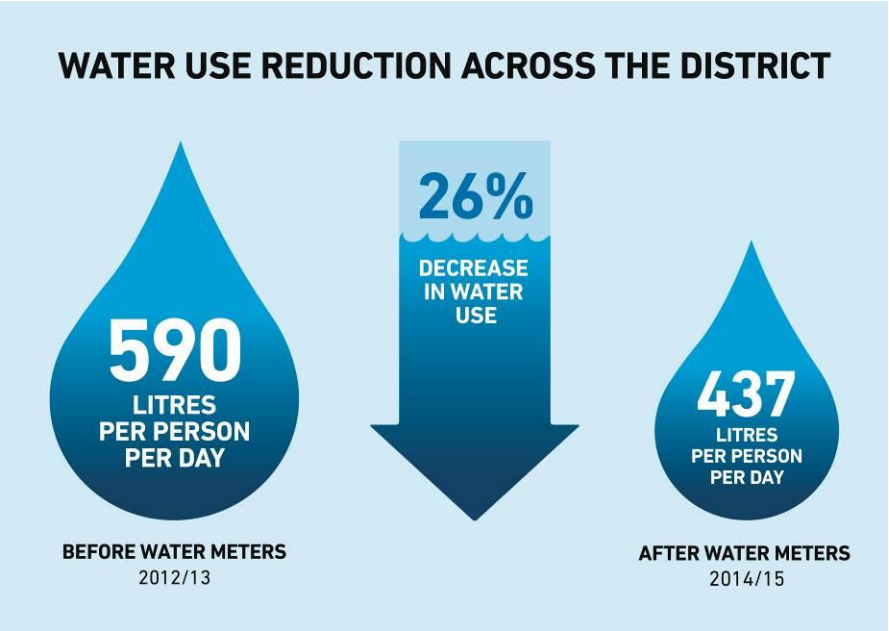

Figure 9 Changes in peak water use since water meters introduced

The peak water use for the three water supplies for 2014/15 and the preceding years is shown in Figure 10 and Table 8.

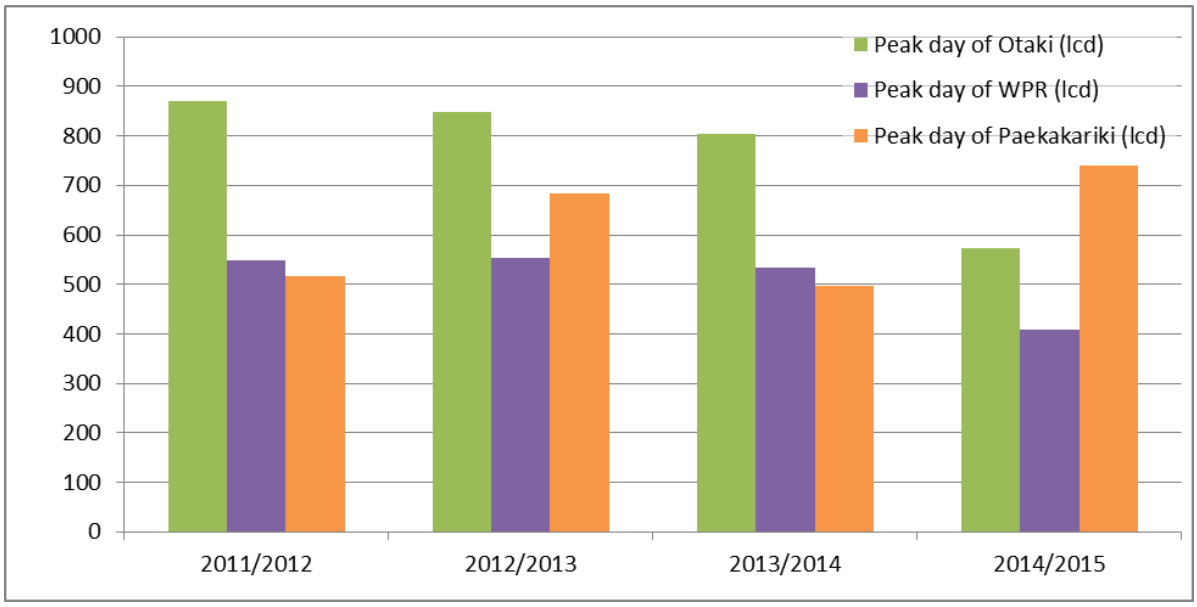

Figure 10 Daily peak day figures for each Kapiti Coast water supplies over the last four years

