

Te

Kaitiaki Wai

Wellington Water's official magazine | Winter 2018

Another wet winter?

Why your home
is more prone to
flooding

Six Principles

Taking a principles-based
approach to three waters
management

Not if, but when:

building Wellington's
resilience for
'the big one'



**Wellington
Water**

Our water, our future.



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Welcome to our first edition of Te Kaitiaki Wai – Wellington Water’s official magazine. We’ve got lots of great stories to share with you, and we’re looking forward to getting to know you better.

For our three water networks (drinking/potable water, stormwater and wastewater), the wetter weather can pose risks and opportunities.

While it’s the perfect time to make sure our storage lakes (Stuart Macaskill Lakes) are replenished, so we have enough water stored for summer, we must also manage the capacity of our stormwater network to prevent overflows. If stormwater enters and overwhelms our wastewater network, this can cause overflows that can wreak havoc in terms of public health and environmental impacts.

We live in a region which experiences a number of natural hazard events. In recent times these have been

more frequent, particularly short-burst rainfall events. No matter what the event, our customers can rely on us to be out there dealing with the issues and working hard to get our services back up as quickly as possible.

We’re working with government and our client councils to help Wellingtonians be more resilient in the event of a significant earthquake through raising awareness for the need to get water storage sorted (at a household level) and implementing a network of community water stations and distribution points throughout the region. We’ve also been busy looking for an alternative water source in the harbour and the development of more water reservoirs.

To make sure we enhance the health of our waterways and ocean we’re working to reduce wastewater network overflows following heavy rain events. We’ll also monitor the impact of stormwater run-off from

urban stormwater networks.

We’re developing a stormwater strategy, and will work with councils to introduce planning controls to mitigate the effects of stormwater run-off. By 2021 we will complete three major stormwater projects in Tawa, the Porirua central business district, and Kilbirnie.

To make sure we minimise the impact of flooding on people’s lives and proactively plan for the impacts of climate change we’ll complete a three-year modelling programme to understand the full extent of the risk across all catchments. While we know high-risk flooding areas, we’ll model stormwater impacts and work with our client councils and customers to plan how to minimise this impact.

If you’ve got a story to share with us for our next issue, we’d love to hear from you – please flick us an email at info@wellingtonwater.co.nz.

Happy reading! ■



 @wellingtonwater
 @WgtnWaterNZ
 wellingtonwater.co.nz

waterloo treatment plant



Tony Ochsner,
Operations Technician

Tony is monitoring the Optimiser programme. The Optimiser is a computer programme which runs in the background, primarily to optimise power usage and reduce running costs.

It does this by predicting the demand on our bulk water system and juggling things like available water supply and cost of treatment at the plants. Then it schedules pumps on and off accordingly to maintain reservoir levels while avoiding peak power demand periods.

The screen Tony is looking at shows a 12-hour prediction of the reservoir level for McAlister Park, Waterloo Treatment Plant’s outflow, and the schedule for the Wellington pumps.



Lance Harrison,
Maintenance Fitter

Lance is kitting up in Personal Protective Equipment (PPE) ready to perform a lime dosing system clean.

The lime dosing system is cleaned once a week to remove a build-up of calcium, a by-product of hydrated lime slurry.



William Stewart,
Project Facilitator/Treatment Operations

William is checking the chlorine residual level at the Waterloo treatment plant using a pocket colorimeter. The water in the sample vial has gone pink, visually indicating the presence of chlorine.

A reagent is added to a 10ml vial of water sample. The change in colour is then measured using a pocket meter to give an accurate reading of chlorine, which in this case is ~0.77ppm. ■

On the hunt for alternative fresh water sources

harbour bores



Drilling barge, Tuhora, being transported back out into Wellington Harbour, January 2018

The search for an alternative fresh water source beneath Wellington Harbour began at the end of June 2017.

Wellington city's water is piped from the Hutt Valley along the State Highway 1 and 2 corridors. In a large earthquake, it's likely these main water pipelines will break, and could take months to repair.

Wellington needs an alternative water supply because parts of the

Wellington could be without water for up to 100 days after a significant quake

city, particularly the eastern and southern suburbs, could be without water for up to 100 days after a significant quake.

To ensure Wellington is prepared, we began investigating ways to provide Wellington city with an increased and more resilient fresh water supply.

Investigations highlighted two water source options – a cross-harbour pipeline and under harbour bore. If viable, the under harbour bore

could be a cheaper and more resilient alternative to a cross-harbour pipeline.

In June 2017, the barge and drilling rig, Tuhora, was fitted out at Taranaki Wharf and deployed about a kilometre off the Miramar Peninsula to see if suitable drinking water could be found in the Waiwhetu Aquifer which extends under the harbour floor.

Fresh water was discovered in sufficient volumes that could be used as an emergency supply. However, it

Fresh water was discovered in the Waiwhetu Aquifer that extends under the harbour floor

would require significant treatment to make it safe for drinking, as early tests identified levels of manganese, iron, and ammonia.

In January 2018, the harbour bores project resumed with Tuhora heading back out into the harbour at a new location near Somes/Matiu Island. After a month of exploratory drilling, it headed back to the wharf and is now decommissioned.

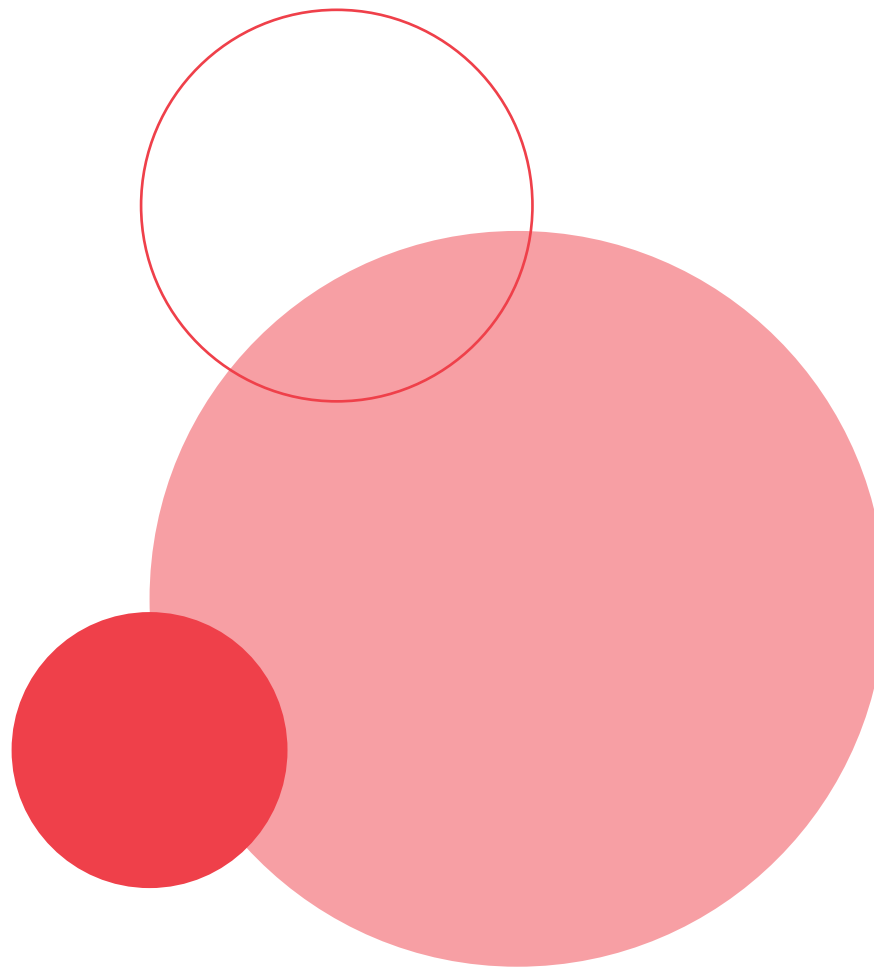
A full analysis of all data from both

exploratory bores is now underway. The results from the second bore are not yet available, but early indications are positive as the upper aquifer is thicker in this location than the first, but the water quality is not yet known.

