Water supply annual report – 2010/11

Introduction

Reporting scope

This report covers the Greater Wellington Regional Council's wholesale water supply activity for the year ended 30 June 2011.

Greater Wellington's main annual report meets the Council's statutory reporting requirements under the Local Government Act 2002. This report is supplementary to the statutory annual report and provides our customers and the community with a more detailed account of our wholesale water supply operation.

The commentary on pX-X reflects significant achievements and challenges in relation to our business objectives and performance targets.

Our objectives cover quality and quantity of supply, system security (risk), environmental responsibility, asset management, business efficiency, and health and safety. We have summarised our results for all annual targets for 2010/11 on pX-X.

Our purpose

We aim to provide a continuous and secure supply of safe, high-quality water – in a sustainable and cost-effective way – to meet the reasonable needs – both current and future – of the people of our region's four cities.

What we do

We collect, treat and distribute water to four city councils – Hutt, Porirua, Upper Hutt and Wellington – for their supply to consumers. We:

- Operate four water treatment plants, 15 pumping stations and 183km of pipeline
- Supply about 145 million litres of water daily on average, to meet the needs of public services, industry, commerce and about 390,000 people
- Target at least an A grade quality standard for our water treatment plants and distribution system, where consistent with customer requirements
- Forecast future water needs and plan so those needs can be met at an acceptable cost to the community
- Carry out our work with care for the environment, including promoting ways to conserve water and the benefits to the public of water conservation
- Manage assets with a replacement book value of $347 million

Governance and organisation structure

The Wellington Regional Water Board Act (1972) defines Greater Wellington's wholesale water supply role. The Council is responsible for setting policy. The Council's Social and Cultural Wellbeing Committee oversees the work carried out by Greater Wellington's Utilities and Services group to manage wholesale water supply. Four departments share this workload:

- Water Supply – (manages and operates the existing water supply assets including water treatment, distribution, asset management, engineering design, system modelling and compliance with quality and environmental standards)
- Development and Strategy – (manages strategy, planning, investigations and development of new water sources and associated infrastructure)
- Marketing and Design – (includes customer reporting and water conservation activities)
- Finance and Support – (financial, administrative and secretarial services)

Other groups within Greater Wellington provide water-catchment management services to Water Supply, including pest monitoring and control. Greater Wellington contracts-out water quality testing services and some construction and maintenance work.

Performance indicators

Greater Wellington's 10-Year Plan 2009-19 and Annual Plan 2011/12[1] group performance indicators and targets for wholesale water supply under four main activities: water collection treatment and delivery; water supply infrastructure; planning for future water demand and supply; and water conservation programmes. We have cross-referenced reporting of annual targets for our seven long-term performance indicators with these four main activities, from pX. You can view the 10-Year Plan 2009-19 and Annual Plan 2011/12 on our website or you can contact us for a copy (see outside back cover for contact details).

Management systems

We operate management systems for assets, water quality, environmental effects, health and safety, public health risk, projects and maintenance. We hold quality-management system certification to international standard ISO 9001:2008 and environmental-management system certification to ISO 14001:2004.

[1] 1. The 10-Year Plan 2009-19 contains performance indicators for three years to June 2012. The Annual Plan 2011/12 updates the 10-year plan

Chairperson's report – the year in review

The financial performance of our Water Group this year continues an ongoing story of effective business management. Total operating costs were under budget and the bulk water levy for 2010/11 remained static. Although the levy will be raised by 3% for 2011/12 this is only the second increase since 1997 – and even with this small increase, the levy remains below the 1997 level. This is good news – but decisions need to be made in the near future that will have considerable impact on capital expenditure…

Quality

Our water quality is something to be proud of, and this year we received an A1 Ministry of Health grading for our Gear Island Water Treatment Plant in Petone – our Te Marua and Wainuiomata plants already have A1 water. This is particularly impressive when you consider that we are one of only two councils in the whole of New Zealand to have reached the A1 standard. In fact, our only treatment plant that doesn't have an A1 grading is Waterloo, due to Hutt City Council's preference to receive unchlorinated water.

Two innovative projects reflect our desire for continued improvement in our environmental performance. Back in 2006, we set an ambitious target of cutting greenhouse gas emissions from energy used for water supply by 15%, by 2012. In 2009, we converted two disused pumps at Te Marua into turbines, allowing us to generate power from water flow and reduce our reliance on fossil fuel generated electricity. This year we're commissioning a hydro-generation plant at our Wainuiomata Water Treatment Plant. The Wainui plant is projected to generate an impressive 10% of the Water Group's total power demand, and together with generation from Te Marua, we're set to meet our target in the coming year.

Future proofing

Over the past few years, we've seen a steady decline in water supply volumes – and councils deserve congratulations for their part in this progress, including leak detection work. This improvement needs to continue – if it doesn't, our

projections show that we will still need to make a decision by 2014 on how to maintain an acceptable level of supply capacity for our growing population. And any large-scale upgrade of this capacity will be expensive.

The current favoured option for a new water source – if and when it is needed – is a storage dam at Whakatikei. We have also been investigating a potential site for a new storage lake just north of the Stuart Macaskill lakes at Te Marua. Our investigations so far are positive from an engineering perspective but some work remains to be completed. It is hoped that Council will be in a position to decide whether this is a better option for inclusion in the 2012-22 Long Term Plan.

Security

The security of "lifelines" utility networks, including water supply, has been in the public spotlight since the Canterbury earthquakes. For over a decade, the Water Group has had a programme to improve the seismic strength of our water supply system. There are two notable highlights among half-a-dozen enhancement projects this year. Firstly, the installation of a valve on the Wainuiomata-Wellington main will allow an area of anticipated major damage in Thorndon to be confined more tightly and result in faster reinstatement of water to several neighbouring suburbs. And a three-year project to upgrade the seismic strength and increase the capacity of the Stuart Macaskill lakes has begun. Expenditure in this area will also increase costs over the coming years.

Forward planning, has softened the blow of sharp increases in insurance cover in the aftermath of the Canterbury earthquakes, with our decision in the mid 1990s to self-insure some of our infrastructure by establishing a reserve fund. However, costs will go up as we cover the balance and contracts are renewed.

Conservation

Increased water-use efficiency and conservation is a way to delay construction – and therefore the cost – of a new water source. New Zealand's experience with other utilities has shown that metering can work to encourage conservation and keep demand in check. But the tension between the desire to avoid wasteful water use and the strong feeling against metering in some parts of the community means this is a difficult issue to resolve. However, the decision on whether or not to introduce household water metering is one that can only be made by local councils with their communities.

Household rainwater tanks have also been mooted as a way to both conserve water and indefinitely delay the need for a new water source. Greater Wellington continues to encourage households to store water for an emergency, and the Canterbury earthquakes have demonstrated the value of household emergency water tanks. However, the results of a Water Group-commissioned investigation into the cost-benefit of installing household water tanks in the four cities – to replace reticulated supply for some uses – show that they wouldn't provide an economic alternative to bulk storage or offer sufficient stored water when it really counts – toward the end of a very dry summer.

Councillor Nigel Wilson

Chair, Social and Cultural Wellbeing Committee

The following pages cover Greater Wellington's major water supply projects and key performance measures for 2010/11. Information is grouped by our main externally focused objectives: ensuring there is a secure water supply; meeting demand; providing safe, high-quality water; operating sustainably and being cost effective.

Where applicable, a reference to relevant objectives and targets follows each heading. We have listed our objectives and targets in full, with links to the relevant content from Greater Wellington's 10-Year Plan 2009-19, from pX.

Ensuring a secure water supply

While the Canterbury earthquakes have focused great attention on utility resilience and recovery planning this year, Greater Wellington has been steadily improving its bulk water infrastructure against disruption for more than a decade. This year we have been working on many fronts:

Seismic upgrade – Stuart Macaskill Lakes
(Key improvement project 1.01)

In January, we started physical works to improve the resilience of our storage lakes' embankments against earthquake damage.

A review of seismic performance of the lakes in 2008 (part of preparations to increase their depth) found that a movement of the Wellington Fault posed some risk of significant cracking of the lakes' clay linings. This cracking would cause the lakes to leak and possibly to fail eventually.

Our plan to improve the seismic performance of the lakes involves laying a tough flexible lining on the inside surface of the embankment walls and placing rock buttresses at the foot of the steepest sections of the outer wall facings, to reinforce them against damage from water seepage. These improvements will ensure the lakes meet safety guidelines published by the New Zealand Society on Large Dams.

Construction of the rock buttresses started in January. By the end of June, two buttresses – on the embankment between the lakes – were finished and work on the other three was underway.

We have received and tested a sample of the polyethylene liner, which performed well. The design of the internal upgrade of the lakes was subsequently finished by the end of the June.

We expect to advertise a tender for supply of the liner for Lake 2 – and registration of interest for construction works to install the lining and raise the level of the lakes – in July. Tenders for the construction works are scheduled to close at the end of August. Lake 2 will be drained once we are confident that there are suitable tenders to allow us to award a contract. We expect to drain the lake during September, with the lining contractor likely to start in November 2011.

Strategic earthquake stock review
(Key improvement project 1.03)

During the 2009/10 financial year, we investigated the best locations at which to store our critical pipeline repair stocks, to see whether we could significantly cut forecast reinstatement times following an earthquake.

Following this review, we decided to relocate our main storage depot away from Wainuiomata, to a purpose-fitted and more accessible site in the Hutt Valley, and develop a new 'hardstand' storage yard next to the Te Marua Water Treatment Plant. Rapid access to emergency spares in their present locations is likely to be difficult following a major earthquake, so relocating them is a high priority.

At our June year-end, Greater Wellington was negotiating to lease a 1700m^2 warehouse and adjoining 3000m^2 yard, in the Pomare area of Lower Hutt. We hope to secure the lease shortly.

OK main re-commissioning
(Key improvement project 1.05)

We finished re-commissioning part of the original Orongorongo-to-Karori (OK) water main, between Ngauranga and Thorndon, to enhance our options for reinstating supply to Khandallah, Ngaio, Highland Park and central Wellington (via Thorndon) after a major earthquake.

We have installed a cross-connection at the Ngauranga Valve Chamber, so that water from the

Te Marua Water Treatment Plant can be supplied to those suburbs via the OK main, along the Hutt Road.

The project in total has both duplicated our 1050mm bulk water main along the Hutt Road to Thorndon (which also serves the Onslow, Ngaio and Highland Park reservoirs) and provided for supply via either pipeline from all of our water treatment plants.

Raroa Road Tunnel
(Key improvement project 1.02)

We have also completed a three-year project to improve recovery time after an earthquake for the Ngauranga-to-Karori water supply artery, where it crosses the Wellington Fault at Karori.

In the first two years of the project, we realigned part of the pipeline near Zealandia, to eliminate a 'zigzag' double crossing of the fault line. The one remaining fault crossing point is in a tunnel, 12m below ground. This year we installed three steel frames to support the tunnel roof in a vulnerable section of the tunnel. We also installed a bypass pipe, which crosses the fault in a shallow trench, before rejoining the main pipe in the tunnel, via a shaft. This bypass will allow a much quicker repair across the fault if the pipe breaks.

The fault crossing at Karori is critical to recovery of a piped water supply to Wellington following an earthquake. Our recovery strategy is to repair the Kaitoke-to-Karori main first, as it is likely to be damaged less severely and reached more easily than the Wainuiomata-to-Thorndon main (which links our Wainuiomata and Waterloo Water Treatment Plants to Wellington). The Kaitoke-to-Karori main can supply water to southern, eastern and central parts of Wellington city once the fault crossing is repaired, and provided there is no serious damage to the pipes in the Raroa Road tunnel.

Isolation valve on the Wainuiomata-to-Thorndon main at Kaiwharawhara
(Key improvement project 1.06)

We installed a new isolation valve and valve chamber on our 1050mm water main from Wainuiomata-to-Thorndon, at Kaiwharawhara. This improves service recovery times after maintenance, or a rupture of the main where it crosses the Wellington Fault in Thorndon.

This new valve is some 4km south of Ngauranga, just north of where the 1050mm main crosses the Wellington Fault. In the event of maintenance on this main between the Ngauranga Pumping Station and Thorndon, it will now take less time to drain, flush and recharge, so making it easier to maintain supply to Ngaio and Khandallah. If the 1050mm main ruptured at Thorndon due to a fault movement, the new valve also provides for the main's continued use between Ngauranga and Kaiwharawhara.

This project proved particularly challenging. Thorndon is a bottleneck for services entering the city and our engineers and pipeline crew had to contend with communications ducts and 11kV power cables in close proximity and a confined work site in the middle of the busy Hutt Road, which has a 300mm-thick concrete foundation slab beneath the road surface.

In addition, the excavation site overlapped a pier foundation from a demolished railway over-bridge (built in 1881 for the Wellington and Manawatu Rail Company), so we had to gain approval from the Historic Places Trust, and work could only proceed in consultation with an archaeologist.

In all, almost 100m^3 of soil, concrete and asphalt was excavated to expose the water main and house the valve chamber, bypass and scour pipes.