Year	Ōtaki	WPR	Paekākāriki	District-wide
2011/2012	870	549	517	588
2012/2013	848	554	683	590
2013/2014	805	534	496	557
2014/2015	574	409	740	437
2015/16 490 lpd target met in 2014/15?	On target	Target met	Further work required	Target met

Table 8 Peak consumption for each network and high water use days

The District peak water use dropped by over 120lpd since last year and reached the 490lpd target. The peak water use across the WPR has continued on a downward trend and despite 2014/15 summer being one of the driest on record, peak demand fell below the 490lpd target. The Ōtaki supply declined and still sits above the peak 490lpd target. Section 4.3 provides more detail on how a large leak in Paekākāriki's caused a high peak day use.

Table 9 shows the number of days WPR water use exceeded various totals and the peak water use day for the year. Over the 2014/15 summer period, water use didn't exceeded 18,000m^3/day for the WPR scheme once. The reduction in water use continued from the previous year.

Year	Days greater than 18,000 m^3/day	Days greater than 20,000 m^3/day	Days greater than 21,000 m^3/day	Days greater than 22,000 m^3/day	Peak day consumption m^3/day
2011/2012	42	5	0	0	20,605
2012/2013	63	5	0	0	20,973
2013/2014	11	1	0	0	20,359
2014/2015	0	0	0	0	15,712

Table 9 Peak consumption for WPR scheme and high water use days

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.

Population source	Year	Ōtaki	WPR combined	Paekākāriki
Census 2006	2006/07	5,460	35,404	1,590
LTP projection 2007		5,634	35,656	1,641
LTP 2007-12 annual increase	2007/08	5,646	36,079	1,622
LTP 2007-12 annual inc.	2008/09	5,658	36,501	1,603
LTP 2007-12 annual inc.	2009/10	5,671	36,924	1,585
LTP 2007-12 annual inc.	2010/11	5,683	37,346	1,566
LTP projection 2012	2011/12	5,695	37,769	1,547
Census 2013	2012/13	5,778 (5.8%)	37,823 (6.9%)	1,655 (4.1%)
Census 2013 to LTP 2018 Annual inc	2013/14	5,813	38,106	1,634
Census 2013 to LTP 2018 Annual inc	2014/15	5848	38,389	1,613

Table 10 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 Waikanae, Paraparaumu and Raumati networks, for WPR as a whole and Ōtaki and Paekākāriki.

7 Water Conservation and Demand Management Activities 2015/16

7.1 Council leadership

7.1.1 Informed community

7.1.1.1 Communications and engagement planning

Council will review the communications and engagement requirements for the coming years and develop a water communications strategy for in line with the Councils long term plan. The review will

- Examine the Long Term Plan forward works programme for water
- Review engagement processes and progress to date
- Identify key themes to communicate and options for communications
- Develop a strategy for keeping the community informed on issues relating to water.

7.1.1.2 Digital support

Website updates will continue as long as needed. Council's **Facebook page** will be used to inform the community and identify and address public concerns.

7.1.1.3 Elected members and Council staff

Elected members and Council staff will continue to be kept up to date.

7.1.1.4 2015 Sustainable Home and Garden Show

Council will continue offering advice on how residents can most efficiently use water and promote services related to water use reduction.

7.1.2 Quality Advice and information

7.1.2.1 Water Conservation Advisor

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

7.1.2.2 Green Gardener

Green Gardener will continue offering free garden advice to residents, community groups and schools to create water efficient gardens via articles, workshops and demonstrations.

7.1.2.3 Ecodesign Advisor

Ecodesign Advisor will continue including water conservation in the two hour assessment of resident home's.

7.1.2.4 Community groups and business

While water meters have been implemented, experiences in other areas show it takes time for community to adjust. Council will continue to be available to assist community groups adjust to the new charging scheme. A focus on providing a tool for water wise businesses to undertake a water audit will be progressed from the work undertaken with schools to date.

Council will continue to assist residents to reduce their water use and action leak repairs in 2015/16.

7.1.3 Reduce Council water use

All Council properties pay applicable rates in accordance with the ratings Act (2002) including water rates. Council will monitor and continue to seek ways to reduce water use at properties under its control using the information provided by water metering.

Over 2015/16, Council aims to:

- Identify and analyse water use in areas managed by Council
- Prioritise areas for further investigation
- Pilot a water audit on a key Council asset

7.2 Better data, Better results

7.2.1 Zone metering

7.2.1.1 Monitoring leakage across District networks and supplies

Although Council has already progressed elements of stages 4-7 of the Water Use Management preliminary project plan focus will be given to bedding in stages 2, 3 and 5 and costing stage 4 for piloting. The implementation of stages 6 and 7 will be reviewed at the completion of stage 5.