Additional analysis has also been commissioned from GNS Science into the aquifer and the likely thickness of the aquiclude (the solid, impermeable area underlying and overlying the aquifer).

Once the data has been assessed, a full report will be developed, providing a comparative analysis of the harbour bores against the cross-harbour pipeline, looking at the business cases of both in providing Wellington with an alternative water supply.

We expect to have some decisions on the way forward by July this year. ■



not if, but when

The first of the emergency bladders being manufactured February 2018



Drilling barge, Tuhora, in Wellington Harbour 2017

Building Wellington's resilience for 'the big one'

Have you thought about what you'd do for drinking water after a major quake? And do you have a plan for what to do with your wastewater (ones and twos)?

Our water network is made up of more than 2000 kilometres of buried pipes – and around 1400 kilometres are considered vulnerable. Around 30 per cent of our 149 water reservoirs are also considered vulnerable.

Following a significant earthquake, some communities will be without drinking water and wastewater services for more than 100 days. There will be no water in the taps, and you'll be unable to flush your toilet, or use your sink.

*You need
20 litres
of stored water
per person
per day,
for at least
seven days*

We will do our best to get our water services back up and running, but the time this takes will depend on the damage to our infrastructure.

In an emergency, the first thing people need to rely on is themselves and their families – so storing water and food is a must for every household. We recommend you need enough stored water (20 litres per person per day) for you, your family, and your pets, for at least seven days.

The single best thing people can do to help Wellington survive and thrive after a major earthquake is to be prepared.

Preparing communities

We are working with local councils and central government to establish an above-ground emergency water network. Made up of at least 22 water stations across metropolitan Wellington, they will supply more than 300 strategically-placed water collection points throughout Wellington, Lower Hutt, Upper Hutt and Porirua.

From day eight you'll be able to get a daily supply of 20 litres of water per person, from these community water collection points. There'll be a collection point within one kilometre from your home.

Get your water storage sorted TODAY!

Plastic bottles

Water can be stored in plastic juice or soft drink bottles that have been washed with warm soapy water and rinsed. Don't use milk bottles, as they are too difficult to clean well and will spoil your water. Fill each bottle with tap water until it overflows.

Store your bottles in a dark, cool place, and replace the water every 12 months. Put a reminder on your calendar, or do it at the same time as checking your smoke alarm batteries when daylight saving starts/ends.

Water tanks

You can buy a 200-litre water tank from your local council for \$105. They will fit into most cars, and are easy to install at home. All fittings are included, including a diverter kit to collect rainwater, strapping, a bung and brass tap.

We recommend filling it up with hose water first so you have chlorinated water ready from the outset. Then hook up the diverter if you need it.

Because it doesn't need to be fitted to a downpipe, a water tank is a good option even if you're renting – just empty it and take it with you when you move. ■



Emergency drinking water and wastewater kit supplies

From mid-June 2018, 22 community water stations will be strategically-placed throughout the Wellington region.

Community water stations will only operate from day 8+ onwards following an earthquake, so from days 0-7 all households need to be prepared and have water stored at home.

The community water station signs demonstrate where the water comes from and how it's distributed.

We have an Emergency Water section on our website where people can go for more information about the water stations. Visit wellingtonwater.co.nz/emergency-water.

WE'RE BUILDING A COMMUNITY WATER STATION

Wellington Water

After a significant earthquake some suburbs could be without water for more than 100 days

For the first seven days you'll be relying on water you have stored at home.

We recommend that you have 20 litres of stored water for every person in your household, every day – for at least seven days.
That's 140 litres for an average four-person home.

NEW EMERGENCY WATER SOURCES

By mid-2018, community water stations will be strategically located across the Wellington region. Water will be available at this site from day eight after a large earthquake.

Construction is scheduled to begin in **March 2018**. Work will finish in **June 2018**.

Where will the water come from?

Groundwater will be extracted through an emergency bore. From day eight after the earthquake this water station will provide around 65,000 litres of treated water every day. This is enough to supply around 3,000 people from the surrounding community with 20 litres of water every day.

What will this water station do?

- Store equipment to extract, treat and distribute water from day eight after a large earthquake.
- You can collect safe water from a water station, or at a supply point near your home.
- Help provide 20 litres of water every day for every person.
- Water will be available at water stations, and more than 300 water collection points across Wellington.
- Water will be extracted, treated and made available at this site.
- No one will have to go more than 1,000 metres to collect water.

Find out more about emergency water

Web: wellingtonwater.co.nz/emergency-water
Email: afterday7@wellingtonwater.co.nz
Phone: (04) 912 4400

Our water, our future.

Wellington Water is owned by the Hutt, Porirua, Upper and Lower Hutt local councils and Greater Wellington Regional Council. We manage their drinking water, wastewater and stormwater services.

CDEM innovation

Significant Contributions to Civil Defence Emergency Management (CDEM) have been recognised by Minister of Civil Defence Kris Faafoi at an event in Wellington on 30 May.

Mr Faafoi said that the awards ceremony recognised people and organisations who have made a vital contribution to CDEM in New Zealand.

“Through their efforts, they have helped make our communities safer and more resilient,” said Mr Faafoi.

The awards ceremony also recognised innovation in CDEM through the presentation of the Director’s Innovation Award, which was jointly awarded to Wellington Water and Cardno for Community Infrastructure Resilience (CIR): keeping water flowing to 400,000 people following a major earthquake in Wellington.

This award recognises exceptional innovation or creativity that has pushed the boundaries of current CDEM practice in New Zealand.

Wellington Water’s Mark Kinvig (Group Manager, Network Strategy & Planning) and Nick Hewer-Hewitt (Service Delivery Facilitator - Operations, Network & Customer Operations) were at the ceremony held at The Beehive to collect the award on behalf of Wellington Water.

Mark said that the award was a great recognition of the collaboration between Wellington Water and Cardno to deliver the CIR programme of work.

“We are grateful to be recognised for the hard work and innovative approach to delivering this programme in such a short timeframe. The outcomes will help our communities to be more prepared and resilient in the event of a significant natural disaster, and this is something we are very proud of,” Mr Kinvig said.

The CIR programme is jointly funded by central government and the Wellington, Porirua, Upper Hutt and Hutt City Councils, and has three elements:

1. building awareness about the need for household water resilience (20 litres per person, per day) to help people cope for at least the first seven days after an earthquake;
2. building community water resilience; and
3. strengthening water infrastructure.