Other resilience projects of note are:

- An emergency distribution point – consisting of two fire hydrants – was installed on our Ngauranga-to-Karori bulk water main at Khandallah. Normal water supply to the Onslow and Ngaio zones is via another main, along the Hutt Road to Thorndon, and the Kaiwharawhara Pumping Station. If a fire or natural disaster damaged our infrastructure along this route, the new distribution point allows standpipes to be set up for people and tanker trucks to collect water

- Flexible joints were installed on the Wainuiomata-to-Wellington water main on each side of the Gear Island Valve Chamber. Gear Island is vulnerable to ground-

deformation from earthquakes. These new flexible joints can accommodate some ground movement without breaking apart

- Investigation of landslide risk at 17 vulnerable sites on our distribution network, and assessment of social impacts from loss of water following a major earthquake – with the proposed Whakatikei dam in place – was commissioned separately from GNS Science

- Investigating with the Wellington Lifelines Group how to accelerate the recovery of services after a movement on the Wellington Fault at Thorndon – a key choke point for utilities and transportation

- Setting up a water emergency-preparedness working group of engineers and emergency managers from Greater Wellington and the region's city councils, to review options for improving water services' readiness to withstand – and recover from – an emergency. Consultants MWH were engaged to report on the options for emergency sources of water for each city after a natural disaster. They found that in-catchment options to supply significant quantities for Wellington and Porirua are limited and looked at alternatives to overcome this situation, including importing water. The working group believes water storage tanks are a good option as part of an emergency supply and the four cities have a programme to install emergency water tanks at civil defence sites and some schools and community centres. Further work is needed to confirm a region-wide strategy for emergency water supplies

Meeting demand

Less dramatic than – but just as important as – disaster readiness, is the day-to-day reliability of our system to provide enough water to satisfy the communities that we serve. In the last 12 months, we met all demand for water comfortably.

Total water supply volume

We supplied 52,776 million litres (ML) of water, 0.3% less than during 2009/10 (52,939 ML). The resident population supplied has increased 0.95%[2]. The average daily supply was 144.6ML/day.

[Graph #1 – Average daily water supply and population – 10-year trend]

Graph caption: Our annual water supply total has decreased for five consecutive years. This year we have seen less supply than for any of the previous 15 years

Water supply by city

Annual supply to each city was:

- Wellington: 28,440ML (53.9%)
- Lower Hutt: 13,469ML (25.5%)
- Porirua: 5,877ML (11.1%)
- Upper Hutt: 4,990ML (9.5%)

Wellington City (-0.2%) and Porirua City (-4.9%) each used less water year-on-year, while Hutt City (0.8%) and Upper Hutt City (2.2%) used more.

Peak water supply

The highest weekly supply total for the year was 1,169ML (averaging 166.9ML/day), a lower total than for any of the previous 15 years. The highest daily supply last year was 181.9ML, which exceeded the highest day for 2009/10 (176.0ML), but was still less than 14 of the previous 15 years.

Per-capita water supply target

Total gross supply of water per resident[3] averaged 369 litres per person per day (L/p/day).

Greater Wellington's 10-Year Plan 2009/19 includes a target of at least 10% reduction in per capita water use by June 2019, from a base of 399 L/p/day. To date, the reduction in per capita supply is 7.5% since 2009.

While this progress is encouraging, levels of water use can be influenced by many factors and it is unclear the extent to which the reductions in both total and per capita use are embedded

[2] Mid financial-year estimates projected from Statistics NZ estimates of resident population at 30 June each year
[3] Total water supply divided by the estimated resident population

rather than a temporary change due to short-term influences, including subdued economic activity and recent benign summers.

[Graph #2 – Average daily water supply per resident – 10-year trend]

Graph caption: Average daily water supply (gross) per head of resident population is decreasing steadily. A downward trend is also evident in summer, winter and peak week averages. The slight increase in average summer use this year was due to a dry early summer relative to 2009/10

Reservoir supply reliability

We have two time-related monthly targets for maintaining water storage above 60% full and 70% full for every city reservoir that we supply to directly:

- We achieved the "70% full" target for 98% of all reservoir-months, and the "60% full" target for 97%[4]; we aim to achieve 100% of both targets
- No loss of supply to water users resulted from the few events that led to the <100% results[5]

Water transmission efficiency

There was a 1.1% difference between the volume of water leaving our treatment plants and the volume entering customer reservoirs; this result is within the error margin for our revenue meters (+/-2%).

Estimated domestic water use

Most local households do not have a water meter to measure their individual water use, so our city council customers do not have precise figures for domestic water use. City council estimates of average domestic water use[6] this year are:

- Wellington: 230L/p/day
- Lower Hutt: 240L/p/day
- Porirua: 230L/p/day
- Upper Hutt: 230L/p/d

Public engagement with water conservation

Following our summer water-efficient gardening promotion '*Be Water Smart*', we arranged research to assess recall of the promotion, the popularity of a range of watering methods, and attitudes about water use and conservation.

Almost a third of people (30%) remembered the '*Be Water Smart*' promotion – those who recalled it were more likely to have conserved water during summer than those who did not (80% versus 69%). Those who saw the promotion were also more likely to have taken water-saving action last summer for the first time (15.4% vs. 10.4%).

Fifty-eight percent had mulched their garden during last spring/summer, including 3% who had mulched for the first time.

Levels of action regarding the main tips from our '*Be Water Smart*' promotion – test soil moisture before watering, target watering straight to the roots and time watering to 30 minutes with sprinklers and irrigation systems – have all increased since first surveyed: 'test' from 24% to 42%, 'target' from 52% to 74% and 'time' from 23% to 37%.

Segmentation based on attitude statements suggests that over three-quarters of the adult community would try to do more to conserve water to some extent before a major water shortage occurred. This knowledge will inform our preparations for this summer's water conservation communications, when we will have only one storage lake available for use (see story, pX).

Security of water supply standard endorsed

In 2000, we adopted a sustainable yield design standard such that water shortages would be rare – not more than once in 50 years on average. This standard is one of the criteria used to plan the timing of infrastructure development and monitor service levels. This year, consultants confirmed the standard as appropriate, a view that was subsequently re-endorsed by our customers.

[4] Where a customer has requested that we operate a reservoir at a lower-than-target level, we do not record these events as 'not achieved'.
[5] See page X for full details.
[6] Estimates provided by Capacity (for Wellington, Lower Hutt and Upper Hutt) and Porirua City Council. Figures estimated as accurate to +/-30L/p/d

Increased storage – Stuart Macaskill Lakes

(Key improvement project 3.01)

We started work to increase the capacity of the Stuart Macaskill Lakes over the next two to three years (in conjunction with improving the lakes' earthquake resilience – see page X story).

Our aim is to provide more lake-stored water in case of summer droughts and so maintain our target level of supply reliability. This upsizing will give another 400 million litres of storage – enough to maintain normal supply for up to two weeks longer in a drought.

Installing a lining in each lake (for resilience) requires the inside walls of the embankments to be dry, so we are preparing to drain and upgrade each lake in turn over the next two to three summers. The storage lakes give our region's four cities a contingency against shortages of river water due to prolonged dry weather. Emptying one lake during summer raises the risk of a supply shortage – if we get a dry summer, savings of up to 15% may be needed to compensate. Preparations are well advanced – in league with the city councils – to ensure water users are aware of this development and ready to help, as conditions require.

Water consent – Hutt River at Kaitoke

While we are preparing to engage our water supply community about our more limited water reserves this summer, we have also secured an option to take more water from the Hutt River.

In October, we applied for a change to the low flow condition of our consent: to be able to take up to 200 litres per second more water from the river at the Kaitoke weir, for up to three years. This change would help to offset the greater risk of a water shortage over the next 2-3 years, during the upgrade period for the Stuart Macaskill Lakes.

Independent scientists assessed the environmental effects on the Hutt River from this change as no more than minor. Fifteen of 22 submitters to the application opposed it, while the city councils that receive water from us were in support, although Hutt City Council asked for further conditions.

An independent panel of commissioners heard our application in June; its decision (released in July) granted a change of consent, with modification of some conditions. We are satisfied with this outcome, which caps roughly five years of investigation, scientific and environmental research, and consultation in preparation.

New storage investigation

We are investigating land immediately north of Kaitoke Hill, to see whether it is suitable for a water storage lake.

Consultants URS carried out the investigations, including determining the location of fault lines, whether the soils are suitable to use for earth dam embankments and the ecological features of the site. While their report shows that the ground is suitable for construction, we have requested further assessment of seismic issues, as the Wellington Fault is nearby. GNS Science and an overseas expert on dams in seismic-prone areas will review this further analysis.

An engineering concept design indicates that storage capacity of 5,000ML is possible, which is about 50% larger than the combined storage of our twin lakes at Te Marua.

In the coming year we will assess the merits of developing a water storage facility at this location, compared with a storage dam at Whakatikei, Greater Wellington's currently preferred option for extra water supply capacity, when it is needed.

Rainwater tanks

Advocates of household rainwater collection and storage see it as a more sustainable alternative to expansion of the public water supply. However, recent modelling of the monetary costs and benefits involved has not supported that view.

In 2010, we had consultants Harrison Grierson model the use of rainwater tanks for household toilet flushing and outdoor uses in Wellington. Modelling covered a range of tank and roof sizes, and house occupancy rates, for both normal and dry rainfall years.

Harrison Grierson's report was received this year and found no financial imperative for householders to install a suitably sized rainwater tank, given the very low marginal-cost saving expected from reduced use of water from the

public supply. The cost of a publicly funded programme of tank installations would be many times more expensive than new bulk water storage, while providing much less storage capacity.

We also investigated the use of domestic water storage tanks for emergency use only. The Christchurch earthquakes demonstrated clearly the value of household emergency water tanks in providing a degree of self-sufficiency immediately after the event, and avoiding the need to queue at city water points daily to collect and carry water. Our analysis shows that 750-1,000 litres of stored water should provide a sufficient emergency supply of water for many households, particularly when the tanks are able to refill from rainwater off the roof. Greater Wellington will continue to promote the use of rainwater tanks for emergency readiness.

Providing safe, high-quality water

Full drinking water standards compliance

We achieved full compliance with New Zealand's drinking water standards. This covers the microbiological and chemical requirements of water leaving our treatment plants and in our bulk-water distribution network.

A1 grading for Gear Island treatment plant

In June, we received confirmation of A1 grading – the Ministry of Health's highest possible endorsement for drinking water – for our Gear Island Water Treatment Plant, in Petone.

To achieve A1 grading, a water treatment plant must consistently produce safe water without an unpleasant smell or taste and have in place an internationally recognised quality management system. We have operated a quality management system certified to international standards since 1996. We maintained certification to ISO[7] 9001 (2008) this year.

Gear Island joins our Wainuiomata and Te Marua Water Treatment Plants in holding A1 grading. We also maintained "a1" grading for each of our three bulk water distribution pipeline zones.

Our Waterloo Water Treatment Plant, which supplies most Lower Hutt city residents, is graded B, due to Hutt City Council's preference to receive un-chlorinated water. Addition of chlorine, to guard against contamination affecting the water in pipe networks, is needed to get A1 grading.

Working sustainably

The main impacts of our operation on natural and physical resources relate to the taking of water, energy and chemical use, discharges and disposal of waste.

About two-thirds of our annual electricity use typically occurs at three sites: the Waterloo Water Treatment Plant (about 40% of total kilowatt-hours), the Waterloo wells (about 10%) and the Te Marua Pumping Station (about 16%). Therefore, our power use relative to the volume of treated water is affected by the share of total supply that we pump from the aquifer at Waterloo and how much raw water treated at Te Marua is pumped from the Stuart Macaskill Lakes to the treatment plant.

Our use of chemicals relative to the volume of water we treat is influenced by how much of our total production comes from river sources (which require more treatment than our aquifer source) and natural variation in raw water quality. Treating river water also generates solid and liquid waste, which we must dispose of.

We measure carbon emissions from energy use, but have been unable to identify standardised emission factors for the production and transportation of treatment chemicals, so the relative environmental merits of production from rivers and the aquifer are unknown. Given this uncertainty, our approach is to produce water at minimum marginal cost, subject to meeting our obligations under the Resource Management Act and organisational targets, and taking a conservative approach to security of supply.

[7] International Standards Organisation

Carbon emissions target progress

Our carbon emissions from power use for the year to June were 33% less than in 2006, our base year. This result comfortably exceeds our short-term target for carbon emissions reduction from energy use: 15% by December 2012.

This welcome progress is due in part to a favourable movement of New Zealand's energy generation emissions factor, as well as our power-use efficiency gains and a steady decline in demand for water over recent years. Of the 33% emissions reduction since 2006, 9% derives from lower water use and self-generation of electricity at Te Marua (2.3%)[8].

Compliance with resource consents

We fully complied with all resource consents held during the year. At our June year-end, we held 87 consents, encompassing water take, land use and discharges.

Taking of water

We took 65,684 million litres (ML) of water in total from our river and aquifer sources, 10.9% more than during 2009/10. This increase is due largely to more water take at Kaitoke weir, during periods of higher river flows, to generate hydroelectric power at Te Marua – 90% of the net increase in water take was at Kaitoke. Once this water passes through the turbines, it is either held in the Stuart Macaskill Lakes for later treatment and supply or returned to the Hutt River.

Electricity use

We used 18,820 megawatt-hours (MWh) of electricity for water supply, 4.5% more than in 2009/10; kilowatt-hours per million litres of production (kWh/ML) increased by 4.7%.

The single main reason for the increase in power use this year was greater use of the Waterloo Water Treatment Plant – 49% of all production compared with 43% in 2009/10 – to compensate for a winter shutdown of the Wainuiomata Water Treatment Plant. The increased power use at the Waterloo wells and treatment plant equates to 8% of total power use.

In addition, the volume of water that we pumped up Ngauranga Gorge more than doubled. Our supply cost optimisation software and a new energy supply contract meant we were able to take advantage of low spot prices at certain times of the day. This involved filling the Ngauranga Reservoir from our Waterloo plant via pumping up the gorge during low spot price 'windows' (rather than from the Te Marua Water Treatment Plant) then supplying water back down the gorge when prices were higher.

