Wellington Water

THREE WATERS REPORT AND OUTLOOK FOR THE QUARTER ENDED 31 MARCH 2015

Our water, our future.

DRAFT

Supply resilient in dry weather, contractors upbeat on future

An extremely dry summer on the back of a dry autumn led to the recommendation to councils to increase garden watering restrictions off the base level (alternate day) to a sprinkler ban. Dry weather creates a double whammy for water, increasing demand at the same time as supplies from dehydrated catchments dwindle. Managing the use of sources and storage to meet demand and maximise supply security incurred significantly higher costs, on top of the extra advertising employed to promote the restrictions. But we made it through a record-breaking summer without tougher limits on water use, reflecting good public uptake of messages and effective supply management.

At our quarterly meeting with representatives of contractors and consultants with whom we work, we noted a buoyant feel to the room in relation to market conditions. Major projects in play – including the Transmission Gully and Mackays Crossing–Pekapeka highways – are key factors in this change in sentiment. Implications for us are that we'll need to be careful with our work planning and programming to ensure we maintain competitive bidding, and that there could be upward pressure on pricing. On the broader economic front, we see no significant impact from reported levels of property development, or material and labour costs.

The draft regional plan continues through the review process and we continue to monitor this to ensure cost impacts of potential policy applications are fully understood. Towards the end of the quarter there was increasing noise at the national level on issues of water management, ownership, and regulation. We'll keep a close watch on developments in this area.

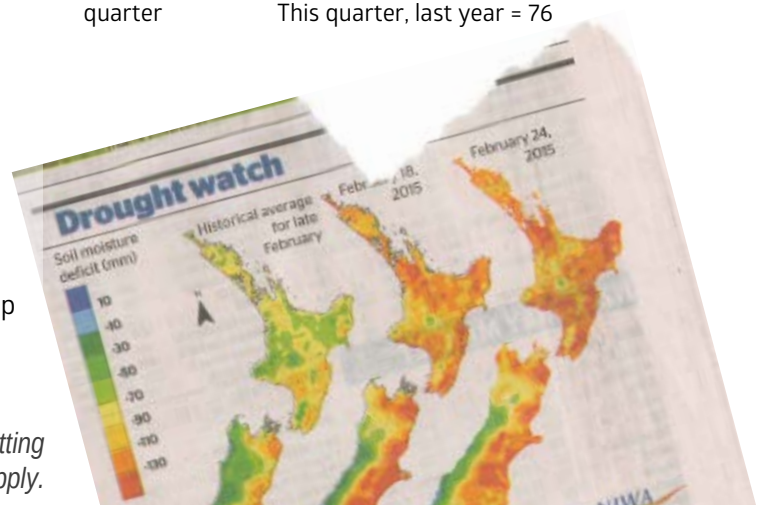
The Macaskill Lakes at 1 April 2015, with Lake 1 at about 45% availability

New connection applications

New water supply connections showed a decline on the previous quarter, and on the same quarter the previous year.

Previous quarter

This quarter
This quarter, last year = 76



Almost the entire country dried out over summer, putting pressure on rivers and water supply.

Contents

OUTCOME 1.
OUR WATER IS SAFE TO DRINK

Dry summer challenges region's drinking water

Despite the dry weather and very low river levels in our supply catchments, we delivered over 13 billion litres of water to customers and met all extraction consent conditions.

These conditions had a net negative impact (increase) on treatment costs. Reduced flow meant we could not use the Orongorongo hydro power plant, nor could we use other power saving options, and we had to pump more water than normal. On the plus side, cleaner river water reduced chemical treatment costs.

The advertising spend promoting the sprinkler ban and water saving tips topped the $130,000 mark.

Emerging supply issues we are watching centre around water security and the Waiwhetu aquifer in particular. These include iron bacteria in the aquifer wells, age dating of aquifer water, bore strengthening for seismic resilience, and bore renewal.

It's important to note that none of these issues affects our Safe to Drink outcome, and we're working through each of them. A new casing in the well affected by iron bacteria has seen bacteria levels drop. Water age testing is in progress as is work on strengthening supply assets, and we're assessing bore condition ahead of renewal projects, which would likely be carried out next year.