We’re currently building a comprehensive above ground water distribution network that will provide emergency water from nine new bores, and a number of streams and rivers will be available through 22 new water treatment stations, as well as desalination systems. ■

six principles

Taking a principles-based approach to three waters management

Principles serve to guide behaviour and practice. They are foundational beliefs or understandings of how we believe things should be done, and as such, they guide what we do. They are especially valuable when decisions have to be made quickly, or in the absence of hard and fast rules, or in the presence of considerable complexity and ambiguity.

Recognising this complexity, the first recommendation of the Stage Two inquiry into the contamination of Havelock North’s water in August 2016, which caused a third of the population there to fall ill, was that water supply managers adopt six principles for assuring safe drinking water.*

*Recommendation 1. *The six fundamental principles of drinking water safety should be recorded and promulgated to the industry and used to inform all recommended reforms as well as the operation of the entire drinking water system.*

This reflects the experience that in

spite of all the regulations and rules, processes and standards, procedures and tests that you might care to wrap around something as critical to human health as providing safe water, there are always going to be times when human behaviour can influence outcomes.

As the Inquiry put it, supply systems are vulnerable in countless ways to contamination and a single vulnerability has the potential to cause widespread illness in consumers.

We are embracing this principles-based approach, and we intend to use it to demonstrate both what we’re doing to make sure the water we provide is safe, and how we’re

going about it.

It’s worth noting that two of the principles have a strong cultural element to them. Principle 1: *A high standard of care must be embraced*, and Principle 5: *Suppliers must own the safety of drinking water*, speak to the way we engage with our communities on the work we do, and the way we choose to behave as we carry out our work.

Over the coming year we’ll refine how we report on the six principles and look to broaden their application across other areas of our work. For now, we’ve chosen to present both hard (data-based metrics) and soft (people-focused) performance measures and activities.





A high standard of care must be embraced

We care about our customers and their communities, and will make sure they always have access to safe drinking water now and in the future.

What we do:

- Water quality testing at:
 - source
 - treatment point
 - delivery
- Backflow prevention testing
- Water supply operator and contractor training requirements.

How we do it:

One of our drinking water wells recently recorded a positive E.coli result. We shut this well down and classified it 'non-secure'.
 Note: All water from our active wells is ultra-violet (UV) treated and chlorinated before it's delivered to the customer.



Protection of source water is of paramount importance

We will look after our water sources and catchment areas and will work with others to make sure they are protected from potential contamination.

What we do:

- Source risk management plan
- Resource consent compliance
- Lab test review and audit.

How we do it:

Our source water quality depends on the surrounding catchment. Our river sources are protected, but our aquifer is located in an urban environment. This puts the aquifer at risk from development.

We are working with local authorities to make sure that any development activity takes the aquifer into account.

Recent work to identify an alternative extraction point for aquifer water prioritised the risk of salt water intrusion in viability studies.



Maintain multiple barriers against contamination

Our source-to-tap approach uses multiple robust barriers to make sure the water we supply our customers is and remains safe.

What we do:

- Treatment results
- Monitoring procedures
- Burst and leak responses.

How we do it:

We employ multiple barriers against contamination:

- protection and quality monitoring at source;
- treating raw water;
- secure distribution networks;
- network monitoring; and
- rapid responses to adverse signals such as leaks.

The annual programme of network upgrades and renewals is a core part of improving distribution security. We've recently completed installing network meters to improve our ability to respond to leaks.



Change precedes contamination

We will actively monitor our environment, prepare and respond quickly to any change that could result in the contamination of the drinking water we supply.

What we do:

- Emergency response events
- Customer service response
- Workplace risk management.

How we do it:

Flooding and overflows from the storm or wastewater network can impact customer safety and drinking water quality.

Customers can often be the best early warning system we have to let us know about water quality issues.

We're working hard to make it easier for customers to find us, when they need us, and to respond quickly in times of emergency.



Suppliers must own the safety of drinking water

Our people are responsive, knowledgeable, experienced and committed to making sure we provide safe drinking water to our customers.

What we do:

- Learning participation hours
- Consultation activity
- Responsiveness.

How we do it:

Recently, earthworks created a situation where wastewater entered the water distribution network. Staff from across our business, along with our partners, quickly worked together to make sure the affected community knew what to do to keep themselves safe while the problem was fixed.

We know that people are concerned about major work in their community. Our consultation process on a planned reservoir was commended by community members and commissioners.



Apply a preventive risk management approach

We will actively monitor and manage risks to our water supply from source to tap to make sure we prevent contamination.

What we do:

- Risk audit
- Water safety plan status.

How we do it:

We're preparing a single, regional water plan from the nine water safety plans that are currently in place. This will include identifying nine critical control points, along with points where there's increased pressure to the contamination barriers.

Alongside these, are other risk and assurance processes designed to minimise the chance of contamination. We support activities that make sure our key stakeholders are involved in this work.

“will it flood?”

We're working to make sure Kiwis are prepared in the face of a changing climate

**-Ben Fountain
Wellington Water Chief Advisor,
Stormwater**

Buying a house can be one of life's biggest decisions, so you want to get it right. There are a lot of factors to consider, like: how many bedrooms do you need; does it get enough light; what maintenance does it need; does it have enough storage space; how big is the garden; and, of course, can I afford it?

These days many Kiwis also ask the question 'will it leak?' In the 1990s and 2000s, the combination of changing building regulations, architecture design, construction industry materials and practices created the conditions for a national crisis. The leaky homes legacy has left us with a nationwide scar. Those affected speak not just of the financial hardship, but also about the stress and health impacts.

Another question worth asking is 'will it flood?' This can be a hard question to answer because many parts of our country are only flood-prone under rare weather conditions. But, like a leaky house, a flood-prone home can be just as hard on the owners as a leaky home can be.

Minimising the impacts of flooding on people's lives is one of our service goals. We're trying to help, where we can, and make sure flooding does not become another 'leaky homes crisis'.

Our nation's legacy of establishing towns and cities on floodplains, combined with our shift to slab-on-ground house construction, has left many of us in a vulnerable situation. But whilst our past has left us exposed, it's actually our future climate that could turn our vulnerability into a crisis.

New Zealand experienced a taste of what it should prepare for recently when, in Christchurch, following the earthquake, some low-lying neighbourhoods sunk. Another way of looking at this is that these areas experienced more than half a metre rise in sea level in only one year. Half a metre may not seem like much, but in the floods that followed close on the heels of the earthquakes, this sinking of half a metre was enough to nudge a vulnerable drainage situation into a crisis.

The changing climate is making us think about our toolbox of measures, which we use to manage flood risk.

Traditionally, New Zealand's flooding risk has been managed through a combination of infrastructure and private insurance, and to a lesser degree by development planning controls, community preparedness, and emergency response. As we learn more about the impacts of rising sea

We're trying to help, where we can, and make sure flooding does not become another 'leaky homes crisis'

levels and the increased frequency of rainfall, we recognise the need to place greater emphasis on the flood risk management tools we haven't frequently used before.

Appropriate development planning controls are the most effective and powerful measure that councils can employ to build a community's long-term, sustainable resilience to flooding. The controls encourage the growth of our towns and cities, but also avoid the most vulnerable areas. They also maintain a natural hydrology, enhance natural drainage paths and guide homes and businesses to be built at safer, higher levels.