Self-generated electricity use

We self-generated 651.9MWh of electricity at Te Marua, 29% of total power use at the Te Marua Pumping Station and 3.5% of our total power use.

Chemical use

We used 2,493 tonnes of treatment chemicals, 14.1% less than during 2009/10. Almost half of this reduction occurred at the Wainuiomata Water Treatment Plant, which was shut between 19 June and 19 October 2010. A marked reduction in chemical use (by weight) was achieved at the Te Marua Water Treatment Plant due to changing our coagulant chemical, and reducing chlorine use (replaced by sodium hypochlorite, which is generated on-site using salt and electricity) and lime use (as a result of trials to optimise pH and alkalinity control). Across all treatment plants, we used 47kg of chemicals for every million litres of water treated, 13.7% less than during 2009/10.

[Graph #3 – Power and chemical use trend]

Graph caption: Changing levels of chemical and power use by volume of water supplied are influenced by our choice of production between aquifer and river sources, the quality of raw water for treatment and our choice of treatment chemicals as well as by efficiency measures. We seek to minimise our marginal cost of production, subject to meeting various obligations and targets, including for water supply reliability

Treatment waste

We sent 2,051 tonnes of de-watered treatment waste (sludge) to landfill from our river-water

[8] 9% was derived using the same NZ average emissions factor that was used in 2006, our base year. The emissions factor can go up as well as down

treatment plants. On a weight-by-flow basis, this is 77kg of sludge per million litres of water treated from rivers, an increase of 6.8% over 2009/10. The ratio of sludge to treated water is determined by the quality of "raw" river water to be treated: dirtier water results in more sludge.

Projects

Notable progress with energy efficiency projects and a new education resource reflects our goal of continual improvement in environmental performance.

Hydro-generation at Wainuiomata

We commissioned a hydro-electricity generator near the Wainuiomata Water Treatment Plant, to harness pressure from the flow of water between the Orongorongo River intake and the plant.

The turbine-generator's main purpose is to provide a cost-effective and sustainable source of power to our Wainuiomata plant, but it will also supply electricity to the national grid. We received approval from Wellington Electricity for connection to the local electricity network, to allow the export of excess power generated.

The generator was operational in June. Maximum output is 300kW of electricity, and it is expected to generate about 1.8 million kWh annually[9] – equivalent to the power use of 225 average homes. This level of generation will cut our total demand for electricity from the National Grid by 10% and offset about 400 tonnes of carbon emissions.

Hydro-generation at Te Marua

We completed modifications to our hydro-electricity generation facility at Te Marua that have increased maximum output by 38%.

When first commissioned in late 2009, power was generated from water flowing into the Stuart Macaskill Lakes from the Kaitoke weir. However, we could not generate power when river water was too dirty to store in the lakes following heavy rainfall; changes made this year allow bypass of the lakes in these conditions. The bypass raises the 'head' (pressure) available by about 15m, which increases maximum generation from 240kW to 360kW. The forecast average-year saving is 1.1 million kWh, 6% of total power use.

Alkalinity control in treated water

The corrosion potential of the water that we supply is an important aspect of water quality. We believe that we can achieve effective corrosion control with lower chemical costs and have been running trials to test that theory.

Our trials to study the effect on pipe materials of lowering the alkalinity and raising the pH of treated water were on hold at our year-end, until we can resolve a chemical mixing issue at the Te Marua Water Treatment Plant. To date, the trials show that the changed water chemistry has the potential to reduce wear on cement-lined water mains, the presence of heavy metals form household plumbing materials and the amount of treatment chemicals used. Significant cost savings are anticipated if the planned changes can be introduced. We hope to be able to start realising these savings in the coming year.

Water supply teaching resource

We completed *Turning on the Tap* – a curriculum-focused teaching resource, for years 5-8, about potable water supply and conservation. This resource complements Greater Wellington's Environmental Education offering; it will be launched in September 2011.

Being cost-effective

Financial highlights

Our Water Supply group produced strong financial results this year:

- Operating deficit lower than budget – $0.901 million (budgeted deficit $1.681 million). A cash surplus was still achieved
- Total operating costs lower than budget – $26.6 million (budget $26.9 million)
- Interest costs held at $2.5 million (budget $2.8 million)

[9] Projected long-term annual average

- Debt less-than budgeted – $43.5 million (budget $45.6 million)

Operating revenue

The Pipelines team completed over $120,000 of extra work subcontracted from Wellington Pipelines and Capacity Infrastructure Services.

Returns from our insurance contingency fund were better than budgeted, at $894,000, because interest rates were higher than forecast.

Operating costs

Over the winter, we ran a trial "low-season" shutdown of the Wainuiomata Water Treatment Plant, to release staff to assist with duties at other sites. Because of the shutdown, we treated more raw water at the Waterloo Water Treatment Plant. Pumping water from the Waiwhetu Aquifer is more energy-hungry than supply from rivers, and this change, together with higher than anticipated power prices, caused extra costs of $293,000. Despite this, we have made good progress with energy efficiency projects (see story, pX).

Depreciation charges are higher than estimated, by $298,000.

In our favour, a mild summer and the postponement of draining one of the Stuart Macaskill Lakes until 2011/12 saw less spent on water conservation advertising than was budgeted. We have transferred an unspent $80,000 "dry year" reserve into 2011/12.

Personnel costs were below budget, by $237,000, due to unfilled vacancies and less time than was budgeted spent on operational projects.

Spending on consultants for the review of asset information and condition rating, and engineering investigations into the feasibility of constructing a third water-storage lake, at Te Marua, was also less than budgeted.

Finance costs

Finance costs were $218,000 below budget, because our debt position at the start of the year was less-than budgeted and capital expenditure was lower than expected.

Capital expenditure

Capital expenditure was $7.26 million, compared with a budget of $9.70 million. Contractor costs relating to the seismic upgrade of the Stuart Macaskill Lakes were $1.04 million under budget, due to delays in the delivery of rock to build the buttresses. Unforeseen delays in completing the design and tendering contracts for work on the lake lining and storage capacity increase resulted in a further under-spend of $310,000. For both projects, these are timing issues rather than savings.

Cash flow

Cash flow from operating activities was $7.3 million; slightly down on the 2009/10 year ($7.6m).

Financial position

The Water Supply group's financial position is sound, with assets of $351 million (previously $350 million) and liabilities of $48 million (previously $47 million). Total debt is at $43.5 million (previously $42.2 million).

Bulk water levy 2011/12

We have had to increase the levy by 3% from 2010/11, but this is only the second time since 1997 that we have increased the levy (net of GST). The last time the net levy increased was 2008 – it remains below the level of 1997, thanks to price reductions delivered between 2000 and 2002 and costs held in most years since. This record reflects good on-going cost control.

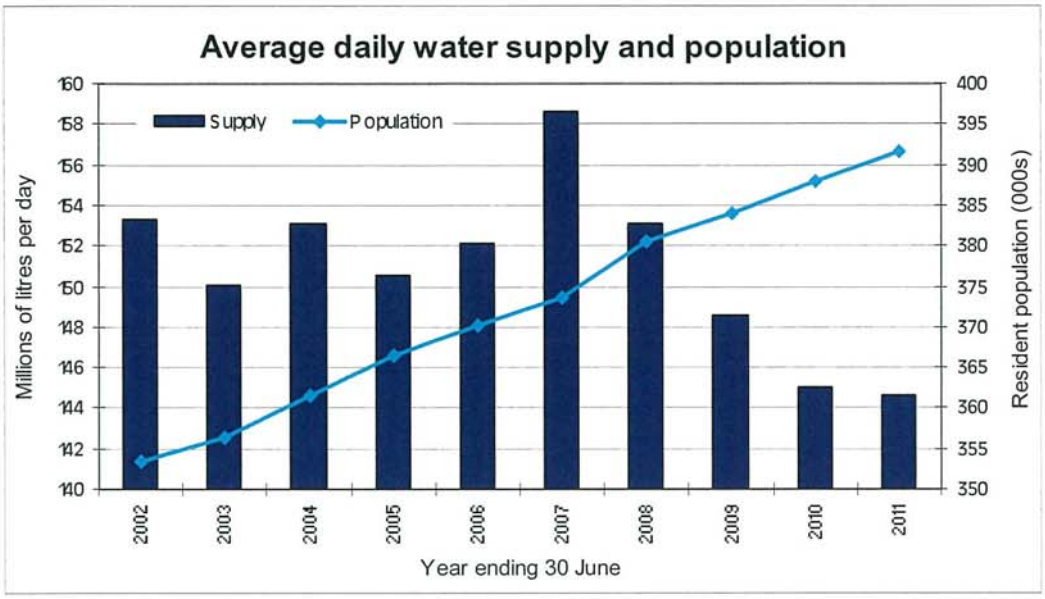
[Graph #4 – Wholesale water levy and CPI inflation]

Graph caption: The water levy that we charge Hutt, Porirua, Upper Hutt and Wellington city councils will increase by 3% for 2001/12. However, if the levy had kept pace with inflation since 1991, it would now be $39.8 million, 43% more than the actual figure. (CPI figures are 12 months to December – year to December 2011 estimated at 2.5%. Source: Asia-Pacific Risk Management

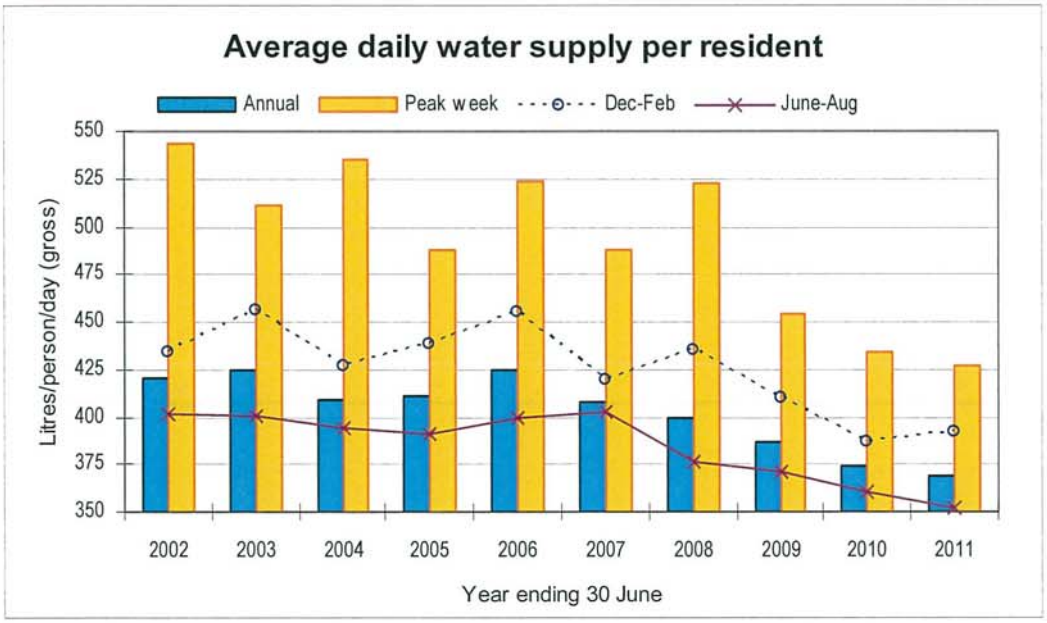
Financial summary

	June 2011 Actual $000	June 2010 Actual $000	June 2009 Actual $000	June 2008 Actual $000	June 2007 Actual $000
Operating revenue	**25,717**	**25,614**	**25,729**	**25,157**	**24,395**
Depreciation	8,221	7,953	7,529	6,241	6,175
Financial costs	2,538	2,923	3,453	3,491	3,268
All other operating expenditure	15,859	15,240	14,863	14,204	15,315
Operating surplus/(deficit)	**(901)**	**(502)**	**(116)**	**1,221**	**(363)**