13,279,470,000 litres
delivered to 138,000 connections

Last summer (Jan-Mar 2014) we delivered 12,839,350,000 litres

Drinking water safety

Full compliance with the New Zealand Drinking Water Standards (DWSNZ 2005, 2008) for microbiological, chemical, aesthetic and reticulation measures

Key: **On track** **Minor issues** **Concerns to be addressed**

In the coming quarter we'll initiate a review of communications relating to water restrictions. With the lake enlargement process complete we feel it's a good time to have a new look at restriction triggers and activities. We also learned a lot over the summer about communicating the many factors at play in managing our water supply and demand.

The Waiwhetu Aquifer – where we get 40% of our water supply

Wellington's water supply history is a cycle of urban growth, rising demand, new supply development and gradually increasing pressure on capacity. Since the mid-1800s, the Waiwhetu Aquifer has played an increasingly important role in that story.

The aquifer first served as a private, then public water source for European settlers, but early municipal engineers preferred the known qualities of river water to supply growing cities in the region. As demand grew, and local water management authorities jockeyed for supply, bores were drilled first on Gear Island (Petone) in the 1930s, to supplement supply for Wellington City, then at Buick Street in 1963 to supply Petone.

As the supply / demand cycle continued, studies in the 1970s suggested the aquifer could supply a lot more water from further up the valley, and the Waterloo bores and treatment plant were commissioned in 1981.

The aquifer is generally seen as extending from Taita Gorge to the mouth of Wellington Harbour. It is naturally pressurised (artesian) from Melling. The aquifer structure is 70m thick at its western edge, narrowing to 20m at the east. There are three 'layers'; the upper and lower Waiwhetu aquifers, and the Moera, which is about 50m below ground level at Waterloo.

The pressure in the aquifer varies and, particularly during drier conditions, responds directly to the amount of water being drawn because we draw more out than is coming in. We measure the pressure above sea level at McEwan Park, on the Petone foreshore. Above 3m is generally a sign of plentiful water; below 2.5m and we watch very carefully for further impact. Special consent is required to allow the pressure here to drop below 2.2m.

Water from an aquifer is regarded as safe (according to the Drinking Water Standards of NZ) if it is at least a year old. This is seen as enough time to ensure potentially harmful organisms that may enter the aquifer with surface water have died off.

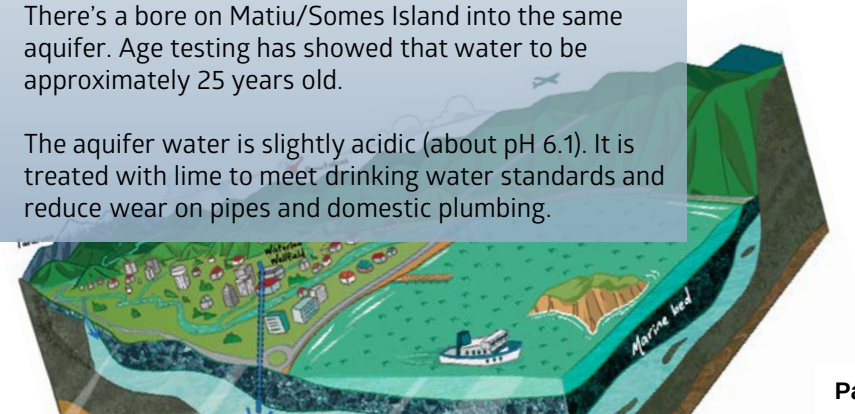
We're required to carry out age dating tests every five years. Previous tests showed the Knights Road wellfield water was 18 months old; current sampling results will be known later this year, and we'll increase our testing regime as necessary to ensure we remain compliant with the age requirement.

After 30-plus years the extraction wells are nearing the end of their expected working life, and this year we are assessing their condition to see when they might need to be replaced or refurbished.

