

# Three waters report and outlook

For the quarter ending 30 September 2016



**Our water, our future.**

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## Front page picture



A small group of Wellington Water staff helped out the Friends of the Waiwhetu Stream group with their stream rehabilitation work one afternoon in September. We laid weedmat, moved rocks and planted lots of plants.

## In the news

Stuff and the Dominion Post went to Te Marua Water Treatment Plant to learn about where Wellington's drinking water comes from.



# Our operating conditions

Construction costs have increased since the current Long Term Plan budgets were set in 2014. Costs are increasing at a rate of approximately 10% per year in some of our construction categories as a result of increased activity within the infrastructure space. There are a number of reasons behind these cost increases: increased materials costs; market buoyancy; increased construction labour costs; increased Health and Safety compliance costs; and limited resource availability.

Our consultancy panel is now up and running and we have spent the first three months working with the various teams to establish a more collaborative and relationship based working model. The panel has been busy rationalising and improving our project Health and Safety and quality audits, and is reducing the administrative efforts in our programme through greater bundling of work, and through the use of simplified project planning on low risk projects.

The weather this quarter has been relatively mild with few heavy rainfall days. This has resulted in little disruption to our physical works programme. Our pipeline network is located within both private property and public roads, so during the wetter winter months we generally concentrate on projects that involve working within roadways. We reserve the projects that include working within private property for the drier months (quarter's two and three), so that we minimise disturbance to residents.

We're continuing to work on completing a number of reservoir upgrades prior to the start of summer to ensure that we have maximised the amount of water storage within our network. This will also help to reduce the stress on our water treatment plants during the drier summer months.

## New connection applications

Four cities

Previous quarter



This quarter



Year to date: 270  
This quarter, last year: 97  
Year to date, last year: 238

While the number of new connections this quarter is less than the same time as last year, this doesn't tell the full story. We've had a number of multi-unit developments that required new connections this quarter which are only counted as one connection per development.

The increase in water connections over the past year is indicative of an overall increase in development activity in our region. This growth increases the pressure on our infrastructure in a number of places. As we identify these issues, we're proactively working to develop appropriate solutions.



## Helping Havelock North

It was a team effort when we were asked by Hastings District Council to assist with solving the water contamination crisis in Havelock North in late August.

Two of our Chief Advisors were asked by Hastings District Council to go up to Havelock North for four days to lend a hand. Once on site they quickly realised that there was a couple of immediate challenges. The first was to agree with Regional Public Health what had to happen before the boil water notice could be lifted, and secondly, the Havelock bore source had to be removed from supply and replaced with water from Hastings. And this had to happen without introducing a risk of the contaminated water flowing back into Hastings from Havelock North.



*One of the Havelock North bores visited by our chief advisors*

The best way to get rid of the contaminated water was to flush the water out by opening up a number of hydrants around the town and letting the water discharge to the stormwater system. The problem was figuring out which hydrants needed to be used to do this effectively and how long they would need to run for.

Our team in Havelock North sent an urgent request back to our Modelling team in Lower Hutt who immediately stopped what they were doing and ran the Havelock North water supply model. In the space of an afternoon they determined where the best flushing locations would be and how long the flushing would need to run for. Fourteen hydrants in key locations were identified and were left flushing for at least 48 hours.



*The water supply network was flushed clean by opening 14 hydrants at locations set by our modelling team*

In addition to the flushing, the water supply was continually chlorinated, all reservoirs were emptied, cleaned and superchlorinated, and the Havelock North network flushed three times over.

The boil water notice was finally lifted on 3 September 2016. It had been in place for 22 days.