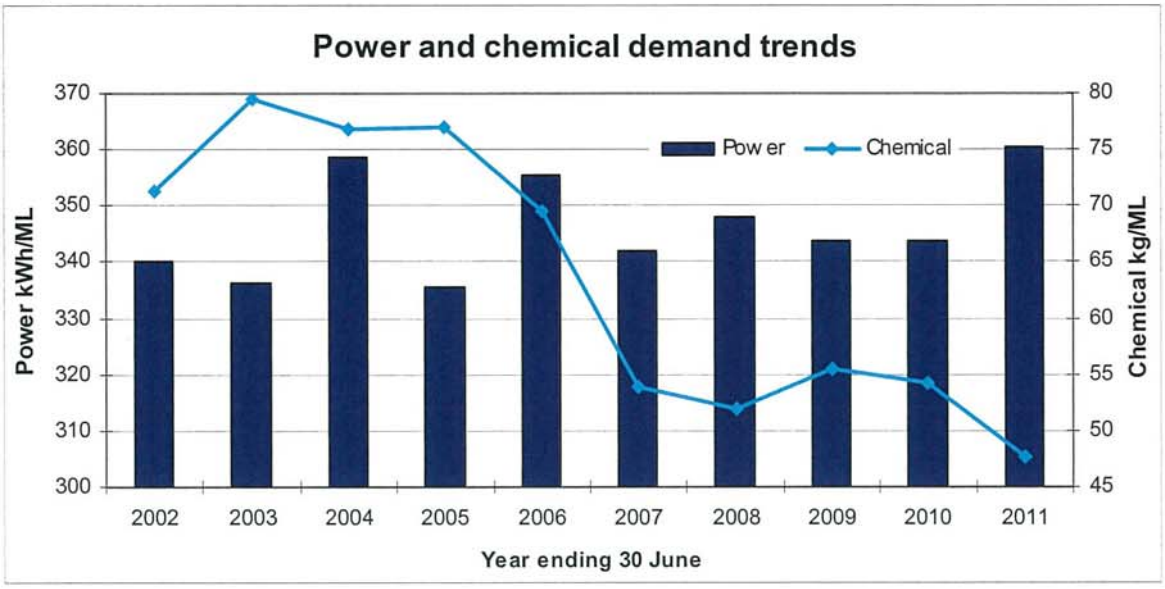
Graph #1



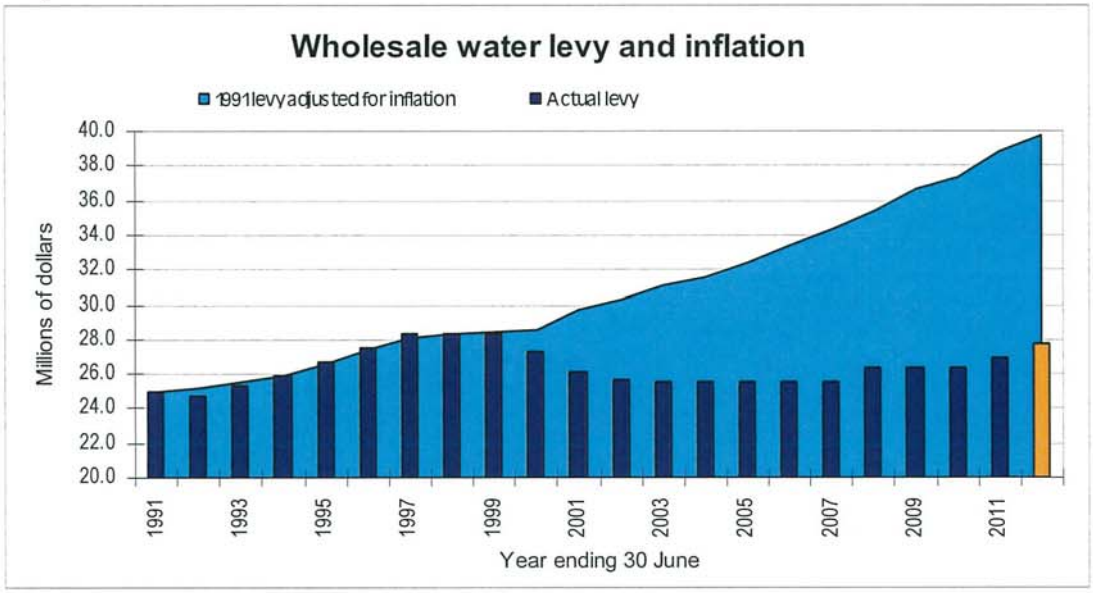
Graph #2



Graph #3



Graph #4



Detailed water supply delivery and financial performance

Sources of water supplied

Water abstraction (millions of litres)

For the year ended 30 June

Source	Annual					Maximum week			Maximum day		
	Total			Average day			Average day			Day	
	2011	2010	Percent 2011	2011	2010	Date 2011	2011	2010	Date 2011	2011	2010
River and stream abstraction											
Kaitoke/Te Marua	35,104	29,244	53.4%	96.2	80.1	25/05/11	149.0	130.9	29/12/10	155.0	149.5
Wainuiomata	2,106	4,120	3.2%	5.8	11.3	27/10/10	16.8	23.4	29/04/11	22.3	31.0
Orongorongo	1,087	1,533	1.7%	3.0	4.2	23/03/11	11.6	14.5	18/03/11	18.5	23.0
George Creek	818	1,100	1.2%	2.2	3.0	15/06/11	6.8	6.1	9/06/11	7.7	7.7
Big Huia Creek	922	558	1.4%	2.5	1.5	27/04/11	6.3	7.7	7/06/11	9.3	9.4
Total – Rivers	40,036	36,556	61.0%	109.7	100.2	25/05/11	171.8	156.1	1//05/11	181.1	176.6
Public artesian abstraction											
Waterloo	25,630	22,626	39.0%	70.2	62.0	18/05/11	83.0	84.8	29/05/11	90.9	90.6
Gear Island	18	48	0.0%	0.1	0.1	4/08/10	0.5	3.3	30/07/10	3.6	15.5
Total – Artesian	25,648	22,675	39.0%	70.3	62.1	18/05/11	83.0	85.3	29/05/11	90.9	94.1
Total Public Abstraction	**65,684**	**59,230**	**100.0%**	**180.0**	**162.3**	**25/05/11**	**238.6**	**227.1**	**1/05/11**	**254.4**	**258.4**

See also "Taking of water", pX. Totals may not add exactly due to rounding

Rainfall levels (millimetres)

For the year ended 30 June

	Kaitoke[1]	Karori[2]	Orongorongo[3]	Wainuiomata[4]
2011	2,255	1,485	2,347	1,698
2010	2,068	1,299	2,362	1,726
Mean of data record	2,297	1,238	2,529	1,927
2011:mean	98%	120%	93%	88%

1: Kaitoke Headworks rain gauge. 2: Karori Sanctuary rain gauge. 3: Orongorongo Swamp rain gauge. 4: Wainuiomata Reservoir rain gauge

The following graphs show average rainfall per month in our surface water catchments compared with the maximum, minimum and mean of the data record for each site.

[GRAPH – Rainfall worksheet] **Orongorongo catchment rainfall** (Orongorongo Swamp record 1980-2011)

[GRAPH – Rainfall worksheet] **Wainuiomata catchment rainfall** (Wainuiomata Reservoir record 1890-2011)

[GRAPH – Rainfall worksheet] **Hutt catchment rainfall** (Kaitoke Headworks record 1951-2011)

Levels and flows from water sources

The following three graphs show historical highs, lows and averages for river flows from the Hutt and Wainuiomata rivers and for the level of the Waiwhetu aquifer at Petone – the three main water sources that we use to supply the greater Wellington metropolitan area – compared with data for the 12 months to 30 June 2011.

[GRAPH – Rivers-Aquifer worksheet] **Waiwhetu aquifer** (McEwan Park record 1971-2011)

Average monthly level for the year ended 30 June

[GRAPH – Rivers Aquifer worksheet] **Hutt River** (Kaitoke record 1968-2011)

Average monthly flow rate for the year ended 30 June

[GRAPH – Rivers-Aquifer worksheet] **Wainuiomata River** (Manuka Track record 1982-2011)

Average monthly flow rate for the year ended 30 June

Distribution shut-offs

For the year ended 30 June

We had to shut off part of our bulk water supply network on 44 occasions this year, to carry out repairs, maintenance and improvements (2010 = 51). In all cases, we finished the work and reinstated the supply without loss of water or pressure to consumers within the affected supply zones.

Of the 44 shut-offs, we needed more than eight hours to reinstate 19 of them. We were able to supply water from an alternative reservoir in all of these cases.

Ten shutdowns were unscheduled, for repairs of leaking or burst mains, or to repack leaking valves, compared with 18 during the year to 30 June 2010 (see graph below).

The remaining 25 shutdowns were scheduled (2010 = 33). This work was required to install new or refurbished pipes and valves, install new flow meters and mitigate the risk of asset failures from seismic activity.

[GRAPH – Unplanned shuts worksheet] **Unplanned shut-offs of bulk water mains**

Resource consents

Resource consents held as at 30 June 2011

Water-take	Land use	Discharge	Total
10	56	21	**87**

Full compliance was achieved for all resource consents held during the year

Water supplied to customers

Historically, we have recorded water supply figures weekly by manual reading of revenue meters at the supply points to our customers. However, since December 2005, we have had remote access to these meters and have collected readings daily. The annual supply totals prior to the year ended 30 June 2006 presented below have been calculated to represent 365/366 day years, so as to make the historic data more directly comparable between years and consistent with abstraction and production figures, which are recorded daily. The years ended 30 June 2000, 2004 and 2008 are 366 days.

Water supplied (millions of litres)

For the year ended 30 June

	Hutt City		Porirua City		Upper Hutt City		Wellington City		Total supply	
	Total	Avg. day	Total	Avg. day	Total	Avg. day	Total	Avg. day	Total	Avg. day
2011	13,469	36.9	5,877	16.1	4,990	13.7	28,440	77.9	52,776	144.6
2010	13,369	36.6	6,179	16.9	4,880	13.4	28,510	78.1	52,939	145.0
% change	*+0.8%*		*-4.9%*		*+2.3%*		*-0.2%*		*-0.3%*	
2009	13,804	37.8	6,277	17.2	5,011	13.7	29,136	79.8	54,228	148.6
2008	14,133	38.6	6,439	17.6	5,159	14.1	29,912	81.7	55,642	152.0
2007	14,076	38.6	6,317	17.3	5,113	14.0	30,542	83.7	56,048	153.6
2006	14,236	39.0	6,475	17.7	5,533	15.2	31,667	86.8	57,913	158.7
2005	13,938	38.2	6,022	16.5	5,319	14.6	30,244	82.9	55,522	152.1
2004	13,956	38.1	5,907	16.1	5,296	14.5	29,776	81.4	54,935	150.1
2003	14,714	40.3	6,135	16.8	5,303	14.5	29,899	81.9	56,050	153.6
2002	14,177	38.8	5,908	16.2	5,774	15.8	28,902	79.2	54,760	150.0

[GRAPH – Weekly supply worksheet] Average daily water supply by week

For the year ended 30 June 2011

Weeks shown are seven days from 1 July

Average daily supply gross water supply per capita and per household (litres)

For the year ended 30 June 2011

	Hutt City	Porirua City	Upper Hutt City	Wellington City	Total
Population[1]	102,400	52,300	39,000	197,850	391,550
Households[2]	37,550	16,400	15,000	72,450	141,400
Gross litres/head/day	360	308	351	394	369
Gross litres/household/day	983	982	911	1,075	1,023

1: Usually resident population, urban areas – extrapolated from Statistics NZ estimates. The populations presented are estimates for 30 June 2010, plus half the difference between the 30 June 2009 and 2010 estimates, to approximate a 2010/11 average population. 2: Occupied dwellings, local authority areas – Statistics NZ 2006 Census (final) figures, projected forward using the usually-resident population estimate and the average annual change in residents per household (for the four cities in total) between the 2001 Census and the 2006.

Maximum week supply (millions of litres)

For the year ended 30 June

	Hutt City	Porirua City	Upper Hutt City	Wellington City	Total
Maximum week 2011	1/12/10	8/12/10	23/02/11	8/12/10	8/12/10
Total of maximum week					
2011	304.6	134.0	117.7	620.4	1,168.6
2010	299.4	141.1	120.1	618.8	1,179.3
% change	*+1.7%*	*-5.0%*	*-2.0%*	*+0.3%*	*-0.9%*
Average day of the maximum week					
2011	43.5	19.1	16.8	88.6	166.9
2010	42.8	20.2	17.2	88.4	168.5

'Base' winter (June - August) supply (millions of litres)

For the year ended 30 June

	Hutt City		Porirua City		Upper Hutt City		Wellington City		Total 'base' supply	
	Total	Avg. day	Total	Avg. day	Total	Avg. day	Total	Avg. day	Total	Avg. day
2011	3,240	35.2	1,411	15.3	1,150	12.5	6,903	75.0	12,704	138.1
2010	3,275	35.6	1,472	16.0	1,174	12.8	6,940	75.4	12,860	139.8
% change	*-1.1%*		*-4.1%*		*-2.0%*		*-0.5%*		*-1.2%*	
2009	3,352	36.4	1,505	16.4	1,201	13.1	7,062	76.8	13,119	142.6
2008	3,321	36.1	1,491	16.2	1,192	13.0	7,165	77.9	13,168	143.1
2007	3,387	36.8	1,515	16.5	1,240	13.5	7,813	84.9	13,955	151.7
2006	3,377	36.7	1,503	16.3	1,276	13.9	7,560	82.2	13,716	149.1
2005	3,356	36.5	1,443	15.7	1,245	13.5	7,271	79.0	13,314	144.7
2004	3,414	37.1	1,415	15.4	1,226	13.3	7,230	78.6	13,285	144.4
2003	3,498	38.0	1,402	15.2	1,283	13.9	7,137	77.6	13,319	144.8
2002	3,445	37.4	1,365	14.8	1,374	14.9	6,996	76.0	13,180	143.3

N.B. figures are July and August from one calendar year and June from the next. E.g. 2011 represents July and August 2010 and June 2011

Water supply to Wellington during June 2006 (shown as part of the 2006 June year total), and July and August 2006 (shown as part of the 2007 June year total), was substantially more than expected, due to a large leak on the city's reticulation, which was repaired in September 2006. Our analysis indicates that this leak accounts for much of the increase seen in total base supply during those two financial years.

Water quality

Chemical monitoring – wholesale water supply

The health risk due to toxic chemicals in drinking water differs to that caused by microbiological contaminants. It is unlikely that any one substance could result in an acute health problem except under exceptional circumstances, such as significant contamination of the supply. Moreover, experience has shown that the water usually becomes undesirable after such incidents for obvious reasons, such as taste, odour and appearance. The problems associated with chemical constituents arise primarily from their ability to cause adverse effects after prolonged periods of exposure. Standards for chemical compliance are set out in the Ministry of Health's *Drinking-water Standards for New Zealand (DWSNZ) 2005 (Revised 2008).*

The drinking-water standards state that maximum acceptable values (MAV) for inorganic determinands of health significance represent concentrations in the water that, based on present knowledge, do not result in any significant risk to the health of the consumer over their lifetime of consuming that water. Guideline values (GV) apply to aesthetic determinands, which the standards identify as not of health significance. However, if a GV is exceeded the water may be rendered unappealing to consumers.