Aqui-facts

Did you know:

- The maximum production capacity from the Waterloo treatment plant is 135 million litres a day, but is limited by resource consents to 115 MLD. Limits on extraction prevent seawater intrusion.
- There are eight wells feeding Waterloo treatment plant, stretching roughly along Knight's Road between the railway station and Westfield shopping centre.
- The Knights Road wells extend between 20-40m below ground level. There is sufficient pressure for water to rise to the surface here, but pumps are needed to extract the volume required for supply and distribution.
- To draw water from the aquifer requires a consent from Greater Wellington Regional Council. There are currently 22 active consents, including one to supply Waterloo, one for the hospital, and four for golf clubs.
- There's a bore on Matiu/Somes Island into the same aquifer. Age testing has showed that water to be approximately 25 years old.
- The aquifer water is slightly acidic (about pH 6.1). It is treated with lime to meet drinking water standards and reduce wear on pipes and domestic plumbing.



Overflows lead to reviews

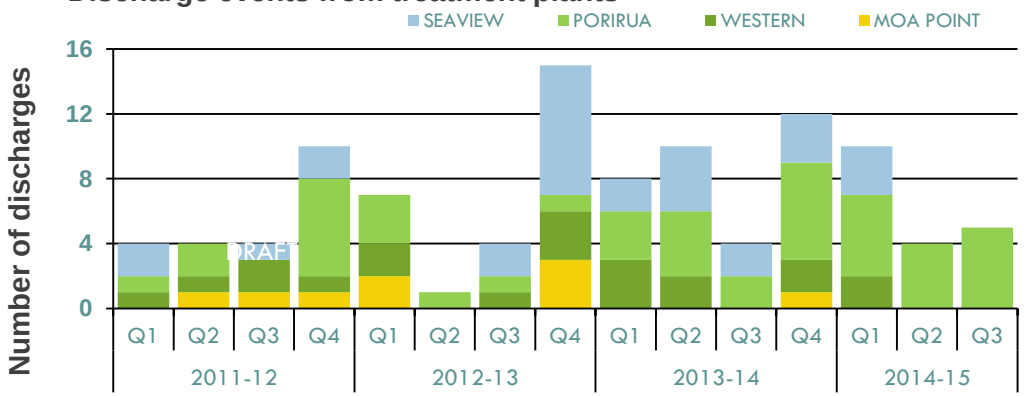
The quarter saw several overflow incidents from the wastewater and water network resulting in discharges to the environment.

A submerged cross-connection beneath Featherston Street that had been contributing to water quality issues in Wellington Harbour (near the Marine Police building) was found and fixed. Shortly after that repair, a blocked wastewater main resulted in a short discharge into the same area. In Whitby, a wastewater pipe failure led to a spill into the Pauatahanui arm of Porirua Harbour, while a pipe burst at the Rukutane Point pump station saw untreated wastewater flow into the sea. Repairs were carried out to restore service. Also during the quarter a procedural failure after routine pump station maintenance led to an overflow at northern Titahi Bay, and a water pipe burst led to sediment entering Waiwhetu Stream.

We've worked hard on improving our communications with colleagues on the consent team at Greater Wellington Regional Council, and made sure they were kept informed of these incidents and the follow-up procedures.

There were three beach closure events in Hutt City and one in Porirua during the quarter. Follow up investigations showed water quality returning to normal within 24 hours. There were no incidents at our 33 monitored freshwater sites.

Discharge events from treatment plants



Consent compliance 1 Jan – 31 Mar 2015:

Nature of work	Target	Track
Extracting water	Full compliance	✓
Discharging water	Full compliance	✓
Wastewater – dry weather overflows	Full compliance*	✗
Wastewater – wet weather overflows	Full compliance	✓
Stormwater discharges	Full compliance	✓
How we carry out our work	No issues this quarter	✓

*Although we technically complied with the conditions of our consent in relation to dry weather overflows, we view the events of the quarter as a fail with regard to this outcome.

Bypasses and overflows

An **overflow** refers to a discharge from the wastewater system that impacts a stream or coastal marine area. The discharge exits the wastewater system through a constructed overflow arrangement (weir or pipe) positioned in a manhole (an access node), pumping facility, treatment plant or customer controlled piping system (gully trap etc.).