## Safe and healthy water

### Our outcomes

We have three high level outcomes:

- Safe and healthy water
- Respectful of the environment
- Resilient networks support our economy

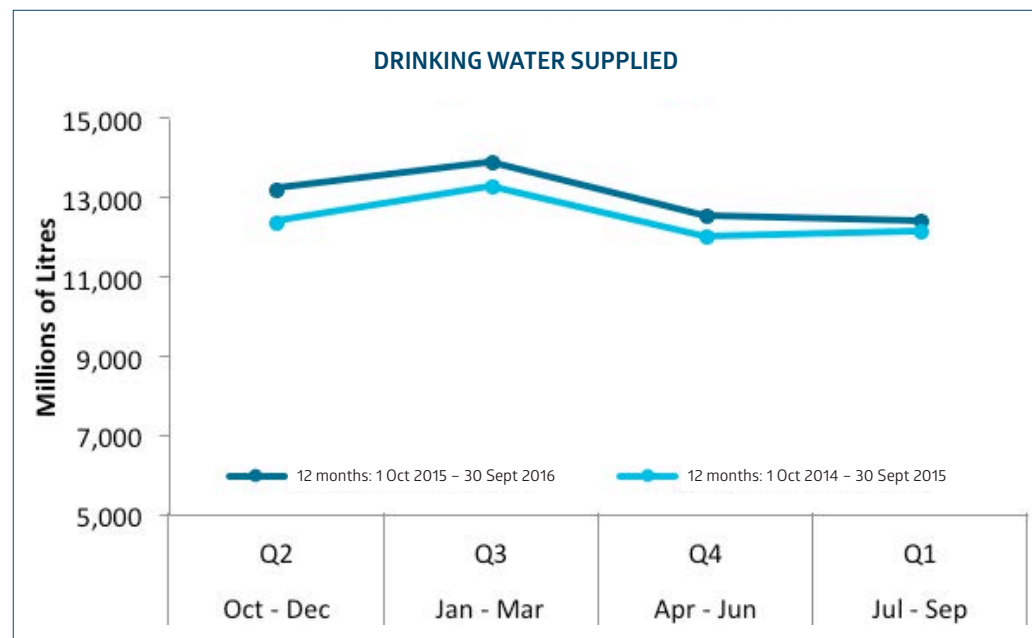
Under each outcome there are four service goals which provide further insight into the investment activities required to achieve the high-level outcomes.

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					

All drinking water supplied met the national drinking water standards, and our networks complied with Ministry of Health requirements. While there were no reported incidents of public health issues relating to drinking water, we are continuing to work on reducing inflow and infiltration within the wastewater networks. High levels of inflow and infiltration within the wastewater networks can result in overflows of wastewater during heavy rain events.

We delivered 12,400 million litres of safe drinking water to 144,000 connections during this quarter.

In the same quarter last year (July – September 2015), we delivered 12,100 million litres. The amount of water delivered this quarter is only slightly higher than the same quarter last year (1.6%).



### Water supply issues:

Algae – we continue to closely monitor the storage lakes. While they still have algae present, the levels are not high. We expect that the algae levels will increase as we head into summer. We have identified some potential options that may mitigate the causes and impacts of higher than normal levels of algae. One of these options is to replace the filter media at the Te Marua Water Treatment Plant with BAC (Biological Activated Carbon). BAC neutralises taste and odour compounds. We're currently investigating to see if BAC will work on the algae present in our storage lakes.

# Outcome 2

## Outcome 2 – Respectful of the environment

### Friends delighted by Waiwhetu Stream water quality

The water quality in the Waiwhetu Stream has improved greatly from when we first initiated our water quality management plan two years ago. The 12-month dry weather rolling median in March 2014 was 8,600cfu<sup>1</sup> while the 12-month dry weather rolling median in September 2016 was 604cfu – this represents a very large improvement in water quality. The National Policy Statement for Freshwater Management has a minimum acceptable target of 1,000cfu - the Waiwhetu Stream now exceeds this target.