Mean values of chemical analysis at treatment plants

For the year ended 30 June 2011

DWSNZ 2005 (Revised 2008)			Te Marua		Wainuiomata		Waterloo		Gear Island	
Parameter	MAV (A)	GV(A)	No. of samples	Value	No. of samples	Value	No. of samples	Value	No. of samples	Value
Alkalinity (total), mg/L $CaCO_3$	–	–	11	27.0	9	38.0	11	59.0	1	58.0
Aluminium (acid soluble), mg/L	–	0.10	38	0.021	28	0.032	2	0.041	2	<0.002
Arsenic (total), mg/L	0.01	–	2	<0.002	2	<0.002	2	<0.002	1	<0.002
Boron, mg/L	1.4	–	2	<0.05	2	<0.05	2	<0.05	1	<0.05
Cadmium (total), mg/L	0.004	–	2	<0.001	2	<0.001	2	<0.001	1	<0.001
Calcium (total), mg/L	–	(B)	–	–	–	–	–	–	–	–
Chloride, mg/L	–	250	1	11.6	1	20.9	2	15.2	1	15.3
Chromium (total), mg/L	0.05	–	2	<0.001	2	<0.001	2	<0.001	1	<0.001
Conductivity, µS/cm @ 25°C	–	–	1	10.4	1	15.4	2	17.0	1	17.2
Copper (total), mg/L	2	–	13	0.143(D)	9	<0.013	13	<0.013	12	<0.013
Cyanide (total), mg/L	0.6	–	2	<0.005	2	<0.005	2	<0.005	1	<0.005
Fluoride, mg/L	1.5(C)	–	52	0.81	37	0.84	40	0.80	52	0.83
Hardness (total), mg/L $CaCO_3$	–	200	13	20.0	9	41.0	13	51.0	3	24.0
Iron (total), mg/L	–	0.2	13	0.017	9	0.021	12	0.060	13	0.061
Lead (total), mg/L	0.01	–	2	<0.001	2	<0.001	2	<0.001	1	<0.001
Magnesium (total), mg/L	–	(B)	–	–	–	–	–	–	–	–
Manganese (total), mg/L	0.4	–	13	<0.013	9	<0.013	13	<0.013	12	<0.013
Mercury (total), mg/L	0.007	–	2	<0.001	2	<0.001	2	<0.001	1	<0.001
Nickel (total), mg/L	0.08	–	2	<0.001	2	<0.001	2	<0.001	1	<0.001
Nitrate, mg/L –N	50	–	2	0.05	2	0.04	2	0.75	1	1.05
pH	–	7.0–8.5	12	7.78	10	7.62	13	7.69	13	7.50
Selenium (total), mg/L	0.01	–	2	<0.005	2	<0.005	2	<0.005	1	<0.005
Silica (molybdate-reactive), mg/L	–	–	2	10.2	2	13.3	2	15.9	1	16.7
Sodium (total), mg/L	–	200	1	12.1	1	13.2	2	12.6	1	25.4
Solids (total dissolved), mg/L	–	1000	1	52	1	77	2	85	1	115
Sulphate, mg/L	–	250	1	3.27	1	5.52	2	6.75	1	6.07
Zinc (total), mg/L	–	1.5	13	0.037	9	<0.013	13	<0.013	12	<0.013

Notes: Values that are preceded by the '<' symbol indicate the detection limit for that test. (A) Drinking-water Standards for New Zealand 2005 (Revised 2008); MAV denotes 'Maximum acceptable values for inorganic determinands of health significance'; GV denotes 'Guideline values for aesthetic deteminands. A dash in the 'GV or MAV' column indicates that there is no applicable value. (B) See Hardness. (C) The fluoride content recommended for drinking water by the Ministry of Health for oral health is 0.7 to 1.0 mg/L. (D) Annual mean values for copper typically <0.1 – we found an issue with the sampling point, which has been corrected. (E) We no longer require our laboratory to test for treated water alkalinity. We are now testing for raw water alkalinity and using that to adjust pH to achieve a suitable Langelier Saturation Index

Microbiological monitoring of the wholesale water supply

A public water supply that is free from microbiological contamination is an important factor in achieving high standards of public health. Microbiological contamination of a water supply has the potential to cause sickness within the community. We carry out microbiological monitoring of potable water in order to determine the safety of the water in relation to the possibility of transmission of waterborne disease. *Escherichia (E.) coli*, which usually comes from faecal material, is an accepted indicator of bacteriological contamination. We maintain very low turbidity levels in our treated water to demonstrate low numbers of protozoa *(Cryptosporidium)*. Direct testing of protozoa is not practical or required by the Ministry of Health.

Production

At our surface-water treatment plants (Te Marua and Wainuiomata), we demonstrate compliance to the microbiological criteria of the DWSNZ by continuously monitoring turbidity of the water leaving each filter, and free available chlorine (FAC) and pH in drinking water leaving the treatment plants. A chlorine residual in the treated water indicates that we have neutralized microbiological contaminants.

The Waiwhetu aquifer is a secure water source and, therefore, free from microbiological contamination according to the drinking water standards. However, we test water leaving our aquifer-source water treatment plants (Waterloo and Gear Island) to demonstrate compliance to the *E.coli* criteria of the DWSNZ. Daily testing detected no *E.coli* in the water leaving either the Waterloo or Gear Island water treatment plants.

Regional public health units assess microbiological compliance to the DWSNZ on behalf of the Ministry of Health. These assessments cover the same period as our financial year: that is, 12 months to 30 June.

We received formal notice of microbiological compliance for our Te Marua, Wainuiomata, Waterloo and Gear Island treatment plants for the 12 months to 30 June 2011.

Distribution

An International Accreditation New Zealand-registered laboratory monitors the microbiological quality of water in our distribution system after treatment. The laboratory uses. *E.coli* sampling, in accordance with the sampling requirements for urban reticulation systems, as contained in the drinking water standards.

The *Register of Community Drinking Water Supplies in New Zealand* includes our distribution system. The system has three distinct zones, with each having its own sampling requirements based on population served. We must take samples on different days of the week and from sites that represent the full range of conditions that exist within a distribution zone. The three zones are (1) Central Hutt/Petone (un-chlorinated supply from Waterloo Water Treatment Plant), (2) Wainuiomata/South Wellington (supply from Wainuiomata Water Treatment Plant) and (3) Upper Hutt/Porirua/North Wellington (supply from Te Marua Water Treatment Plant). We take samples from 16 sampling sites within the three zones.

We received formal notice of microbiological compliance for our three wholesale water supply network zones for the 12 months to 30 June 2011. A summary of results for the twelve months to 30 June 2011 appears below.

E.coli results – summary of samples collected

For the year ended 30 June 2011

Distribution Zone	DWSNZ MAV(D)	No. of samples	No. of positive results
Central Hutt/Petone	<1 in 100 mL of sample	399	0
Wainuiomata/South Wellington	<1 in 100 mL of sample	293	0
Upper Hutt/Porirua/North Wellington	<1 in 100 mL of sample	390	0

(D) Drinking Water Standards for New Zealand 2005 (Revised 2008), MAV denotes 'Maximum acceptable value for microbial determinands'.

Performance indicators

Our performance indicators for the 2010/11 operating year are shown in regular type. Performance in relation to these indicators is denoted in italic type.

Activity 1: Water collection, treatment and delivery (long-term)

Our services

1. Supply water to the four cities in the region that meets or exceeds national quality standards and meets reasonable daily demand
2. Ensure security of supply is not less than 2% annual probability of shortfall

How we measure our performance

1. Compliance with drinking water standards for biological, chemical and aesthetic determinands
2. Grading of water treatment plants
3. Reservoir levels
4. Breaches of security of supply standard
5. Level of deferred maintenance

By 30 June 2019

The quality of water supplied will continually meet the Ministry of Health's Drinking-water Standards for New Zealand (DWSNZ).

We have consistently met the requirements of the Ministry of Health's drinking water standards.

We hold certification to the International Standard ISO 9001:2008 for water quality management.

The grading of our water treatment plants and distribution system will be maintained or improved to achieve A1/a1, where this is consistent with customer requirements.

Three of our four water treatment plants have A1 grading. Our remaining treatment plant is graded B, the highest grading available given Hutt City Council's preference to receive an un-chlorinated water supply from this plant. Our wholesale water distribution system is graded a1, the highest grade available.

A Supply security will meet a 2% annual probability of shortfall (one in 50-year drought standard).

We are currently operating outside the 2% standard for annual probability of shortfall. We have included various developments and activities in our 10-Year Plan 2009-19 to restore operational capability within the 2% standard.

By 30 June 2011

We will supply water to the four cities in the region that meets or exceeds national quality standards, and meets reasonable daily demand, within a budget of $21,575,000.

Regional public health units assess compliance to the Drinking-water Standards for New Zealand on behalf of the Ministry of Health. Wellington's regional public health unit has confirmed full compliance with the chemical and microbiological requirements of the standards.

We met all demand for water within the four cities.

Actual costs were $20,516,000.

We will maintain or improve treatment plant grading levels.

We improved the grading of the Gear Island Water Treatment Plant and source to A1, and maintained the grading for our other water sources and treatment plants. The Te Marua and Wainuiomata Water Treatment Plants are also graded A1, the highest grade available. The Waterloo Water Treatment Plant is graded B.

Security of supply will be no more than 2.5% annual probability of shortfall (one in 40-year drought).

Security of supply was 2.25% based on a 30 June 2011 estimated population of 393,400 (0.95% increase over 12 months). This is an improvement over the 2.5% target maximum. We will review the security of supply when Statistics NZ population figures are available towards the end of 2011.

There will be no deferred maintenance in the system.

There is no deferred maintenance of water supply assets. We carried out over 3,000 planned maintenance activities and 450 corrective maintenance activities during the year.

Activity 2: Water supply infrastructure

Our services

Ensure that water supply assets are maintained and their performance is continually improved so that Greater Wellington has a reliable water supply system. This will be achieved through an asset management plan that reflects international best practice for infrastructure asset management.

How we measure our performance

1. Implementation of asset management plans
2. Capital expenditure projects for new infrastructure are built on time and within budget

By 30 June 2019

Replace and enhance assets in accordance with the asset management plan.

We manage water supply assets in accordance with a planned programme of maintenance. Our policy is that there is no deferred maintenance. The Asset Management Plan was prepared in accordance with the National Asset Management Steering Group guidelines.

By 30 June 2011

We will replace or enhance assets in accordance with the capital expenditure programme that is developed from the asset management plan, within a budget of $1,370,000.

We continue to replace and enhance water supply assets in accordance with the asset management plan, which was prepared in accordance with national standards. Actual costs were $997,000.

Activity 3: Planning for future water demand and supply

Our services

Ensure that plans are in place for Greater Wellington to supply enough water to meet the reasonable needs of the present and future populations of the four cities, taking into account environmental, social, cultural and economic needs.

How we measure our performance

Scenarios are in place to achieve security of supply based on sound modelling methodology, and including both demand reduction and increase in supply.

By 30 June 2019

Capital projects will be developed as required to allow a return to the 2% annual probability of a water shortage (no more than one in 50 years on average) and provide for future growth. The timing of projects will depend on population growth and per capita demand for water.

A Wellington Metropolitan Water Supply Development Plan was completed in 2007/08. This is a supply-side response to meet the needs of a growing population and to restore the security of supply to a 2% probability of shortfall. Water use has fallen steadily since 2006. Our security of supply modelling was updated in 2010 to include this more recent data as part of the calculation base.

By 30 June 2011

We will complete design work for raising levels of the Stuart Macaskill Lakes, within a budget of $500,000.

We finished design work to raise the lake levels and line the internal walls. Construction was tendered in July. Actual costs were $190,000.

We will start to seismically upgrade the Stuart Macaskill Lakes, by constructing rock buttresses at the toe of the outer embankments and preparing to partially line the inner walls of the embankments with a flexible membrane. This work will be carried out within a budget of $2,750,000.

We completed two rock buttresses to strengthen lakes' external embankments. Remaining work on the buttresses is underway, but progress was slowed due to lack of rock and construction rescheduling. A sample of polyethylene liner was tested and the design of the internal upgrade of the lakes subsequently completed by the end of the financial year. We will advertise for tenders for supply of the liner for Lake 2 and registration of interest for construction works to install the lining and raise the level of the lakes in July.

We will commission the Wainuiomata Water Treatment Plant mini hydro-generator, within a budget of $1,700,000.

We finished the hydro-generator building and commissioned the hydro generator. Actual costs were $1,586,000.

A project to investigate and start to construct the Te Marua Water Treatment Plant mini hydro-generator was deferred until the results of other mini-hydro projects have been evaluated. We did not incur any costs for this year.

Activity 4: Water conservation programmes

Our services

Promote the responsible use of water by consumers and encourage people to reduce their demand for water.

How we measure our performance

1. Per capita consumption of water in the four cities
2. Total consumption of water

By 30 June 2019

Per capita gross consumption of water will decrease at a rate of at least 10% over 10 years, from 399 litres per person per day (l/p/d) during 2007/08.

Per capita water use has shown a gradually declining trend over the last 10 years. Our water conservation publicity and promotions are two of many factors that would have contributed to this outcome.