A **wet weather overflow** occurs when stormwater infiltrates, dilutes and overloads the wastewater system.

A **dry-weather wastewater overflow** might be discharged from a private or public wastewater main due to a blockage caused by debris or fat clogging a pipe, pipe failure, tree root or some other form of intrusion into the main itself.

Other failure sources include power outages or mechanical failure in wastewater pump stations or wastewater treatment plants.

The public wastewater network includes all sewer mains, access nodes, pump stations and treatment plants. The private wastewater network includes all piping from a gully trap to the connection to the public main.

A **bypass** is when inflow volumes exceed the capacity of the network to treat it in the normal manner, but rather than overflowing, the water is diverted around the normal treatment path. In the case of a wastewater treatment plan, a bypass results in only partially treated water being discharged to the environment.

Whaitua adviser appointed

Jonathan Gulland, Whaitua relationships adviser.

Whaitua committees consist of representatives appointed to collaborate with their communities to create a vision and prioritise objectives for land and water management in their catchment. The committees' work will inform policies and rules in the Regional Plan (now in draft). Five whaitua committees will be set up in the region; two have been established (the Ruamāhanga in Wairarapa and Porirua), and the third (Wellington/ Hutt Valley) will be established later this year.

To help serve the community on fresh and coastal water quality issues, we've appointed a whaitua relationships advisor, Jonathan Gulland. Jonathan's role will be to participate in the process of forming the Porirua and Wellington/Hutt Valley whaitua; bringing back the views of the committee as they take shape, advising the councils on the implications of those views, and consulting with committee members on council views.

There's no question that freshwater and coastal water quality and allocation will be major issues over the coming years, so this will be an area where we expect to keep a close watch, and to report frequently.

Jonathan comes to Wellington Water from Porirua City Council, via Transpower and Wellington City Council, with an extensive background in stakeholder engagement and participation as well as environmental and project management. He says the breadth and challenge of the new role appealed to him.

"I'm looking forward both to the process and the outcomes. Having been at PCC while that committee came together, I'm convinced of the value this approach has to offer the community and the environment. It's a very exciting thing to be part of."

As part of Wellington City Council's integrated catchment management plan, we're developing a newsletter to broaden the conversation about stormwater quality issues. The first issue is out in April.

Three waters network performance on track

The metrics here show response times to attend and resolve network issues . This is one aspect of the customer experience of network resilience; if there's a service interruption, how long does it take to get fixed?

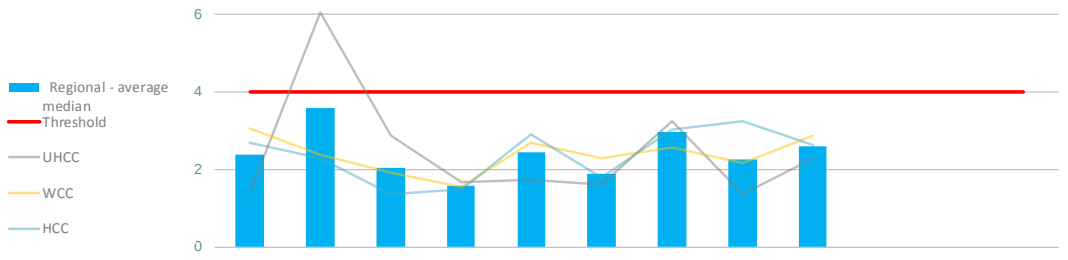
MEDIAN RESPONSE TIMES: *Hours to attend or resolve issue*

WATER SUPPLY

URGENT CALL OUTS

The median response time to ATTEND an *urgent* event in Mar-15 ranged from	0.32 hrs to 0.78 hrs	This is UNDER the 1hr threshold