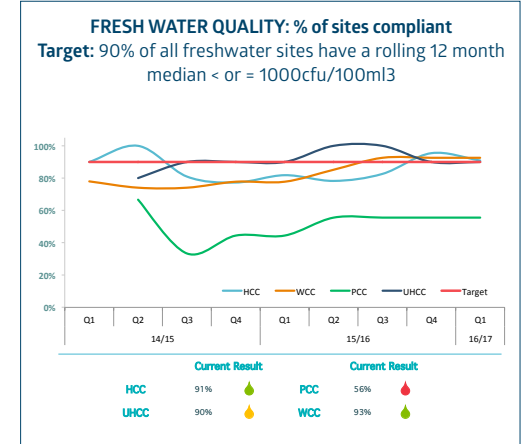
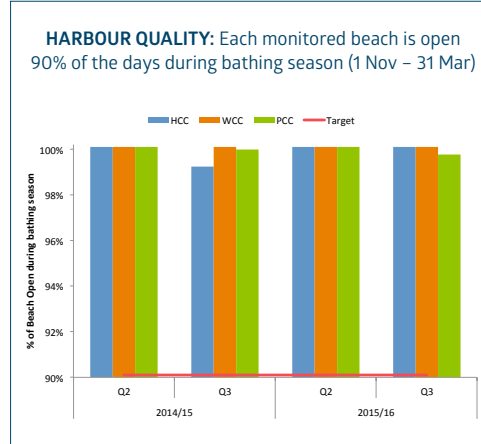
The Waiwhetu Stream's water quality is improving, thanks to the effort of the Friends of the Waiwhetu Stream and Wellington Water.

This result was pleasing as we have been working hard to improve the water quality. We used cameras in the pipe networks and used dye testing of the private network to look for faults in the public network and illegal cross-connections. Following these investigations, we identified and fixed a number of cross-connections, leaking sewer manholes and identified sewer mains for renewal.

These results were shared with the Friends of the Waiwhetu Stream at a recent meeting; they were delighted with the water quality improvement!

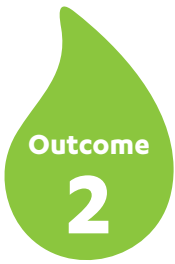
Customer Outcome	Service Goal	Aspirational Direction	YTD Status	Quarterly Status			
				Q1	Q2	Q3	Q4
Respectful of the environment	We manage the use of resources in a sustainable way	Improve	🟢	🟢	🟡	🟡	🟡
	We will enhance the health of our waterways and the ocean	Improve	🟡	🟡	🟡	🟡	
	We influence people's behaviour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

We're continuing to look at how we measure our performance in this area. We're investigating the sources of pollution and we've developed a draft community education strategy.



We run a proactive fresh water monitoring programme to identify areas requiring investigation. While Porirua has a number of sites that we are currently investigating (with the view to improve its water quality), we're also increasing the number of sampling sites in Porirua (from nine to 14), so that we can get a better idea of what's happening in its catchment.

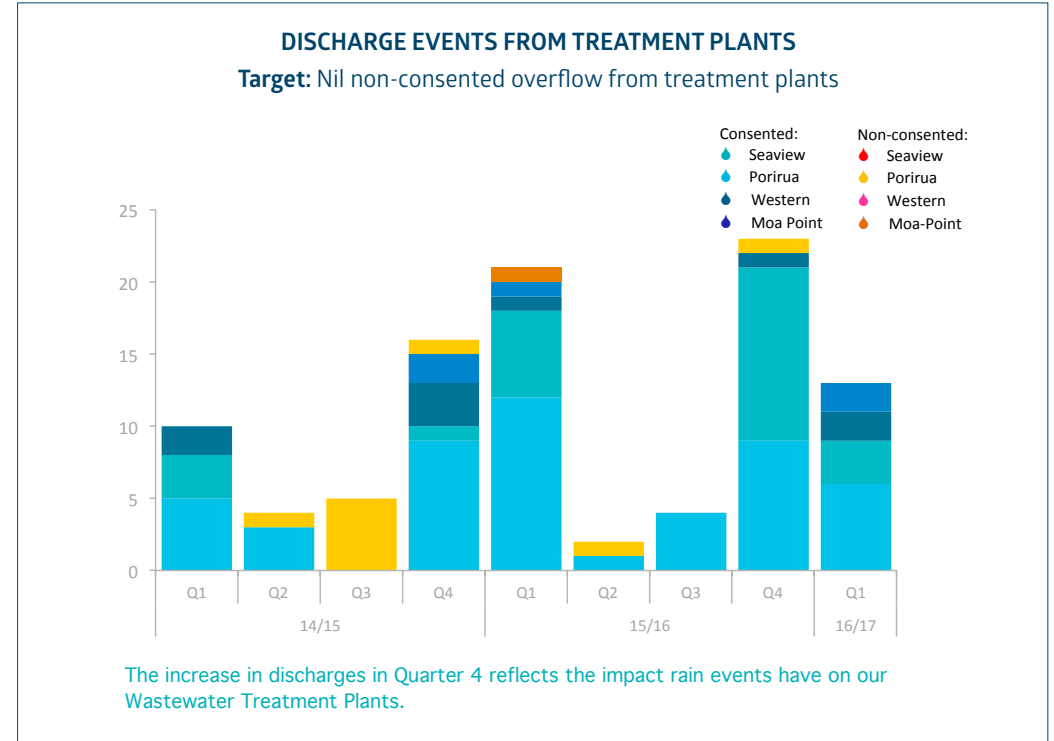
<sup>1</sup> cfu means colony-forming unit. This is a unit used to describe the number of viable bacteria or fungal cells in a sample.