By 30 June 2011

Increases in total consumption will be held to levels consistent with population change and targets for per head consumption, within a budget of $567,000.

Gross water supply per resident during 2010/11 equated to 369 l/p/d – 7.5% less than the target baseline.

Gross annual water supply during 2010/11 was 52,776 million litres, 0.3% less than the annual supply total for 2009/10. The estimated resident population supplied increased by 1.0% between 2009/10 and 2010/11.

The actual cost of water conservation publicity and promotions was $421,000. We realised savings from tailoring the level of water conservation activity to the mild summer experienced, and the deferral of extra water conservation publicity due to the seismic upgrade of the Stuart Macaskill Lakes being deferred by 12 months.

Management systems reporting

We are part of the way through a process to consolidate our management systems for water quality, environmental effects and health and safety, using BSI PAS 99 Integrated Management as a guide.

We have split our quality and environmental management systems reporting between "business as usual" work (annual performance targets) and improvement work (improvement projects). We will review this format as the consolidation process is develops.

For both the improvement projects table and the annual performance targets table we have shown links to the relevant content in Greater Wellington's *10-Year Plan 2009-19*.

Improvement projects and related objectives

		10-Year Plan 2009-19 reference		
Objectives and targets	**Achievement** and 2010/11 commentary	**Activity**	**Community outcomes**	**Objectives** *10-Year Plan 2009-19*, p86
Objective 1 – Ensure there is a secure water supply				
Project 1.01 – Complete seismic upgrade design and start construction for upgrade of the Stuart Macaskill Lakes	**Achieved** See "Seismic upgrade – Stuart Macaskill Lakes", pX	Water supply infrastructure	Prepared community Essential services	Ensure the water supply is as resilient as possible Asset management principles (*10-Year Plan 2009-19*, p95)
Project 1.02 – Finish earth-quake mitigation work for the water main to Brooklyn in the Karori-to-Raroa Rd tunnel	**Achieved** See "Raroa Rd tunnel", pX	Water supply infrastructure	Prepared community Essential services	Ensure the water supply is as resilient as possible Asset management principles (*10-Year Plan 2009-19*, p95)
Project 1.03 – Review strategic location of earthquake damage repair stocks by December 2010	**Achieved** See "Strategic earthquake stock review", pX	Water supply infrastructure	Prepared community Essential services	Ensure the water supply is as resilient as possible Asset management principles (*10-Year Plan 2009-19*, p95)
Project 1.04 – Convert Haywards #1 reservoir for storage of earthquake damage repair stock	**Project superseded** Another site is favoured for development. See "Strategic earthquake stock review", pX	Water supply infrastructure	Prepared community	Ensure the water supply is as resilient as possible
Project 1.05 – Complete O-K main re-commissioning	**Achieved** See "O-K main re-commissioning", pX	Water supply infrastructure Water collection, treatment and delivery	Prepared community Essential services	Ensure the water supply is as resilient as possible Asset management principles (*10-Year Plan 2009-19*, p95)
Project 1.06 – Install an isolation valve, chamber and scours on the 1050mm main at Kaiwharawhara	**Achieved** See "Isolation valve on the Wainuiomata-to-Wellington main at Kaiwharawhara", pX	Water supply infrastructure Water collection, treatment and delivery	Prepared community Essential services	Ensure the water supply is as resilient as possible Asset management principles (*10-Year Plan 2009-19*, p95)
Project 1.07 – Investigate earthworks to mitigate flood damage to road access to the Te Marua Water Treatment Plant after an earthquake	**Achieved** The project proposal anticipated earthworks to manage the flow of water from the lakes – after a Wellington Fault earthquake – away from access roads to the treatment plant. Following analysis of flows and capacities of existing floodway channels, it was determined that these would be sufficient to carry up to 4 cubic metres per second of water without obstructing vehicle access to the treatment plant. Increasing channel capacities would reduce earth cover to sewer pipes and other services and could not be justified when the detail of potential damage such as ground deformation was unknown	Water supply infrastructure	Prepared community Essential services	Ensure the water supply is as resilient as possible Asset management principles (*10-Year Plan 2009-19*, p95)

Project 1.08 – Install meters to measure flows in the Stuart Macaskill Lakes' under-drains including when the "wet well" is flooded	**Achieved** Meters installed; commissioning will take place in 2011/12. A movement of the Wellington Fault could cause the "wet well" drainpipe to rupture. Recording under-drain flows after an earthquake is critical, as increasing flows would indicate damage to the lake linings.	Water supply infrastructure	Prepared community Essential services	Ensure the water supply is as resilient as possible Asset management principles (*10-Year Plan 2009-19*, p95)
Project 1.09 – Install electrical surge protection devices at Te Marua Water Treatment Plant, against lightening strike	**In progress** Lightening strike is a significant risk, due to both potential direct effect on structures and resulting high voltages and currents in sensitive circuits that can damage critical and expensive equipment. Installation of surge devices in key areas should mitigate much of this risk. At our year-end the work was scheduled to coincide with the next plant shutdown for other maintenance	Water supply infrastructure	Prepared community Essential services	Ensure the water supply is as resilient as possible Asset management principles (*10-Year Plan 2009-19*, p95)
Project 1.10 – Replace an undersized scour valve at Moonshine	**Project found to be unnecessary** The pressure rating of the valve was thought to be too low for the main, but investigation found it to have the correct rating	Water supply infrastructure	Prepared community Essential services	Ensure the water supply is as resilient as possible Asset management principles (*10-Year Plan 2009-19*, p95)
Project 1.11 – Install an isolation valve at the Warwick St branch main for improved earthquake recovery	**Project deferred** Adding a second isolation valve on the main between Ngauranga and Karori will speed draining and flushing times and provide extra supply flexibility. WCC is replacing its Messines Rd reservoir (Karori). Limited storage at Karori during this replacement means we can't shut our Ngauranga-to-Karori main for the time needed to install the isolation valve without unacceptable risk of loss of supply to consumers. We have rescheduled this replacement after the estimated completion date – October 2012 – for the reservoir upgrade. A preliminary design and costing was completed this year	Water supply infrastructure	Prepared community Essential services	Ensure the water supply is as resilient as possible Asset management principles (*10-Year Plan 2009-19*, p95)
Project 1.12 – Install an emergency water distribution point at Haywards Reservoir	**In progress** In a major earthquake, the Haywards reservoir isolation valves will close, securing the water held in the reservoir. Installing suitable connections will allow water to be supplied from the reservoir to tanker trucks, for distribution. Design for a fire hydrant was completed; this will be installed in 2011/12	Water supply infrastructure	Prepared community Essential services	Ensure the water supply is as resilient as possible Asset management principles (*10-Year Plan 2009-19*, p95)
Project 1.13 – Investigate, purchase and install intrusion detection software for water treatment plant control systems	**Project superseded** After initial scoping, we investigated expanding the project to cover all software, with Greater Wellington's ICT team. However, experience of similar organisations has shown that the approach envisaged is both very costly and difficult to implement effectively. The project scope was then changed, with an annual budget proposed for localised software protections rather than a global fix. This year we developed virtual servers and configured redundant Ethernet switches.	Water supply infrastructure	Prepared community Essential services	Ensure the water supply is as resilient as possible Asset management principles (*10-Year Plan 2009-19*, p95)
Project 1.14 – Carry out upgrade work for Capacity as directed on the WCC main between Thorndon and Macalister Park	**Achieved** The Thorndon-to-Macalister 800mm main is a critical supply route for southern and eastern Wellington. Under contract, we replaced the bypass valve at the intersection of Webb and Taranaki Streets, repaired the main valve and two associated scour valves and housed both the main and bypass valves in access chambers, for ease of future access (previously buried). The Hansen and Hall Streets bypass valve was also replaced and housed in an access chamber	Water collection, treatment and supply	Prepared community	Ensure the water supply is as resilient as possible

Objective 2 – Provide safe, high-quality water				
Project 2.01 – Complete Public Health Risk Management Plan (PHRMP) actions	**In progress** We have until 1 July 2012 to have Ministry of Health-approved PHRMPs in place for our four water treatment plants and the wholesale distribution network. Regional Public Health (RPH) approved all of the five PHRMPs that we submitted this year. Although approved, RPH noted some areas for improvement. We will review these with RPH before implementing the plans	Water collection, treatment and delivery	Essential services	Provide high-quality drinking water
Project 2.02 – Achieve A1 grading for Gear island Water Treatment Plant	**Achieved** See "A1 grading for Gear Island treatment plant", pX	Water collection, treatment and delivery	Healthy community	Provide high-quality drinking water
Project 2.03 – Confirm that suitable flushing and testing points are in place on the wholesale distribution system	**Project deferred after scope expanded** Investigation for this project found that it could not be fully-resourced this year, due to its size and complexity. It is now established as a capital works project, with scoping next year and physical works in 2012/13	Water collection, treatment and delivery	Healthy community	Provide high-quality drinking water
Project 2.04 – Review the water sampling and analysis schedule for the whole distribution system to confirm it is consistent with Ministry of Health requirements	**Achieved**	Water collection, treatment and delivery	Healthy community	Provide high-quality drinking water
Project 2.05 – Conduct reliability analysis on fluoride dosing systems at water treatment plants	**Project deferred** Equipment reliability issues have meant that we are not consistently achieving our annual performance target for fluoride within the recommended range: 0.7-1.0 parts per million of water (resulting in fluoride levels of <0.7ppm). This project is now scheduled for next year	Water supply infrastructure	Healthy community	Provide high-quality drinking water
Objective 3 – Able to meet current and future demand				
Project 3.01 – Increase the storage capacity of the Stuart Macaskill Lakes	**In progress** Year 1 of a 2-3 year project – see "Increased storage – Stuart Macaskill Lakes", pX	Planning for future water demand and supply	Essential services	Ensure a secure water supply
Project 3.02 – Investigate the Upper Hutt aquifer and complete a water-take consent application	**Project deferred** Investigation work on the proposed Upper Hutt aquifer source was deferred until the result of our application to revise the water take consent for the Hutt River at Kaitoke and reduce the minimum flow below the Kaitoke Weir is known	Planning for future water demand and supply	Essential services	Ensure a secure water supply
Objective 4 – Sustainability (Asset Management)				
Project 4.01 – Develop a new framework for the Asset Management Plan in line with NAMS Group guidelines	**In progress** Year 2 of a 3-year project. We completed development of a new asset management framework, using National Asset Management Steering (NAMS) Group guidelines, which reflect best practice and are endorsed by the Office of the Auditor General, Local Government NZ and Water NZ. We aim to finish the revised Asset Management Plan document in the next year	Water supply infrastructure	Essential services	Asset management principles (*10-Year Plan 2009-19*, p95)
Project 4.02 – Design and install pipeline cathodic protection (Stage 1) – budget $150,000	**Achieved** Stage 1 involved investigating the status of existing systems and options for expansion. Much of this year's budget was spent of electrical isolations at the Gear Island and Silverstream valve chambers, to improve the performance of existing cathodic protection systems	Water supply infrastructure	Essential services	Asset management principles (*10-Year Plan 2009-19*, p95)

Project 4.03 – Replace distribution valves that are near the end of their economic lives or found to be in poor condition	**In progress** Replacing valves is an ongoing project. We completed two of five valve replacements earmarked for this year, with the remainder carried over to 2011/12. The resources of the Pipelines team were fully committed on other projects, including significant unplanned maintenance work	Water collection, treatment and supply Water supply infrastructure	Essential services	Asset management principles (*10-Year Plan 2009-19*, p95)
Project 4.04 – Replace two pumps and motors at the Ngauranga Pumping Station	**In progress** Due to be completed in August 2011. Project delayed by issues with electrical noise from the variable-speed drives making the pumping station instruments unusable	Water collection, treatment and supply Water supply infrastructure	Essential services	Asset management principles (*10-Year Plan 2009-19*, p95)
Objective 4 – Sustainability (People are Safe, Healthy and Productive)				
Project 4.05 – Health and Safety systems meet ACC Level 2 standard	**Achieved** ACC did not select Greater Wellington's Water Supply group to audit this year. Based on self-assessment, we would expect to pass an ACC audit and so maintain the ACC Workplace Safety Management Practices at the secondary level, thus retaining Greater Wellington's ACC levy discount of 20%	n/a	n/a	n/a
Project 4.02 - Review and implement the hazardous substance component of the HSNO Act by the dates required by regulation	**Achieved** No new conditions had to be implemented this year	n/a	n/a	Minimise environmental effects
Project 4.03 - Review and consolidate management systems and standard operating procedures. Review ISO procedures with a view to rationalising and reducing number of procedures	**In progress** In 2010, we reported our plan to consolidate these various management systems using the new international standard for risk management (ISO 31000:2009) as a platform. This plan has been modified and our intention is now to combine ISO 9001 and 14001 and H&S using BSI PAS 99 Integrated Management as a guide. BSI Group is a leading global business services organization providing standards-based solutions in more than 150 countries. PAS 99 (Publicly Available Specification) is the world's first integrated management system requirements specification based on the six common requirements of ISO guide 72 (a standard for writing management system standards), including for quality, environmental, and health and safety management. This is a significant undertaking. Our target is to have the integrated management system in place by November 2012	Water collection, treatment and supply	Essential services	Provide high-quality water Minimise environmental effects
Project 4.04 – Develop a secure trunk network for data and communications	**Project deferred after scope expanded** Planning for this project identified benefits from a common approach across Greater Wellington service groups. Development of a secure network was delayed to accommodate this increased scope	Water supply infrastructure	Essential services	Ensure the water supply network is resilient
Project 4.05 – Streamline maintenance management system (SAP-PM) and improve information access and collection	**In progress** The SAP PM business process and configuration of SAP were not meeting our maintenance management needs well. Maintenance Systems Solutions Pty Ltd completed a process-audit in 2010. This year, we have fully revised our business process document (that sets out the rules for how Water Supply uses SAP Plant Maintenance), produced quick reference guides and completed group-level training. Individual user training is programmed for 2011/12	Water supply infrastructure	Essential services	All objectives