In many low-lying areas near the coast, the traditional forms of private insurance and flood defence infrastructure are likely to be the least adaptable measures to our changing climate. The consequences of sea level rise and the warming climate are slow-approaching challenges, so we need to make the most of the narrowing window of opportunity to rethink how we grow our neighbourhoods.

A privilege of our democratic society is a community's involvement in shaping its own future. Those of us who are tasked with understanding flooding hazards need to be creative in how we inform and empower our communities to prepare for floods. There are fantastic examples of this engagement happening across New Zealand we can all learn from.

For communities to prepare for flooding, they need access to quality information that explains the risks. Pictures, maps, interactive websites, animations, and virtual reality are some of the many tools that are increasingly being used to communicate effectively. As our



Wellington Water is engaging with communities to help them prepare for floods, develop response plans, and prioritise the vulnerable areas that may need assistance

communities grapple with these complex problems, the challenge will be to draw together a consensus around appropriate responses and to empower communities to make meaningful changes.

A learning following the Canterbury Earthquakes was that the resilience of our communities is one of our greatest assets in a disaster.

Connecting and empowering a community to respond to a flood is an important way we can reduce the impact of flooding on people's lives. Wellington Water is engaging with communities to help them prepare for floods, develop response plans and prioritise the vulnerable areas that may need assistance. A neighbourhood's response helps to avoid a catchment-wide problem being carried only by those at the bottom.

Technology is also providing new tools to empower communities to respond—currently we are developing a system to utilise rain radar, which would provide a warning to location-specific areas that are about to be hit by intense rain, up to two hours beforehand. A lot can be done with a bit of warning, such as moving vehicles, raising valuables, putting barriers in place or closing flood prone roads.

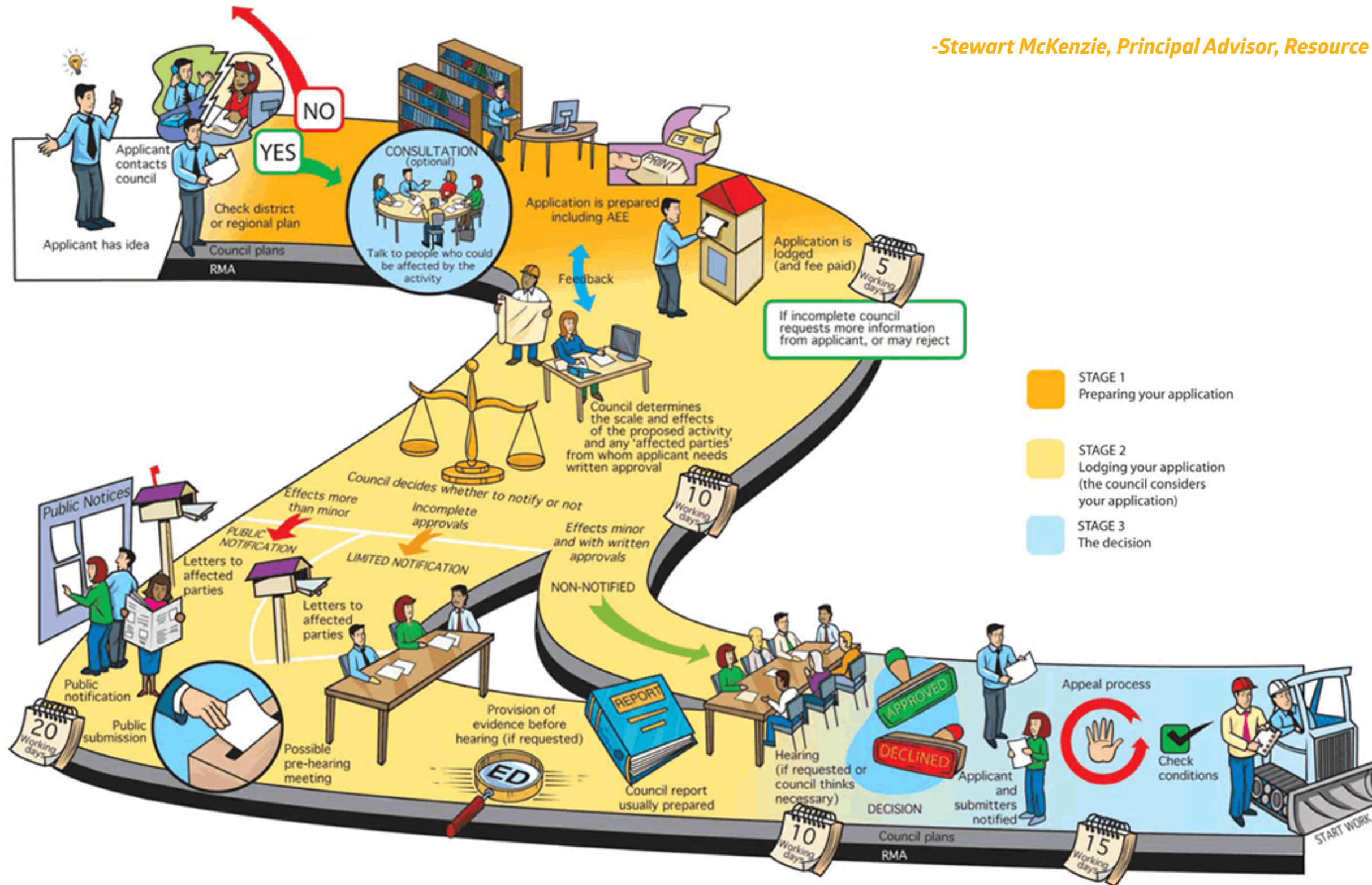
Underpinning all our efforts in minimising the impacts of flooding on people's lives is the need for a strong and reliable base of evidence. But evidence is only as useful as the ability to effectively communicate it.

It is communication that will help us shift from our reactive methods of dealing with floods and our changing climate to a proactive approach, allowing communities to become sustainable, connected and resilient. ■

respect for the environment

The Resource Management Act's Plan-Making Process

-Stewart McKenzie, Principal Advisor, Resource Management Act and Environment



Wellington Water operates in a highly-regulated industry, with the effect of our activities on the natural environment rigorously regulated under the Resource Management Act 1991 (RMA). The overall purpose of the RMA is to achieve 'the sustainable management of natural and physical resources', and the remainder of the Act provides the means to support this.

In our region, the key RMA plan is the Proposed Natural Resources Plan (PNRP). This sets out the objectives, policies and rules for activities affecting water, land and air, and is administered by the Greater Wellington Regional Council (GWRC). Given its broad scope, the PNRP has a direct bearing on the three waters services we provide to customers, affecting everything from how much water we can take for drinking water, what standard we must treat wastewater to, and even how we maintain stormwater assets.

The PNRP replaces five Regional Plans, and is the most fundamental change to our region's past environmental regulation in 20 years. There is a lot at stake for any person, business, farm, industry, etc. that relies on using natural resources (indirectly, everyone). Given how much is at stake, the PNRP



Wellington Water maintains
7500
 stormwater inlet and outlet structures, and
1615km
 of stormwater pipes in the Wellington region

must go through a legal submission and hearing process in front of independent commissioners before it becomes operative, with the potential for appeals.

We submitted a lengthy submission about the PNRP, making over 350 individual submission points relating to water allocation, stormwater, wastewater, discharges to land, activities in streams and rivers, and a host of other matters. We are just one of 526 submitters on the PNRP, with submitters collectively making 14,500 separate submission points.