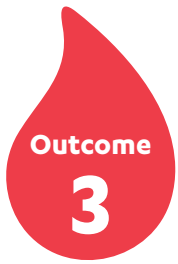
## Outcome 2 – Respectful of the environment

Consent compliance 1 July – 30 September 2016 (snapshot covering these activities)		
Nature of work	Target	Status
Extracting water	Full compliance	✓
Discharging water	Full compliance	✓
Wastewater – dry weather overflows	Full compliance	✓
Wastewater – wet weather overflows	Full compliance	✓ (see note)
Stormwater discharges	Full compliance	✓
How we carry out our work	Full compliance	✓

✓ We managed around 520 incidents this quarter (up from 380 in the same quarter last year) covering blockages, overflows, leaks and faults. No enforcement orders, infringement notices or abatement notices were received. However, Greater Wellington Regional Council (GWRC) is investigating two incidents (a sewage leak into Frank Kitts lagoon from a main breakage and stormwater work on the Hutt River bank in Lower Hutt). We are also continuing to work with GWRC to improve the performance of the Porirua Wastewater Treatment Plant during wet weather.



There were no unconsented discharges from our four wastewater treatment plants this quarter.



## Resilient networks support our economy

### Resilience planning progressing on two fronts

In addition to making excellent progress on our business cases for water supply and wastewater, we've been working in partnership with other providers of key infrastructure (including councils, Wellington Electricity, Transpower, and the NZ Transport Agency) on a regional strategic business case for infrastructure resilience this quarter.

A draft regional strategic case has recently been completed. It identified three key problems that require further attention:

- 1 Wellington's vulnerable infrastructure puts people and long term recovery at risk
- 2 poorly understood interdependencies and resilience services create unclear investment priorities
- 3 a lack of planning will lead to inefficient and expensive event responses

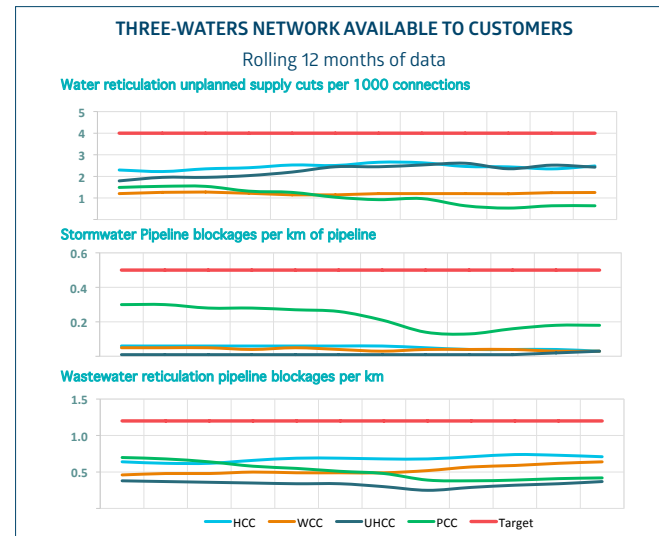
The strategic case is expected to be finalised and approved by the end of this year. The final report is expected to include recommendations on what steps should be taken next.