Objective 4 – Sustainability (Environmental)				
Project 4.06 – Further investigate the source of apparent water loss between Kaitoke and Te Marua	**In progress** We installed a flow monitoring point on the flume bridge at Kaitoke, but the monitoring instrument failed and had to be returned to the United States for repair. Following the repair, there was not enough time to finish the investigation this year	Water conservation programmes Water collection, treatment and supply	Essential services	Minimise environmental effects Ensure there is a secure water supply
Project 4.07 – Refurbish Wellington Pump 2 at the Waterloo Water Treatment Plant	**Achieved** We had custom-made labyrinth seal wear rings made for this pump, with the aim of slowing post-refurbishment degradation. Pump efficiency increased at first, from 79.3% to 83.9% (similar to Pump 1). After 4 months and 2,500 hours of duty, the pump was re-tested and showed a drop-off in performance of 0.5%; half the rate of decay experienced with Pump 1. Pump 2 will be performance-tested again in 2011/12 before deciding whether or not to proceed with refurbishing Pump 3	Water supply infrastructure Water collection, treatment and supply	Essential services	Minimise environmental effects Ensure there is a secure water supply Asset management principles (*10-Year Plan 2009-19*, p95)
Project 4.08 – Set up pulse-count data collection of power use at water treatment plants and pumping stations	**In progress** Power is one of our largest operational costs. Historically, monitoring of power use is only on a monthly basis. Establishing on-line monitoring in the same way we monitor water supply flow data will allow detailed analysis of power use and may lead to further efficiencies. This year we had set up pulse counts for all our pumping stations. We can now see power demand relative to pumping flows for each half-hour. The treatment plants will be done in 2011/12	Water supply infrastructure	Essential services	Minimise environmental effects
Project 4.09 – Install a variable-speed drive on the No.2 Naenae pump at Waterloo Water Treatment Plant	**Achieved** Installing a variable-speed drive on the Naenae No.2 pump is forecast to help to reduce power demand at Waterloo Water Treatment Plant during CMD power tariff periods	Water supply infrastructure	Essential services	Minimise environmental effects
Project 4.10 – Install new pump tapping points and investigate thermodynamic testing of the aquifer well-pumps	**In progress** Existing tapping points were found to be suitable. The Hautana well-pump was tested, but the results have still to be assessed. Investigations will be completed and another five well-pumps tested in 2011/12	Water supply infrastructure	Essential services	Minimise environmental effects
Project 4.11 – Reduce greenhouse gas emissions from water treatment and supply 15% by December 2012	**In progress – on target** See "Carbon emissions target progress", pX	Water supply infrastructure	Essential services	Minimise environmental effects
Project 4.12 – Commission the Te Marua pump-as-turbine project (Stage 2)	**Achieved** See "Hydro-generation at Te Marua", pX	Water supply infrastructure	Essential services	Minimise environmental effects
Project 4.13 – Commission the Wainuiomata hydro-generation plant	**Achieved** See "Hydro-generation at Wainuiomata", pX	Water supply infrastructure	Essential services	Minimise environmental effects
Project 4.14 – Investigate options for further hydro-generation	**Achieved** A cost-benefit analysis for a mini-hydro generator on the inlet main to the Porirua low-level reservoir was finished and concluded it was viable. Design and procurement of the pump-set is planned for 2011/12, with installation in 2012/13	Water supply infrastructure	Essential services	Minimise environmental effects
Project 4.15 – Complete the development of a water supply teaching resource for school years 5-8	**Achieved** See ""Water supply teaching resource", pX	Water conservation programmes	Essential services	Reduce water use

Project 4.16 – Develop and implement a domestic water use calculator for the Greater Wellington website	**In progress** The coding for a water use calculator has been received from another water supplier, but changes to make it applicable for the Wellington area are still to be finished	Water conservation programmes	Essential services	Reduce water use
Objective 5 – Be cost effective				
Target 5.01 – Confirm the viability of reducing treated water alkalinity	**In progress** See "Alkalinity control in treated water", pX	Water supply infrastructure	Essential services Healthy community	Controlling costs and the water levy(*10-Year Plan 2009-19*, p88) Asset management principles (*10-Year Plan 2009-19*, p95)
Project 5.02 – Refurbish Wellington Pump 2 at the Waterloo Water Treatment Plant	**Achieved** See Project 4.07 commentary	Water collection, treatment and supply	Essential services	Controlling costs and the water levy(*10-Year Plan 2009-19*, p88) Asset management principles (*10-Year Plan 2009-19*, p95)
Project 5.03 – Modify the Water Supply group's system optimisation software, to be able to receive live updates of wholesale electricity spot market forecasts via COMIT automation	**Achieved** The aim of this project is to reduce operating costs by purchasing electricity directly from the wholesale spot market. This year, we changed our electricity supply contract from "fixed price variable volume" to a "spot and hedge" contract. The financial gain from this change is currently exceeding expectation, although the details are commercially sensitive	Water supply infrastructure	Essential services	Asset management principles (*10-Year Plan 2009-19*, p95)
Project 5.04 – Set up pulse-count data collection of power use at water treatment plants and pumping stations	**In progress** See Project 4.08 commentary	Water collection, treatment and supply	Essential services	Controlling costs and the water levy(*10-Year Plan 2009-19*, p88)
Project 5.05 – Install a variable-speed drive on the No.2 Naenae pump at Waterloo Water Treatment Plant	**Achieved** See Project 4.09 commentary	Water collection, treatment and supply	Essential services	Controlling costs and the water levy(*10-Year Plan 2009-19*, p88)
Project 5.06 – Install new pump tapping points and investigate thermodynamic testing of the aquifer well-pumps	**In progress** See Project 4.10 commentary	Water collection, treatment and supply	Essential services	Controlling costs and the water levy(*10-Year Plan 2009-19*, p88)

Annual Performance targets and related objectives

				10-Year Plan 2009-19 reference		
Service level statement	**Target ref.**	**Target**	**Achievement / 2010/11 comment**	**Activity**	**Community outcomes**	**Objective** (10-Year Plan p86)
Activity 1 – Ensuring there is a secure water supply						
We will maintain or improve both the resilience of the water supply system and our emergency response capability	1.1.1	Prepare an annual plan, by September each year, for improving seismic performance and ease and/or speed of reinstating supply	**Achieved**	Water supply infrastructure	Prepared community	Ensure the water supply network is resilient
	1.1.2	Complete at least 80% of the seismic performance plan by 30 June (end of the same financial year)	**Achieved** 129% of budget (budget $250,000 versus full year spend of $322,000)			
	1.1.3	At least maintain modelled reinstatement time following a Wellington fault movement (based on GNS modelling)	**Not achieved** Work is in progress to confirm the assumptions for reinstatement time			
Our raw water sources will be protected against contamination	1.2.1	Maximum daily flow from aquifer does not exceed X MLD and pressure does not fall below X metres.	**Achieved** The maximum daily flow from aquifer did not exceed 115ML/d	Water collection, treatment and delivery	Healthy environment	Minimise the environmental effects of water supply
The treatment plants and distribution system will be protected from damage	1.3.1	Maintain a record of damage and near miss incidents. Process all mark-out ("Dial Before You Dig") applications within 2 days	**Achieved**	n/a	n/a	n/a
Activity 2 – Providing safe, high-quality water						
Comply with Health (drinking water) amendment act 2007	2.1.1	Public Health Risk Management Plans (PHRMPs) will be reviewed annually	**Achieved** We have until 1 July 2012 to have Ministry of Health-approved PHRMPs in place for our treatment plants and the wholesale distribution network. Regional Public Health (RPH) approved the five PHRMPs that we submitted this year. Although approved, RPH noted areas for improvement. We will review these with RPH before implementing the plans	Water collection, treatment and delivery	Healthy community	Provide high-quality drinking water

Comply with the requirements of the DWSNZ 2005. Aesthetic and microbiological for treatment and distribution 100% of the time, chemical 85% of the time	2.2.1	Aesthetic compliance 100%	**Achieved**	Water collection, treatment and delivery	Healthy community	Provide high-quality drinking water
	2.2.2	Microbiological compliance – water treatment plants 100%	**Achieved**			
	2.2.3	Microbiological compliance – distribution systems 100%	**Achieved**			
	2.2.4	Achieve a level of fluoride in treated water within the range recommended by the Ministry of Health – 0.7-1.0 parts per million – for optimal dental health at least 85% of the time	**Partially achieved** We achieved this target at Te Marua (96%), Waterloo (89%) and Gear Island (89%), but not Wainuiomata (80%)			
Operate a quality management system that is certified to ISO 9001	2.3.1	Full compliance	**Achieved** Compliance maintained following a surveillance audit, completed 7 December 2010			
Water treatment plant and distribution system gradings will be maintained or improved	2.4.1	Te Marua - A1	**Achieved**			
	2.4.2	Waterloo - B	**Achieved**			
	2.4.3	Wainuiomata - A1	**Achieved**			
	2.4.4	Gear Island - A1	**Achieved** A1 grading achieved for Gear Island as at 30 June 2011			
	2.4.5	Distribution system - A1	**Achieved**			
Operate a quality management plan for the Stuart Macaskill lakes	2.5.1	Plan will be reviewed annually	**Achieved**			

Activity 3 – Meeting demand						
Maintain reservoir levels and distribution system pressure as per the Bulk Water Supply Agreement	3.1.1	Reservoirs at least 60% full for at least 98% of the time	**Mainly achieved** We achieved this monthly target for 513 of 528 reservoir-months, for 97% compliance. Where we did not achieve the target, equipment faults, unanticipated high demand or disruption due to planned work on our network were the cause. No loss of supply to water users resulted from these events	Water collection, treatment and delivery	Essential services	Ensure there is a secure water supply
	3.1.2	Reservoirs at least 70% full for at least 90% of the time	**Mainly achieved** We achieved this monthly target for 518 of 528 reservoir-months, for 98% compliance. Where we did not achieve the target, equipment faults, unanticipated high demand or disruption due to planned work on our network were the cause. No loss of supply to water users resulted from these events			
	3.1.3	Thorndon pressure between 80 and 100 metres head for at least 98% of the time	**Achieved** The average achievement was 99.9%. The target was achieved for each month			
	3.1.4	Thorndon pressure above 85 metres head for at least 90% of the time	**Mainly achieved** We achieved the target for 11 of 12 months – the average compliance level for these months was 97.9% We did not achieve this target for July 2010, due to a zone control-valve fault. The compliance level for July was 88.8%			
Sufficient water is available to meet the unrestricted (other than by routine hosing restrictions) demand in all but a drought situation that has a severity equal to or greater than a 1 in 50-year drought	3.2.1	A robust method is in place for identifying shortfall probability	**Achieved** Greater Wellington's Sustainable Yield Model results			
	3.2.2	Identify options for developing and extending the water supply infrastructure, including new sources, as required, to ensure that sufficient water is available to meet demand	**Achieved** Modelling shows that existing wholesale water supply system capacity can support a population of 390,000 at 2% annual shortfall probability (ASP). A population of 400,000 can be supported at 2% ASP with the Stuart Macaskill Lakes storage increase to 3,390ML in place			

Activity 4 – Working sustainably						
Comprehensive details, including age and condition rating, of all assets and equipment will be recorded in the Asset Management System (SAP)	4.1.1	All new equipment will have details recorded in SAP within 3 months of commissioning	**Achieved** This has resulted from an improved capitalisation process and data capture. This improvement project is still in progress for collection of data for existing assets	Water supply infrastructure	Essential services	Asset management principles (10-Year Plan 2009-19, p95)
	4.1.2	Each year the condition of assets approaching the end of their economic life will be assessed	**Partially achieved** We are 50% of the way through a two year programme of condition assessments for all above-ground assets (not limited to those nearing the end of their life)			
Maintenance plans are produced for all equipment and critical maintenance is not deferred	4.2.1	All new equipment will have maintenance plans in place within 3 months of commissioning	**Achieved** This has resulted from an improved capitalisation process. Project managers review the requirements before capitalising equipment			
	4.2.2	95% of compliance-related maintenance activities are carried out on time	**Achieved**			
A comprehensive AMP is in place to guide maintenance, renewal and replacement programme so that assets are replaced or refurbished to maintain overall asset condition rating	4.3.1	The Asset Management Plan (AMP) is updated annually and peer-reviewed every 3 years, in line with Long-term Plan preparation	**Partially achieved** We extended the timeframe for our improvement project to review the Asset Management Plan (see Improvement Project 4.01). We completed development of a new asset management framework, using National Asset Management Steering (NAMS) Group guidelines. We aim to finish the revised Asset Management Plan document by December 2011			
	4.3.2	No significant deterioration of asset condition	**Partially achieved** Baseline condition assessments have been done for approximately 50% of assets. All baseline information should be complete by the end of 2011/12			
	4.3.3	Consult with the customer territorial authorities regarding the content of each proposed Capital Works Programme (Annual Plan)	**Achieved** The 2011/12 Annual Plan Capital Works Programme was presented to customers on 15th April 2011			