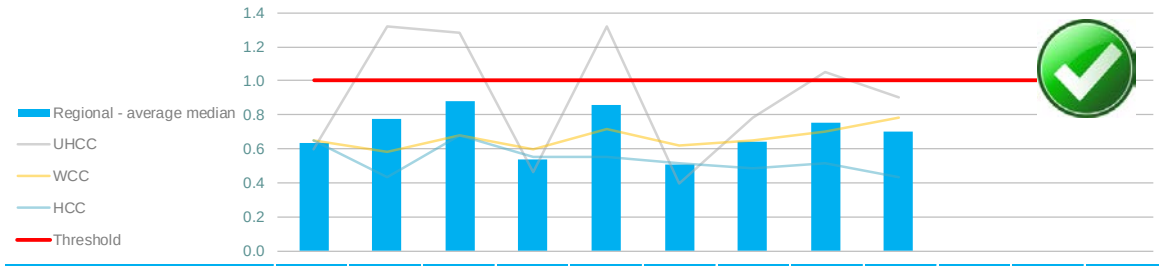
...And we RESOLVED these incidents quicker than threshold:



Resolution of urgent callouts	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15
Regional - average median	*2.38*	*3.57*	*2.05*	*1.57*	*2.44*	*1.89*	*2.95*	*2.25*	*2.61*			
HCC	2.70	2.30	1.35	1.50	2.92	1.78	3.03	3.23	2.63			
UHCC	1.38	6.03	2.88	1.67	1.73	1.60	3.25	1.35	2.30			
WCC	3.07	2.37	1.92	1.55	2.68	2.28	2.57	2.17	2.88			

MEDIAN RESPONSE TIMES: *Hours to attend or resolve issue*

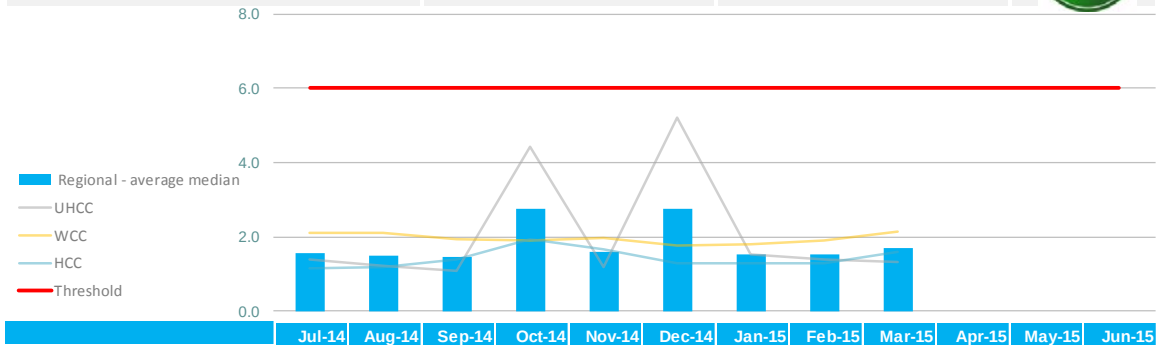
STORMWATER



WASTEWATER

URGENT CALL OUTS

The median response time to ATTEND an overflow event in Mar-15 ranged from	0.48 hrs to 0.73 hrs	This is UNDER the 1hr threshold



Resolution time for wastewater overflows	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15
Regional - average median	*1.56*	*1.51*	*1.48*	*2.76*	*1.62*	*2.77*	*1.54*	*1.52*	*1.70*			
HCC	1.17	1.18	1.38	1.93	1.68	1.30	1.30	1.28	1.62			
UHCC	1.40	1.23	1.10	4.43	1.18	5.22	1.52	1.38	1.33			
WCC	2.12	2.10	1.95	1.90	1.98	1.78	1.82	1.90	2.15			

Building resilience

We're developing a regional strategic initiative on resilience that will cover a range of asset, performance and behaviour characteristics. As we refine these with councils, we'll share them in this report. A resilient system is one that performs well on a daily basis, but also is resistant to, and recovers quickly from, shock. How people interact with the system is also an important factor.

Seismic resilient reservoirs

In the event of a major earthquake, seismic resilient reservoirs are more likely to retain their structural integrity – as well as their water. This will be very important in restoring supply to areas after the quake.

All cities are actively improving the seismic resilience of their systems. Physical strengthening of reservoirs includes adding floor-wall and roof-wall joints, making walls stronger and improving roofing. Pipework improvements include installing auto-shutoff valves and magflow meters.