The resilience team has also been busy engaging with the region's critical customers this quarter. Critical customers are those who require priority connection following an event, and to help the residents and businesses of our region recover faster. To date, we've met with approximately 16 customers, including universities and hospitals. We've discovered that while many have done some resilience planning, most have more work to do to become fully prepared and to co-ordinate with others. They all expressed a desire to work collaboratively towards a more resilient region.

The insights we've gained from our critical customers will inform the development of our water supply and wastewater business cases as well the next steps to be taken following approval of the regional infrastructure strategic case.

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					
	We provide three water networks that are resilient to shocks and stresses	Improve					
	We plan to meet future growth and manage demand	Improve					
	We provide reliable services to customers	Stay the same					

While flooding events continue to be a concern, we have made progress with the Porirua CBD and Kilbirnie areas in particular this quarter. We've completed the initial investigations into the options for reducing the flooding risks in the Porirua CBD area and presented these findings to the Porirua City Council in September. We're now working on refining these options. We also met with residents of the Kilbirnie to discuss the options to reduce the flooding risk in their area.



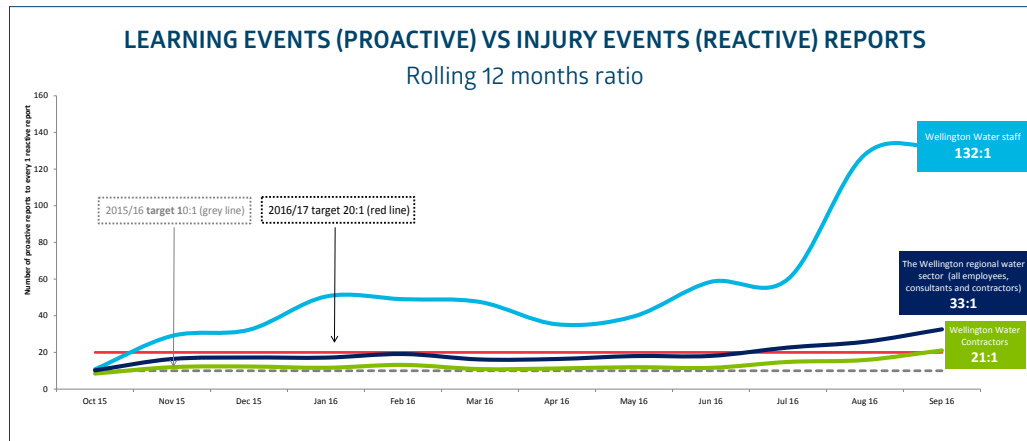
Having supply cuts or blockage levels below the red line means that the network is performing better than the target level.

## Back up the truck: how better incident reporting will improve service

One of the incidents reported to us involved one of our contractors accidentally reversing into a member of the public's car.

Our contractor had parked his truck behind another when suddenly the truck in front began reversing. In an effort to get out of the way, our contractor reversed his own truck. Unfortunately he misjudged the distances and his truck's tow bar ball went into the bumper of the car behind him. While there was damage to the car's bumper, no one was hurt. The incident was reported to the supervisor and details left with the damaged car.

Our mission at Wellington Water is to encourage the reporting of all incidents, even small ones like these. Small incidents can quickly snowball into big ones. Notification of all incidents allows us to form the bigger picture and to pick up emerging trends that might warrant further investigation or training.