Overall, we support the intent of the PNRP, as it aligns with our customer outcomes and service goals, particularly 'respect for the environment'. However, we do have concerns with many of the objectives, policies and rules in the PNRP, and we've been presenting evidence on these matters at topic based hearings.

We recently presented evidence to

the fifth of seven hearings about activities in the beds of lakes and rivers, which has a direct bearing on many of our operational activities. This includes the ability to maintain 7500 stormwater inlet and outlet structures and the 1615km of stormwater pipes we are responsible for.

Previous hearings covered strategically important matters such as water quality, allocating drinking water from aquifers and rivers, and policies and rules applying to wastewater and stormwater services.

Our people, including Chief Advisors and the RMA team, along with expert planning and legal advisors, have presented a comprehensive suite of evidence (some 700 pages to date).

The resounding theme from the evidence is that we'll struggle to maintain our service delivery in these areas, given the objectives, policies and rules currently proposed. We have suggested changes to

the PNRP that will make it apply more realistically to three waters' infrastructure and services. We've also suggested a number of changes to the plan's objectives.

We also gave evidence on consenting risk and compliance issues, and highlighted the potential costs that could be borne by ratepayers if the PNRP remains in its current state. The commissioners presiding over the hearing were very interested in our evidence and arguments, and have taken an inquiring approach. This is a positive sign.

One thing's for sure, the process for developing the PNRP is complex and highly contested, and will take several years (it's taken four years just to get to this point). We're in it for the long haul, and are doing our best to influence the PNRP, so it lets us provide an efficient three waters services, whilst at the same time being respectful for the environment and meeting the overall purpose of the RMA. ■

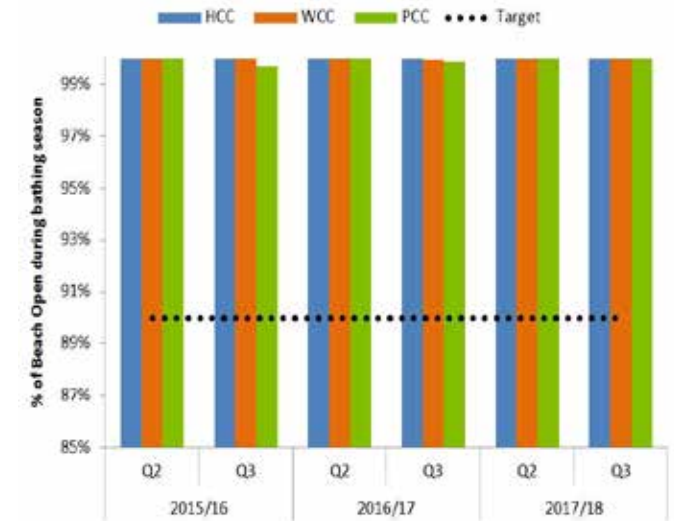
Respect for the environment dashboard

We are mindful of the impacts that our activities have on the environment. We work closely with stakeholders to ensure discharges into waterways and the sea are carefully managed.

Below are the results of our activities from 1 July 2017 – 31 March 2018.

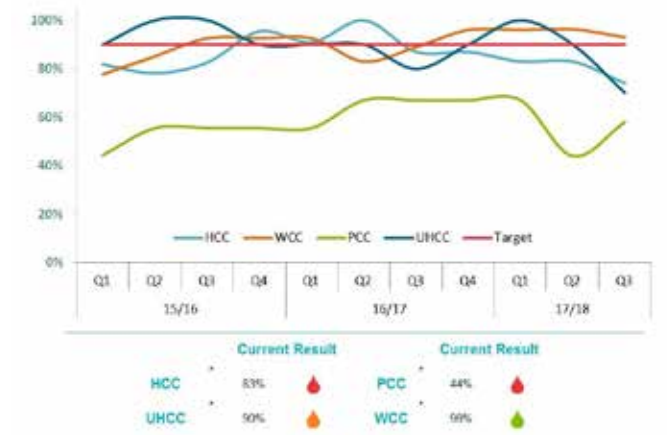
Harbour quality

Target: Each monitored beach is suitable for recreational use 90% of the days during bathing season (1 Nov 2017 - 31 Mar)



Fresh water quality: % of sites compliant

Target: 90% of all freshwater sites have a rolling 12 month median < or = 1000cfu/100ml3



- 🟢 On Track
- 🟡 Some concern
- 🔴 Off track

Overflow discharges from treatment plants

Target: Nil non-consented overflow from treatment plants

*In 15/16, the portion of the HCC/UHCC network operated by HVWS was included in the total number of discharges for the Seaview WWTP. For the 16/17 period the network discharges have been separated from the WWTP discharges.



Wellington Water is conducting a review of its critical health and safety risks to find out if those we've previously identified are, in fact, the ones our people truly face when they're working.

It will help us concentrate our resources on the risks that have the most potential to seriously injure our workers, contractors, and customers - or make them sick.

The review was prompted by an update from WorkSafe New Zealand that identified the top three critical risks workers face. They are:

1. traffic management
2. work equipment
3. falls from heights.

Our Health & Safety and Risk & Assurance teams analysed the risks in our incident reporting system. From this information, we've identified our own critical health and safety risks:

- traffic management
- vehicles and mobile equipment
- tools, equipment and assets
- falls from heights
- excavations
- contact with services such as electricity, gas, sewage, etc
- chemicals
- confined spaces.

Our strategy for managing critical risks is to follow a consistent approach with an emphasis on involving our people, our supply chain and consultants. We seek feedback from these important contributors at each stage of the process.

To start, we will concentrate on the first four critical risks and set up a structure to actively manage them; ideally by eliminating the risk altogether or minimising the opportunity for those risks to cause more harm or ill health. The first critical risk we're addressing is traffic management.

Traffic management

We've held workshops with our senior leadership and our contractors to identify what safety issues workers face when using traffic management processes on worksites. As expected, a number of risks were identified, including:

- distracted drivers and pedestrians not obeying the traffic signs;
- driver inattention from cellphone use;
- increase in speeding vehicles;

- less experienced staff still coming to terms with site risks;
- staff stepping out of the controlled zones into traffic lanes; and
- site controls with more of an emphasis on complying with the temporary traffic management code of practice and not necessarily thinking of practical safety measures.

A working group has been set up to investigate suitable controls, while working alongside our supply chain to agree on a best practice approach to eliminate or reduce the risks surrounding this activity.

We will also follow up with the staff exposed to this risk to find out if the controls are making a difference for the better. ■



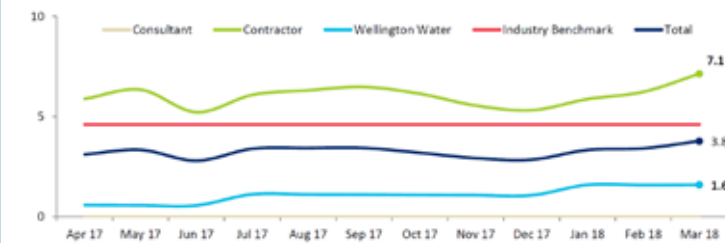
critical risk

-Nikki Ganley, Business Assurance Advisor, Risk and Assurance

Health and safety dashboard

Total Recordable Injury Frequency Rate (TRIFR)

Note: Total Recordable Injuries (TRI) include medical treatment, hospitalisation and fatality injuries.