- Stage 4: Pilot zone water use and water balance reporting – develop reports for a pilot zone that include graphs of water supplied and estimate water loss indicators from quarterly water balance.
- Stage 5: reporting implementation – develop similar water use and water balance reports for other networks and their zones.
- Stage 6: documenting of water use processes – develop a reference document that describes the sources of water use data, Council's systems for data management, the transfer of data between systems, data validation and reporting processes.
- Stage 7: water loss reduction programme - setting targets for night flows and/or water loss indicators, and embarking on a staged programme of targeted water loss reduction by zone and by scheme or network

7.2.2 Understanding water use

Using the consumer meter readings, the accuracy of zone and system water balance calculations will be significantly improved allowing increased confidence in water use figures to target active leakage control, repairs and future renewals.

7.2.3 Network performance, renewals planning and leakage reduction analysis

Based on the observations of the recent and historical leakage surveys, service request records, water pipe condition sampling, water meter installation records, network performance and failure risk profiling the priority for renewals will be reviewed.

The water mains are known to be in generally good condition while information would suggest water service pipes (laterals) in the District may present a higher risk of leakage. Laterals are estimated to make up roughly half of the total length of water reticulation pipework.

As a result of the water meter installation project, a lot more is now known about the laterals in the district. Some of the issues observed have confirmed the extent of poor materials including copper,

extensive amounts of polybutylene (including some Dux Quest) and more galvanised pipe installed across the district.

Council propose to take the information now available and assess the leakage risk of laterals and consider the benefits of targeting laterals for replacement. The prioritisation of laterals vs. mains renewals will be considered and inform the 2015/16 renewals programme.

7.3 Reducing leakage in water supplies

7.3.1 Finding and repairing private leaks

The grace period for fixing leaks is now completed. Council will be aligning its expectations with it Water Supply Bylaw, where private leaks will need to be fixed within 21 days of notification. Property owners will still be able to see a credit on their water account due to fixing the leak. All identified leaks will be actively monitored and outstanding leakage pursed.

7.3.2 Finding and repairing leaks on the public side of reticulation network

Using information from the Wateroutlook monitoring and reporting tool, Council will work to prioritise zones for leak investigation and repairs. Council will intervene if a zone's leakage becomes economical to survey the zone to find and repair the leaks.

$41,296 of funding is provided for leak detection and repair across the WPR network in the 2015/16 Annual Plan. $68,827 in total will be available for leak detection and repair across the District in the 2015/2016 Annual Plan.

$327,827 of funding is provided for network maintenance (that includes water main reactive repairs) across the WPR in the 2015/16 Annual Plan. $439,062 of funding is available in total for network maintenance across the District in the 2015/16 Annual Plan.

As mentioned in Section 7.2.3, Council will be investigating the benefits of lateral renewals in the district and this will inform where Council invests in pipe renewals. $500,000 of funding is available for mains renewals across the District in the 2015/16 Annual Plan.

7.4 Regulation

7.4.1 Council's District Plan water demand management requirements

Council will be developing a new home owner's guide for residents with these systems in place. Council will make this available for new home owners before they move in.

7.5 Financial Incentives

7.5.1 Interest free rates payback scheme

No changes expected with this activity. $210,000 of funding has been allocated of 2015/16.

7.5.2 Rates relief

The rates remission fund that finances the large family credit, one of costs and hardship grants remains at $200,000.

7.6 Education

Council will continue providing facilitated education service for local schools.

A new activity will be to assist schools undertake water audits of their property and activities to identify water savings opportunities and business cases for auctioning the savings.

This will be funded from the Sustainable water use budget ($67,000).

7.7 Fostering innovation

While no grants will be available, 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.

7.8 Investing in water demand management and leak reduction for 2015/2016

Table 11 outlines the key funding allocations for water conservation and demand management work for 2015/16.

Activity	District-wide budget for 2015/16
Keeping community informed, education and providing advice	$ 67,000
Targeted Rate for rainwater or greywater systems	$ 210,000
Water network condition rating and investigation	$ 87,380
Leak detection and repair	$ 68,827
Reactive renewals	$ 439,062
Mains renewal and repair	$ 500,000
Total	**$1,372,269.00**

Table 11 planned expenditure for 2015/16 for water demand management and leak reduction

Appendix 1 Assessment of Environmental Effects section 1.3

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.