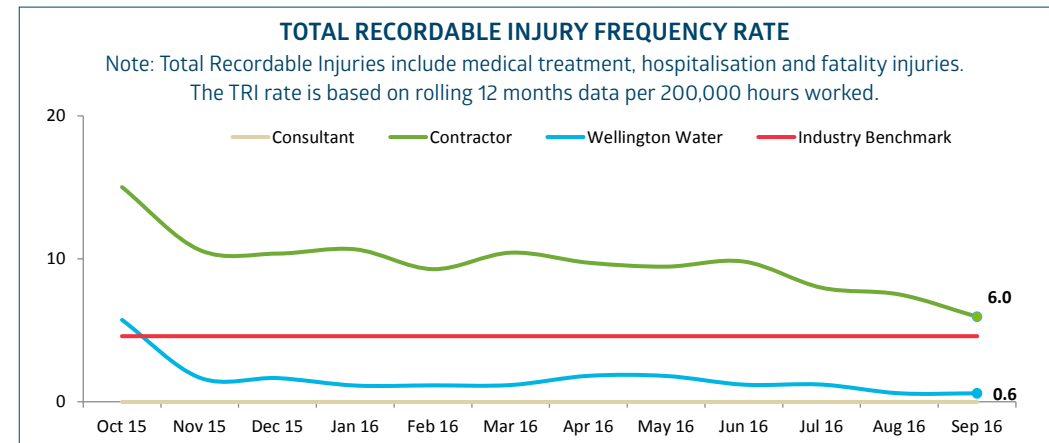


### Proactive reporting ratio on the rise

For the 2016/17 financial year we've set a target ratio of 20 proactive reports for every 1 reactive report. This is higher than the 2015/16 year where our target was 10:1. The higher target is a sign of our growing maturity in respect to Health and Safety reporting.

Proactive steps can be taken when we've been informed about unsafe acts or conditions before they become injuries, such as loose roof bolts or a scissor lift misuse. We achieved well past our target of 20:1 this quarter.

Since starting our message to contractors to report more, the contractors have let us know of many more non-injury occurrences such as unexpected cables in the ground, or dust cloud from sediment. In the past they did not report these events. Over time, these results can only be sustained by continuously improving our engagement, processes, knowledge, technology and business culture. Our consultants had no reported injuries.



In September a worker at a wastewater treatment plant was conducting maintenance work on part of the treatment system and was sprayed with sodium hypo chlorite. This resulted in the worker having sensitivity and swelling of an eye but no permanent damage to his eye occurred. However the worker was medically advised to have seven days off work to rest. An investigation is currently underway to ascertain the cause of the incident and to see what can be learned from it.

We're making progress as an increasing number of contractors are letting us know about more occurrences. As a result we are seeing fewer recordable injuries as our safety message becomes embedded into the way we work. We expect to see recordable injuries continue to drop over time. We will need to keep engaging with our contractors to sustain these results.



### Wastewater pump stations safer and more effective in Porirua

Blocked and faulty pump stations were responsible for around 40 callouts per month in Porirua. Not only were our staff and contractors having to go out at all times of the day and night to fix them (often in less than ideal conditions), it was also costing around \$500 per callout.

Working in wastewater pump stations can be difficult as they are not only a tight space where you have to lift heavy objects and avoid rotating mechanical equipment, but they also involve hygiene concerns.

As part of our programme to reduce the blockages, we lowered the level of wastewater in each chamber. This had the effect of allowing extra capacity in the event of heavy rainfall and the pumps were able to cope much better with the amount of solids in the chamber. We also introduced forced ventilation in dry wells, increased the size of the access openings and embarked on a number of non-asset solutions such as training our staff and contractors in working in confined spaces, working at heights, crane use and traffic management.

The changes have been very successful with the number of callouts dropping from around 40 a month to 4-6 per month. At \$500 a callout, this works out to be a saving of around \$18,000 per month. Just as importantly, the health and safety risks associated with working in the wastewater pump stations have been reduced and they are no longer such an unpleasant place to work!