This trend has increased over the period, in particular in terms of lost time injuries.

We'll continue to reinforce good practices, and raise awareness of risk mitigations to prevent injuries.

Lost Time Injury Frequency Rate (LTIFR)

Note: Lost Time Injury (LTI) rate is based on rolling 12 months data per 200,000 hours worked.



This quarter, we experienced three LTI's, resulting in us not meeting our industry benchmark metric of 1.5 LTIFR.

We have reviewed each incident and have been able to implement controls to either eliminate or significantly reduce the potential of the incidents reoccurring.

Prince of Wales/ Omāroro reservoir

A panel of independent commissioners have praised the extensive community engagement carried out for the proposed new Prince of Wales/Omāroro reservoir. The project has included a strong consultative process.

The panel specifically noted that a number of submissions, including from local residents' associations, had welcomed the level of community engagement.

It has long been recognised that Wellington needed a major new reservoir to address water storage

challenges and improve disaster resilience.

Currently, bulk water supply pipelines bring water to Wellington from both Lower Hutt and Upper Hutt, crossing major earthquake faults. It is very likely water supply will be disrupted in the event of a severe earthquake.

The proposed 35 million-litre buried reservoir will be built to modern seismic standards and will be the largest in Wellington.

The proposed site for the reservoir provides the challenge of being

within the Town Belt and also close to long-established residential communities in Mt Cook and Brooklyn. This meant the project required an easement under the Wellington Town Belt Act 2016 – and this was the first test of how the Act would be applied.

Wellington Water Project Director, Ulvi Salayev, said it was clear from the earliest stages that extensive community consultation would be an integral part of the project.

“We knew from the outset, when the site was first identified, that we would need to be as visible as

planning and addressed openly.

A key concern raised at the Open Days was the number of trucks using Rolleston Street. To address this, Wellington Water proposed to limit truck use of the road from 9am to 3pm Monday to Friday and Saturday mornings; and to raise the level of two adjacent sports fields, using material from the site, reducing the need to truck out rock and fill.

To help address concerns about the visual impact of the reservoir, we provided virtual reality headsets, showing how it currently looked from different vantage points

-Dan Ormond, Omāroro Reservoir Communications Lead



Omāroro Reservoir site location, Brooklyn, Wellington

It was clear from the earliest stages that extensive community consultation would be an integral part of the project

possible within the community, with very active, ongoing and genuine engagement,” said Ulvi.

“It was important that people recognised we weren’t there to tick boxes, but to work with them to reach solutions.”

One of the first steps was a community barbecue hosted by Wellington Water in Rolleston Street, Mt Cook. Ulvi worked with the very active Mt Cook residents’ association to help publicise the event.

“We used the barbecue as an opportunity to introduce the project, and to meet the community – helping the locals to put names to faces,” said Ulvi.

A series of community open days helped to make sure residents’ concerns were fed into project

and how it would look five years after completion. The residents really appreciated this innovative approach.

“Between the formal open days, we held evening street meetings, where we could hear particular concerns and answer questions where possible. Again, these were well attended,” said Ulvi.

We used a local shopfront to post information and we personally delivered leaflet information to houses. We entered feedback from the meetings into a Frequently-Asked-Questions (FAQs) section on our project webpage.

The next stage of the project will see a community reference group established and the appointment of a community liaison person to act as a direct point of contact. ■



out and about

It was a busy start to 2018 for our Community Engagement team, attending local shows, fairs, festivals and arranging treatment plant tours. So far, this year, we've attended six fairs and festivals, and had three groups visit our treatment plants.

In February, we attended the all-new Waitangi Day festival in Porirua. This event replaced Festival of the Elements and saw approximately 25,000 people wander through during the day. The weather was fantastic, so our water manifold and jetpacks went down a treat as we spent the day handing out chilled water to thirsty patrons.

On 17 February, we attended the

Petone Fair. The turn-out was great despite the howling wind and on-and-off showers throughout the day.

We donned our jetpacks again on 24 February, and headed out to Waitangi Park to support the LGBTIQ community at Out in the Park. Once again we had fantastic weather and the chilled water was well received.

Our last event of the summer was Upper Hutt March Madness, where another cracker of a day greeted us. Our focus was resilience and reminding people to be prepared by having at least 20 litres of stored water per person per day. Our competition to win a 200-litre

emergency water tank proved popular. A big thanks, as always, to The Tank Guy for donating the tanks!

A number of student groups have been on tours of our drinking water treatment plants. The tours are a great opportunity to teach the students (young and old) about where their water comes from, and the process it goes through to make sure the water that comes out of your tap at home is safe to drink.

Make sure you look out for the Wellington Water team at your next community event, or if you're interested in a water treatment plant tour, contact us at info@wellingtonwater.co.nz. ■

love every drop

The 2017/18 summer was one of the hottest Wellington has had in recent times. After months of rain, the third driest November on record caught us on the hop, because at the same time as water demand shot up to over 180 million litres a day (MLD), we were also working on important upgrades to two of our three main treatment facilities.

We run a summer demand campaign every year which typically kicks off on Wellington Anniversary weekend (mid-January), however the increased demand around the region coupled with low supply meant we had to launch our Love Every Drop campaign six weeks early with Watch Every Drop.

The summer demand campaign is in addition to the garden watering restrictions in place in Lower Hutt, Porirua, and Wellington during daylight saving months (and all year-round for Upper Hutt).

Garden watering restrictions allow for the use of:

- a single watering system (sprinkler, irrigation system, soaker hose, or unattended hose) between 6-8am and 7-9pm
- on allocated watering days:
 - even-numbered houses on even dates of the month (2nd, 4th, 16th, etc.,)
 - odd-numbered houses on odd dates of the month (1st, 3rd, 11th, etc.,).

The campaign was largely digital, giving us the flexibility to change messaging depending on the water demand and weather predictions.