Studies have shown that should the major supply pipelines to the cities be disrupted, it could take up to 80 days for supply to be restored to some areas. While emergency water tanks installed at schools and community centres will help fill the gap, communities must also take responsibility for water supplies in an emergency.

Strengthening existing structures improves their resistance to seismic shock.

Magnetic flow meters measure and report flow.

Auto shutoff valves preserve water in the reservoir in the event of a sudden increase in flow – such as major burst or break.

Installing reinforced roofing on Newlands reservoir.

Emergency storage tanks at community centres and schools are another important tool in ensuring communities are close to water when they need it.

Health and Safety forum works to improve data

Wellington Water's role in health and safety is to proactively manage risk. That includes the performance of our contractors and consultants. We recognise that our suppliers are very much in the public eye with regard to the activities we are responsible for, so it makes sense to us to work with them as well as on our own performance.

To that extent, we've been working with our contractors and consultants to gather information into a regional reporting structure. This process of gathering information from a large number of external sources is not always easy to establish, so we've also set a target to ensure we're improving the quality of data we get.

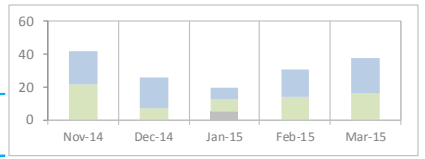
An increase of incident reporting of the last quarter has been pleasing to note. The best part has been a dramatic increase of near hit/miss incidents, at 59% of all reports, compared to 11% the previous quarter. This type of reporting is important because it helps us identify issues and trends before harm or loss occurs.

Over the last month of the quarter a spate of underground service strikes was reported from various projects and contractors. At this stage it is not clear if this is because of an increased awareness to report incidents of all types (possibly indicating under-reporting in the past), a failure of underground service identification (ongoing problem with poor records) or unsafe digging process (inadequate compliance with agreed best practice). We'll monitor this to gain more clarity.

Health & safety incidents

(includes injuries & near misses, plus plant and machinery for WW only)

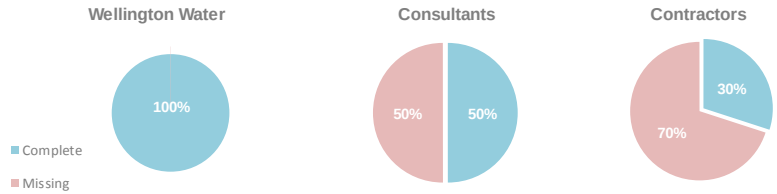
	YTD
Wellington Water	85
Contractors	67
Consultants	5
Total	157



Are we increasing our incident reporting as planned?

Yes

Estimated data completeness
how complete is the data ?



Workers lower shoring components into a trench for a project in Upper Hutt. The trench heights at which shoring must be in place have been reviewed by Wellington Water recently, to ensure workers performing tasks below ground level are safe.