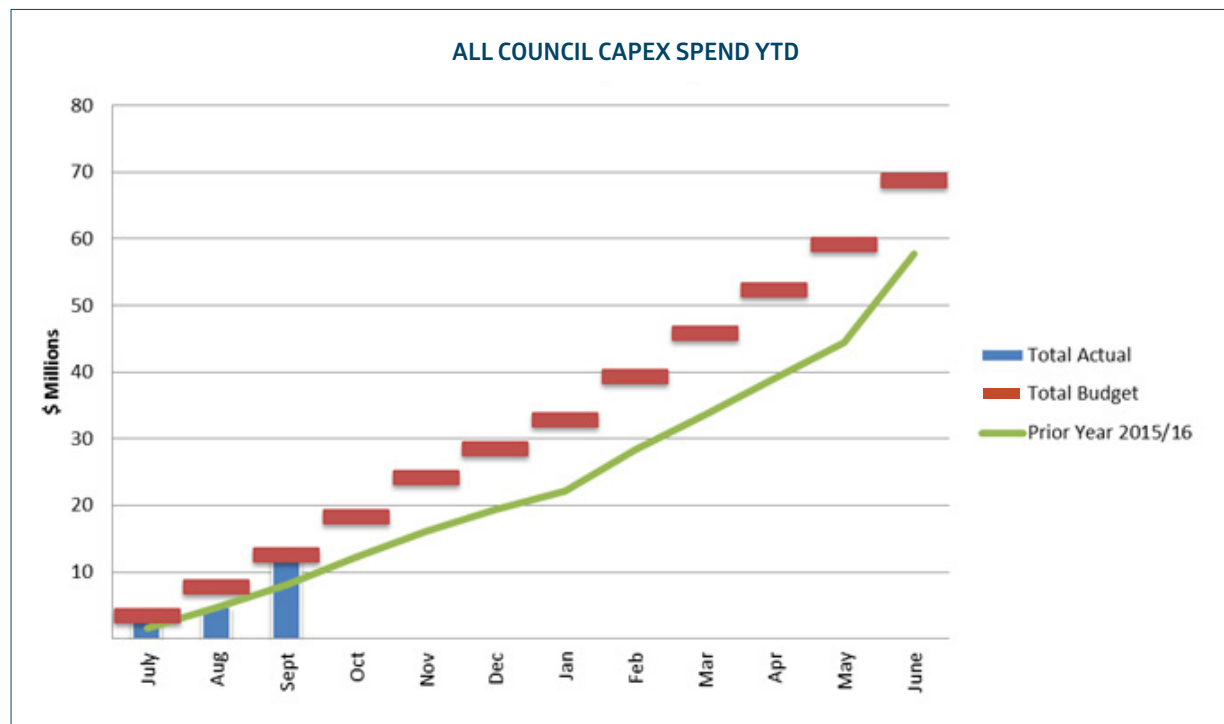
*Wellington Water staff pull a pump out of wastewater pumping station for inspection*

## Wellington Water: Programme delivery

We have 290 activities within our programme this year, with a total budget of approximately \$68 million. Key expenditure in our 2016/17 programme is targeted at pipeline renewals and upgrades (\$26 million), structural strengthening and other pump station upgrades and renewals works (\$10 million). We also have \$10 million worth of forward design and investigations within the programme, which will help to improve our forward network planning.

Our focus on improving our forward designs means we have increased our first quarter expenditure by approximately \$5 million compared with this time last financial year. We have also significantly improved tendering out our physical works with over 75% of work tendered, and we are on track to have over 95% tendered by the end of December.

Our aim is to manage within our available budgets, however with the current market conditions we are receiving tenders higher than budgeted for. We're working to manage our project delivery rate to suit our available budgets. At the end of first quarter we are forecasting that we will complete 96% of our planned projects by the end of 2016/17.



## Wellington Water: Stakeholder engagement

### Beijing Water meets Wellington Water

We recently hosted a lovely group of senior managers and engineers from Beijing Waterworks Group.

They were here to learn about our award winning water treatment technology. This technology allows us to constantly monitor and adjust the chemical dosing used in the water treatment process – which saves not only chemicals and money, but also increases the reliability of our water treatment plants.

There's a bit of difference in scale between Beijing Waterworks Group and Wellington Water – they supply 4,150 million litres of water a day, we supply 145 million litres! Despite this difference, we found a lot of common ground, especially in how important water quality is to our companies.



*Above: Inspecting the rapid mix tank at Wainuiomata Water Treatment Plant*

*Left: Demonstrating the software that controls the chemical dosing process*

## Wellington Water: Stakeholder engagement

### You meet the most interesting people in Tawa...

We recently had the pleasure of attending the Spring into Tawa fair. We were there to talk to the residents about what our modelling says about the flooding risk in Tawa, and to talk about how we will be developing short and long-term solutions which will help to minimise this risk.

Despite the awful weather on the day, we had a lot of interest in our modelling plans – including a lama and a couple of super heroes. Perhaps they were concerned about the impact of stormwater on secret hideaways!!!



*Our modelling plans proved to be of interest to a variety of people and/or animals*