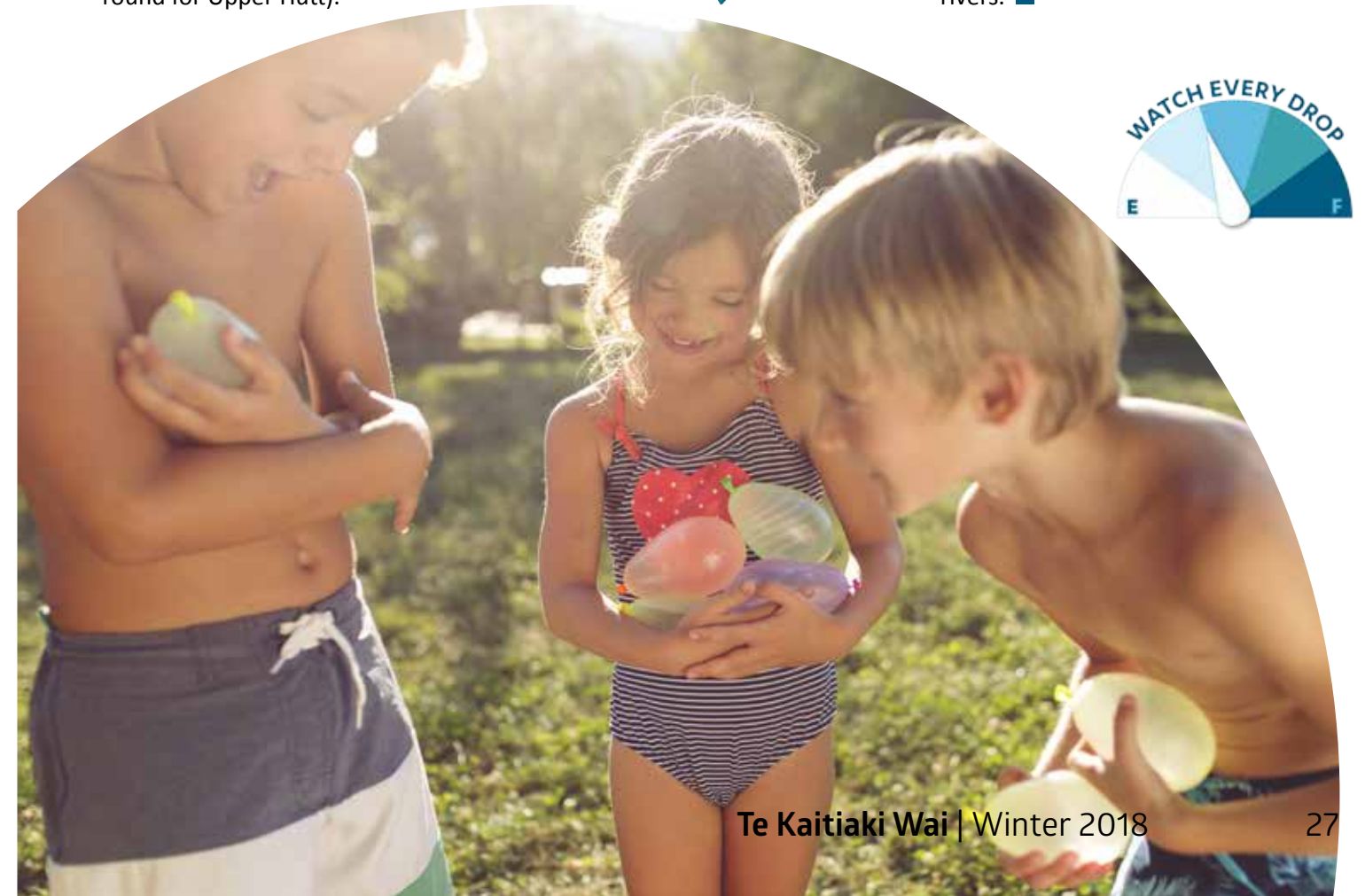
The goals of the campaign were to:

1. reduce demand; and
2. increase our reach on Facebook, so we could:

- Build a sense of community
- Connect with our customers, providing them with information/tips
- Engage with our customers.

Messaging focussed around taking care of water by conserving and using it responsibly, so everyone can enjoy it all summer long. This message was reinforced when a sprinkler ban came into effect at the end of November, 2017.

The sprinkler ban was lifted at the end of January, 2018, thanks to a combination of community members taking action to reduce their water use, completing important treatment plant upgrades, and some much-needed rain, which replenished supply in our storage lakes and rivers. ■



service goals

How we're tracking against our service goals in 2017/18 to date.

● On Track
 ● Some concern
 ● Off track

Customer Outcome	Service Goal	Aspirational Direction	YTD Status	Quarterly Status			
				Q1	Q2	Q3	Q4
Safe and Healthy Water	We provide safe and healthy drinking water	Stay the same	●	●	●	●	●
	We operate and manage assets that are safe for our suppliers, people and customers	Stay the same	●	●	●	●	
	We provide an appropriate region-wide fire-fighting water supply to maintain public safety	Stay the same	●	●	●	●	
	We minimise public health risks associated with wastewater and stormwater	Stay the same	●	●	●	●	



The Havelock North Inquiry recommended six fundamental principles that all water supply companies should adopt for assuring safe drinking water. The development of our regional Water Safety Plan is currently underway, and any requirements related to the Inquiry will be incorporated or actioned as required. We expect to achieve compliance with the New Zealand Drinking Water Standards.



We have experienced six injuries in 2017/18 to date. Our investigations considered physical and behavioural causes, and put a range of controls in place to prevent re-occurrences. The critical risk project has commenced with traffic management and vehicles/mobile equipment being the two areas under review from a people and public safety perspective. The review process is collaborative, with working groups involving our staff, suppliers and consultants.



Identifying and confirming critical hydrants with Fire and Emergency New Zealand of the critical hydrants that will be part of ongoing hydrant performance testing programme. When non-compliant hydrants are found, they are prioritised for upgrade works.



There are network capacity and condition issues that may cause wastewater overflows and contaminate urban stormwater catchments. This can cause public health concerns. Work is ongoing throughout the region to minimise the number of overflows.

Customer Outcome	Service Goal	Aspirational Direction	YTD Status	Quarterly Status			
				Q1	Q2	Q3	Q4
Respectful of the environment	We manage the use of resources in a sustainable way	Improve	●	●	●	●	●
	We will enhance the health of our waterways and the ocean	Improve	●	●	●	●	
	We influence people's behaviour so they are respectful of the environment	Improve	●	●	●	●	
	We ensure the impact of water services is for the good of the natural and built environment*	Improve	●	●	●	●	



We measure water consumption (including loss) across the region. An increase in the identification of water leaks requiring repair occurred in late 2017, coinciding with the early summer dry period and impacting on the per capita consumption for all councils. We put summer demand management strategies in place, and we're investigating the causes of the increased leakage.

As part of the future consolidation of contracts for wastewater treatment plants, we're developing a regional approach for managing biosolids.



We currently monitor freshwater sites and beaches. Some of these sites exceed pollution target levels. This is a long-term ongoing initiative to identify and remove sources of pollution.



This indicator is not currently measured although education programmes are in place for some areas, such as community information boards, summer water conservation, and the whitua committee. At this stage, we're assessing these indicators using our experience and knowledge. We're finalising an annual plan to align with three water activities and raise community awareness is being finalised.



There is significant work underway, with consenting activities under the proposed Natural Resources Plan (NRP). We've also been involved in a good level of engagement in the NRP process itself, including hearings, submissions and other collaborative opportunities. The outcomes of the collaborative work with the whitua committee may impact on future consent conditions.

WHAT COULD BE LURKING IN YOUR PIPES?

The Rag Monster and Fatberg can wreak havoc on your home's pipes, and could cost you thousands of dollars if the damage happens within your property boundary!

To beat these two monstrosities into submission, remember these tips:

1. Flushing anything down the toilet that isn't the 3 Ps (pee, poo or toilet paper) can cause blockages. Cleaning wetwipes (including 'flushable ones') and other sewage items can tangle together and create a monster of a problem for your pipes – and the environment.



Only flush the 3 Ps

- PEE
- POO
- PAPER (toilet paper)



2. When you pour fats and oils down your kitchen sink, it can cause fatbergs to form – lumps of congealed fat that can grow larger and larger as they pass through your pipes, even becoming big enough to block them.

Keep fatbergs away! Put fats and oils in the bin.