Capital works ramp up to hit budget in final quarter

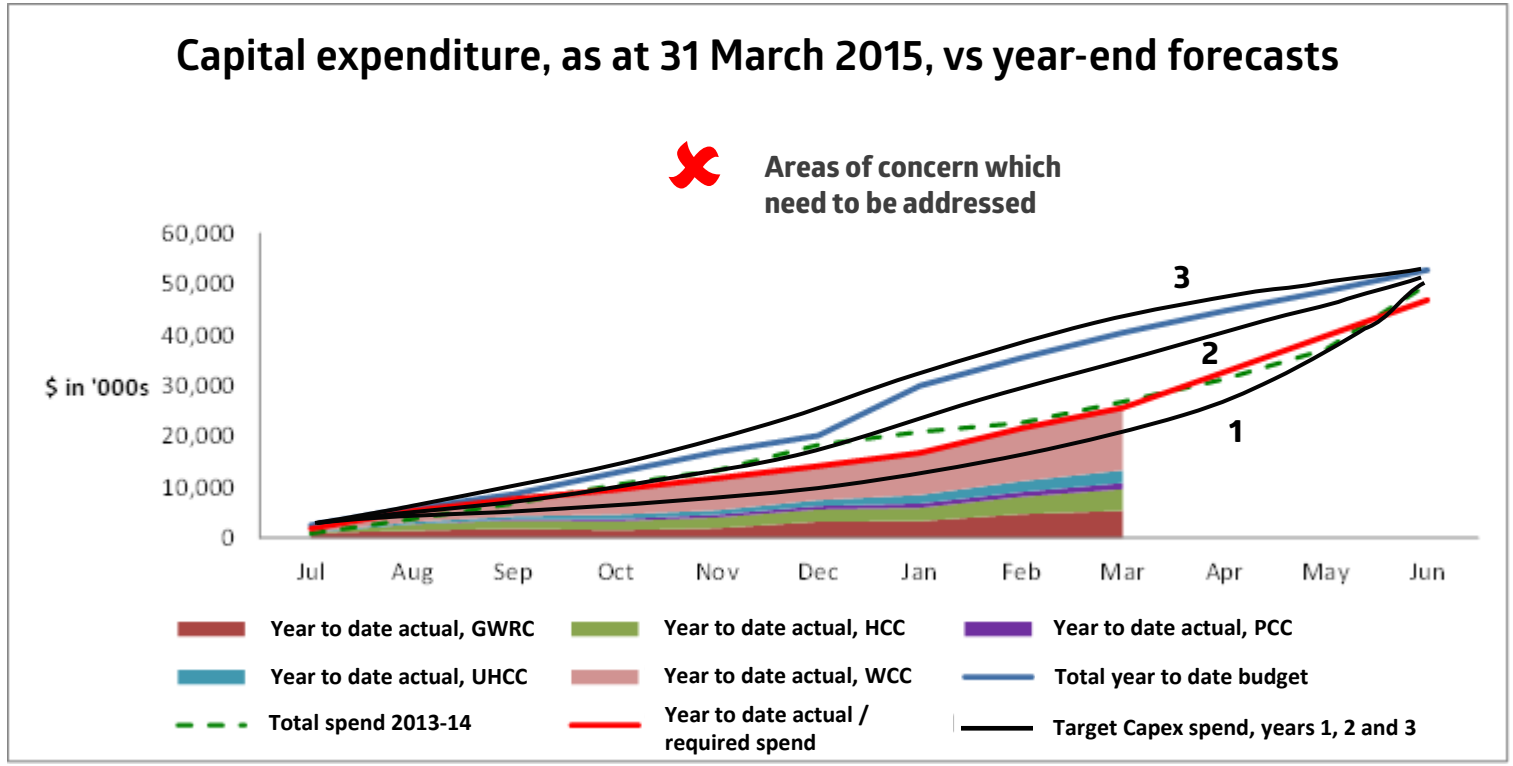
The capital works programme across all five councils is accelerating as we move into the last quarter. We are forecasting a $24m spend for the quarter, with all but a few physical works projects now in construction. Overall the programme is on track at 93% programme delivery (excluding projects deferred by clients).

For the four cities we are forecasting to carry forward approximately $6.5 million, of which $5 million is related to reprioritising work for Porirua City Council and the deferral of the cross-Porirua Harbour wastewater pipeline project.

The revised GWRC programme is largely on track. The programme forecast spend is approximately 8% ($580,000) under budget due to deferral and cancellation of a number of projects. Year to date spend and commitments are $5.4 million out of a revised forecast spend of $7 million.

We are undertaking a programme to "fast-forward" our investigation and designs, and awarding physical works contracts more evenly through the year. This should improve our overall programme delivery performance.

There are some risks associated with the programme, as we have a large number of projects underway with some very tight programmes, any programme slippage may mean projects cannot be completed this financial year.



$ in 000s	YTD actual	YTD budget	YTD variance	% variance	Annual Budget	YE forecast	YE variance
Opex	73,517	75,930	2,413	3%	101,471	100,411	1,060
Capex	28,884	45,864	16,980	37%	59,082	53,120	5,961
Total	102,401	121,794	19,393	16%	160,553	153,532	7,021