Customer Outcome	Service Goal	Aspirational Direction	YTD Status	Quarterly Status			
				Q1	Q2	Q3	Q4
Resilient networks support our economy*	We minimise the impact of flooding on people's lives and proactively plan for the impacts of climate change	Improve	Yellow	Yellow	Yellow	Yellow	Grey
	We provide three water networks that are resilient to shocks and stresses	Improve	Red	Red	Red	Red	Grey
	We plan to meet future growth and manage demand*	Improve	Red	Yellow	Yellow	Red	Grey
	We provide reliable services to customers	Stay the same	Yellow	Green	Green	Yellow	Grey



When we complete our hydraulic models in three years, we can better understand the likely impact of flooding on communities. There are known flood risk areas, and recent flooding events in Kilbirnie have reinforced the need for improved flood mitigations and programmes. Areas prone to flooding continue to be prioritised.



Our networks are fragile and vulnerable to a significant natural event such as an earthquake. Improvements coming out of the water supply resilience strategy have been incorporated into the councils' 30-year Infrastructure Strategies, informing and supporting the 2018-38 Long-Term Plans.



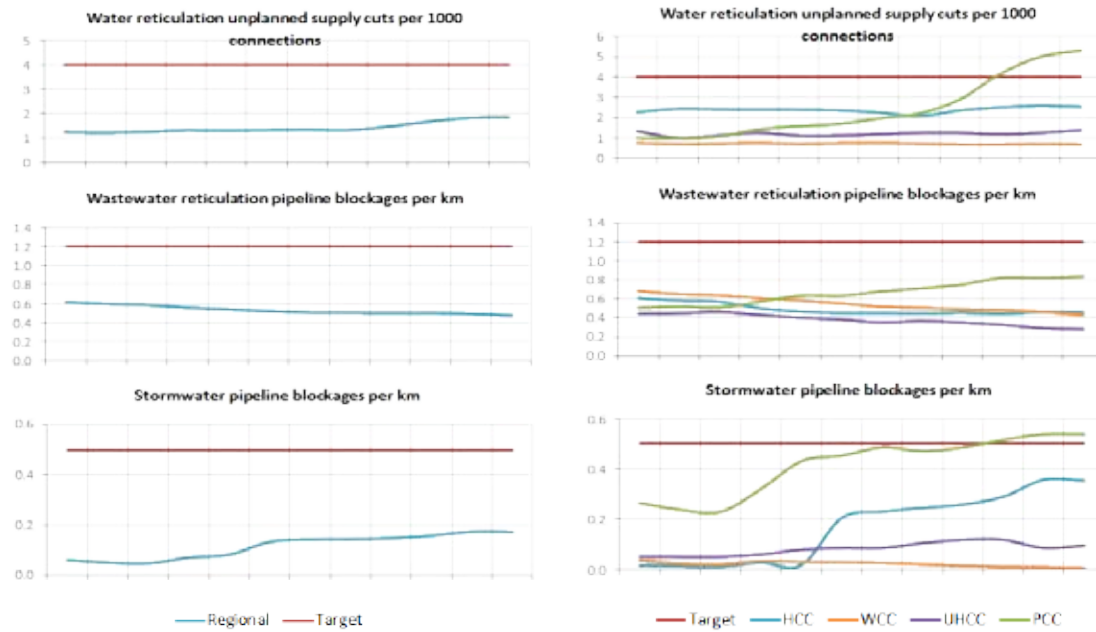
We identified a water treatment capacity limitation at Te Marua treatment plant, which affects our drought resilience. The issue is under investigation, and we expect the results (due by June 2018) to help determine how this can be resolved. The National Policy Statement (NPS) on Urban Development Capacity reinforces the need to understand the impact of the councils' growth aspirations on the three waters infrastructure performance. Continued pressure to process building consent enquiries has highlighted the need to properly identify and resolve potential capacity issues.



Current service interruptions for water supply and network blockages for the wastewater and stormwater networks continue to sit within targeted service levels.

Three waters network reliability dashboard

Rolling 12 month averages

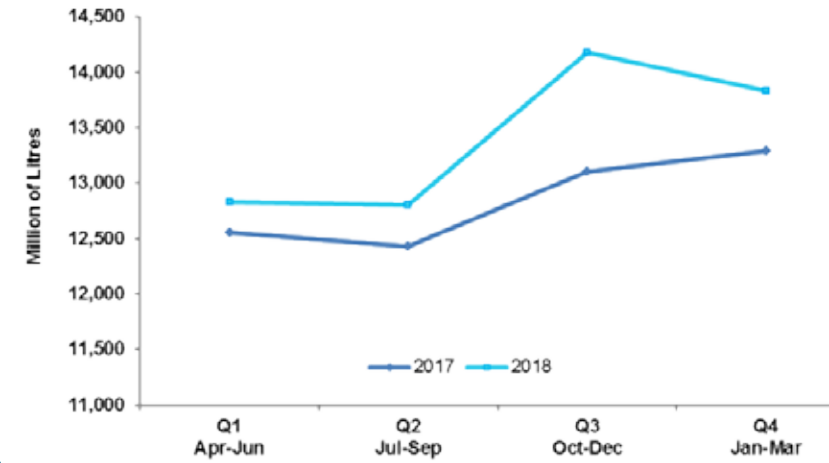


Network reliability remains well within target performance level, with the exception of Porirua City Council.

Note: due to the temporary unavailability of task data, customer call data has been substituted and possibly overstates the number of actual supply cuts and blockages.

Drinking water supply

Drinking water supplied



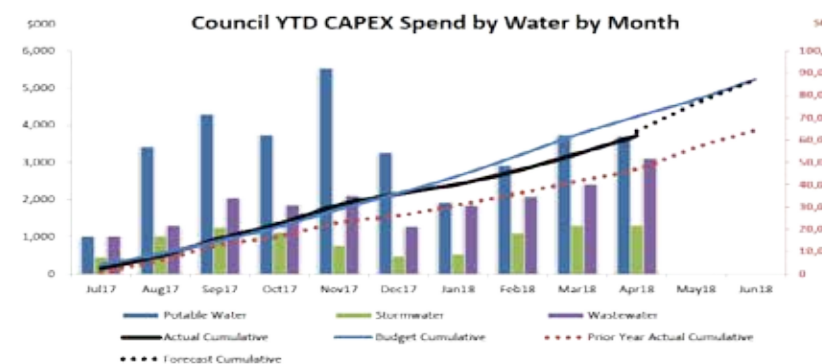
Total water supplied to the four cities is tracking above last year after a long, dry summer, but it looks to be easing off with the arrival of winter.

13,831 million litres of safe drinking water was supplied in January - March 2018

Capital expenditure

Our capital expenditure (Capex) programme of work was tracking well against our full year forecast as at April. It's been a challenging year for our programme managers, with the fast-tracking of the \$11 million ultraviolet water treatment work requiring some rescheduling mid-flight to ensure we remained within budget, along with the additional work required to deliver the community water supply resilience programme.

These two projects bumped up the total capital programme budget for the year by about \$13 million – the bulk of the roughly \$25 million increase over last year's programme. It's a credit to our supply chain – our contractors and our consultants – that we were able to deliver the larger programme along with the critically important water quality project, as well as keep up with prioritised network renewals and upgrades.



Wellington Water is owned by the Hutt, Porirua, Upper Hutt and Wellington city councils, and Greater Wellington Regional Council. The councils are all equal shareholders.

Our vision is to create excellence in regional water services so communities prosper. Our customers, the residents of the metropolitan Wellington region, use the services we provide: drinking water; wastewater; and stormwater in their homes, businesses, and communities every day.