Projects are managed to meet quality, time and cost standards	4.4.1	For 80% of Key Improvement Projects (KIPs), the full-year expenditure is within 5% of 3rd quarter forecast, 10% of 2nd quarter forecast and +10%/-15% of allocated budget	**Not achieved**	Water supply infrastructure	Essential services	Asset management principles (10-Year Plan 2009-19, p95)
	4.4.2	90% of projects that are scheduled to be complete within the current year are complete within the current year	**Achieved** 90% of projects scheduled for completion this year were completed			
Maintain an active, up to date, health and safety management system that helps achieve the requirements of the HSEA	4.5.1	Health and Safety system meets the requirements of the ACC Workplace Safety Management Practices Standards (secondary level)	**Achieved** ACC did not select Greater Wellington's Water Supply group to audit this year. Based on self-assessment, we would expect to pass an ACC audit and so maintain the ACC Workplace Safety Management Practices at the secondary level, thus retaining Greater Wellington's ACC levy discount of 20%	n/a	n/a	n/a
	4.5.2	All building Warrants of Fitness are current	**Achieved**	Water supply infrastructure	Essential services	Asset management principles (10-Year Plan 2009-19, p95)
	4.5.3	The ratio of proactive to reactive health and safety reports will be no less than 2:1	**Achieved** 31:1 proactive to reactive reports ratio	n/a	n/a	n/a
	4.5.4	The lost-time injury frequency rate will be less than 1 incident per 10,000 hours worked	**Achieved** 0.21 incidents per 10,000 hours			
	4.5.5	The lost-time injury severity rate will be less than 1 day per 10,000 hours worked	**Not achieved** 1.48 lost days per 10,000 hours			
Ability – our staff have the knowledge, skills and competence to perform the role they are in	4.6.1	Annual Training and Development Plans are in place for all staff	**25% achieved** Improving this outcome is part of a Q-Pulse audit results project			
	4.6.2	All annual competence-based activities and 85% of development-based activities are complete by June	**25% achieved** Improving this outcome is part of a Q-Pulse audit results project			
	4.6.3	Gallup Q06 and Q12 scores are in 75th%	Partially achieved Q6 22/58 – Q12 63/62	n/a	n/a	n/a

Motivation – our staff are engaged and feel valued	4.7.1	Gallup Q00, Q04, Q05, Q07, Q09, and Q10 scores are in 75th%	**Not achieved** Q04 47/55 - Q05 60/67 - Q07 36/48 - Q09 57/58 - Q10 39/57	n/a	n/a	n/a
	4.7.2	The ratio of days worked to sick days is greater that 30:1 (based on 224 working days/year)	Result to come	n/a	n/a	n/a
Gallup Q02 and Q03 scores are in 75th%	4.8.1	Gallup Q02 and Q03 scores are in 75th%	**Not achieved** Q02 68/58 - Q03 45/58	n/a	n/a	n/a
Direction – our staff know what is expected and understand the priorities	4.9.1	Conduct six-monthly performance review discussions with all staff	**Achieved**	n/a	n/a	n/a
	4.9.2	Conduct annual review of job descriptions (at the end of year performance review)	**Achieved**	n/a	n/a	n/a
	4.9.3	Gallup Q01, Q08 and Q11scores are in 75th%	**Not achieved** Q01 73/78 - Q08 59/60 - Q11 59/67	n/a	n/a	n/a
Be aware of, comply with, and report on compliance with all legislation, regulations, bylaws and standards that are relevant to the environmental performance of GWW	4.10.1	Achieve full compliance with all resource consents	**Achieved**	Water collection, treatment and delivery Water supply infrastructure	Essential services	Minimise environmental effects of water supply operations
	4.10.2	Maintain a list of all relevant legislation and review annually	**Achieved**	Water collection, treatment and delivery Water supply infrastructure	Essential services	Minimise environmental effects of water supply operations
	4.10.3	Trade waste permits are kept current	**Achieved**	Water collection, treatment and delivery	Essential services	Minimise environmental effects of water supply operations
	4.10.4	HSNO location test certificates are current	**Achieved**	Water collection, treatment and delivery	Essential services	Minimise environmental effects of water supply operations

	4.10.5	HSNO stationary container test certificates are current	**Achieved**	Water collection, treatment and delivery	Essential services	Minimise environmental effects of water supply operations
Adopt all practicable means to prevent pollution of the environment	4.11.1	Solid waste will be disposed of to a properly consented landfill	**Achieved**	Water collection, treatment and delivery	Essential services	Minimise environmental effects of water supply operations
	4.11.2	Liquid waste will be removed and disposed of by the correct codes of practice	**Achieved**	Water collection, treatment and delivery	Essential services	Minimise environmental effects of water supply operations
	4.11.3	All accidental discharges of substances with the potential of harming the environment will be recorded	**Achieved** All discharges monitored - no accidental discharges	Water collection, treatment and delivery	Essential services	Minimise environmental effects of water supply operations
	4.11.4	Chemical delivery and spillage procedures are current and audited annually	**Achieved**	Water collection, treatment and delivery	Essential services	Minimise environmental effects of water supply operations
Conserve non-renewable resources such as fuels, energy and materials and minimise waste	4.12.1	Monitor power use and generation and report on adverse trends	**Achieved** We implemented an "EnergyPro" database and developed Vantage Point reporting for hydro-generation at Te Marua. We are able to monitor power use at half-hourly intervals. Energy use trends are summarised on pX	Water collection, treatment and delivery	Essential services	Minimise environmental effects of water supply operations Controlling costs and the water levy(10-Year Plan 2009-19, p88)

	4.12.2	Monitor water losses and report on adverse trends	**Achieved** Monitored weekly; distribution inefficiency – the difference between production and supply – was 1.1%	Water collection, treatment and delivery	Essential services	Minimise environmental effects of water supply operations
	4.12.3	Monitor chemical use and report monthly on adverse trends	**Achieved** The annualised trend in total chemical use is summarised on pX	Water collection, treatment and delivery	Essential services	Minimise environmental effects of water supply operations Controlling costs and the water levy(10-Year Plan 2009-19, p88)
	4.12.4	Carry out water conservation programmes and report on effectiveness by June	**Achieved** See "Public engagement with water conservation", pX	Water conservation programmes	Essential services	Ensure there is a secure water supply Minimise environmental effects of water supply operations
	4.12.5	Prepare an annual plan for pump efficiency testing and complete at least 80% of testing by June	**Achieved** 83% (we tested 15 of 18 pumps we had planned to test)	Water collection, treatment and delivery	Essential services	Minimise environmental effects of water supply operations Controlling costs and the water levy(10-Year Plan 2009-19, p88)
Consider the environmental implications of business decisions	4.13.1	Provide awareness training for all staff and specific training to all staff whose actions have potential environmental impacts – within 3 months of commencing employment	**Achieved** No new staff in this period	Water collection, treatment and delivery	Essential services	Minimise environmental effects of water supply operations

	4.13.2	Include environmental performance as an attribute when assessing tenders for all major works and supply contracts	**Not achieved** There were four major works and supply contracts awarded during the year. Environmental aspects were included for two of these	Water collection, treatment and delivery Water supply infrastructure	Essential services	Minimise environmental effects of water supply operations
	4.13.3	An environmental aspect and impact assessment will be carried out for all new activities and projects	**Not achieved** Eight environmental aspect and impact assessments were carried out, for significant new projects. Aspect and impact assessments were not carried out for projects involving replacement of existing plant and materials or for minor works and control system upgrades	Water collection, treatment and delivery Water supply infrastructure	Essential services	Minimise environmental effects of water supply operations
Operate an environmental management system that is certified to ISO 14001	4.14.1	Achieve full compliance	**Achieved** Compliance was maintained following a surveillance audit, completed 7 December 2010. There were 3 minor non-conformances to address following the audit	Water collection, treatment and delivery	Essential services	Minimise environmental effects of water supply operations
Activity 5 – Being cost effective						
Ensure that the actual direct operating costs do not exceed the budgeted value	5.1.1	Full-year costs are within budget	**Achieved** Total costs were $20.5 million versus budget of $21.6 million	Water collection, treatment and delivery	Essential services	Controlling costs and the water levy(10-Year Plan 2009-19, p88)
Areas of significant operational expenditure will be routinely monitored and opportunities for cost reduction will be identified	5.2.1	Unfavourable variances greater than $20,000 or 10% of budget are identified and reported on monthly	**Achieved**	Water collection, treatment and delivery	Essential services	Controlling costs and the water levy(10-Year Plan 2009-19, p88)
	5.2.2	Monitor power use and generation and report monthly on performance and trends	**Achieved** See target 4.12.1	Water collection, treatment and delivery	Essential services	Controlling costs and the water levy(10-Year Plan 2009-19, p88)
	5.2.3	Monitor chemical use and report monthly on performance and trends	**Achieved**	Water collection, treatment and delivery	Essential services	Controlling costs and the water levy(10-Year Plan 2009-19, p88)

Practice prudent financial management	5.3.1	Ensure that the asset value recorded in the financial statements is materially correct, desktop valuations will carried out annually and full valuations carried out every 3 years	**Achieved**	Water supply infrastructure	Essential services	Asset management principles (10-Year Plan 2009-19, p95)
	5.3.2	The risk from overseas purchases will be minimised by purchasing financial currency hedges for purchases over $100,000 or delivery times longer than one year	**Achieved** The Wainuiomata hydro-generator was bought using a forward exchange-rate contract	Water supply infrastructure	Essential services	Controlling costs and the water levy(10-Year Plan 2009-19, p88)
	5.3.3	Assets are insured to cover maximum probable loss through a mix of external insurance and reserve fund so that the financial impact of any natural disaster is minimised	**Achieved** Our insurance has been adjusted for 2011/12. Our maximum probable loss cover is $42.1 million, the GWRC reserve fund is $16.6 million, our insurance top-up is $25.5 million			
Capital expenditure projects are completed on time and within budget	5.4.1	For 80% of Key Improvement Projects (KIPs) the full-year expenditure is within 5% of 3rd quarter forecast, 10% of 2nd quarter forecast and +10%/-15% of allocated budget	**Not achieved**			
	5.4.2	90% of projects that are scheduled to be complete within the current year are complete within the current year	**Achieved** 90% of the projects scheduled for completion this year were completed			

COMPREHENSIVE INCOME STATEMENT

For the year ended 30 June 2011

	Note	*2011 Actual $000's*	*2011 Budget $000's*	*2010 Actual $000's*
Operating revenue				
Water supply levies		23,460	23,460	23,460
Internal revenue		902	744	690
Other revenue (interest received and external)		1,355	1,067	1,464
Total Operating Revenue		**25,717**	**25,271**	**25,614**
OPERATING EXPENDITURE				
Personnel costs		4,570	4,807	4,071
Contractor and consultant costs		2,113	2,122	1,996
Internal consultant costs	*2*	874	1,045	901
Interest costs		2,538	2,756	2,923
Depreciation		8,221	7,915	7,953
Loss/(gain) on sale		(10)	(87)	126
Movement in doubtful debt provision		-	-	-
WRC overhead charge		975	975	1,032
Operating expenditure	*3*	7,337	7,419	7,114
Total operating expenditure		**26,618**	**26,952**	**26,116**
Net operating surplus/(deficit)		**(901)**	**(1,681)**	**(502)**
Other comprehensive income:				
Unrealised revaluation gains (losses)		-		-
Other reserve and equity movements		-		-
Total comprehensive income for the year		**(901)**	**(1,681)**	**(502)**

Statement of Changes in Equity

For the year ended 30 June 2011

	2011 Actual $000's	*2011 Budget $000's*	*2010 Actual $000's*
Equity as at 1 July 2010	303,171	306,159	303,673
Total comprehensive income for the year	(901)	(1,681)	(502)
Other reserve and equity movements		-	
Equity as at 30 June 2011	**302,270**	**304,478**	**303,171**
Components of equity:			
Closing accumulated funds	200,716	202,972	201,611
Closing other reserves	162	108	162
Closing asset revaluation reserves	101,392	101,398	101,398
Equity as at 30 June 2011	**302,270**	**304,478**	**303,171**

The accompanying notes and accounting policies should be read in conjunction with these financial statements.

BALANCE SHEET

As at 30 June 2011

	Note	2011 Actual $000's	2011 Budget $000's	2010 Actual $000's
EQUITY				
Closing accumulated funds as at 30 June 2011		**302,270**	**304,478**	**303,171**
Represented by:				
Non-current liabilities				
Public debt	5	43,467	45,551	42,196
Total non-current liabilities		**43,467**	**45,551**	**42,196**
Current liabilities				
Accounts payable		1,745	1,638	1,638
Employee entitlements		512	691	691
Treasury payables	4	2,736	-	2,284
Total current liabilities		**4,993**	**2,329**	**4,613**
Total liabilities		**48,460**	**47,880**	**46,809**
Non-current assets				
Property, plant and equipment	6	328,366	330,295	329,086
Intangible assets	7	467	547	547
Investments	8	16,943	16,943	15,774
Total non-current assets		**345,776**	**347,785**	**345,407**
Current assets				
Accounts receivable		2,619	2,501	2,501
Stocks	9	2,217	2,007	2,007
Accrued revenue		118	65	65
Treasury receivables		-	-	-
Total current assets		**4,954**	**4,573**	**4,573**
Total assets		**350,730**	**352,358**	**349,980**
TOTAL NET ASSETS		**302,270**	**304,478**	**303,171**

The accompanying notes and accounting policies should be read in conjunction with these financial statements.

FUNDING STATEMENT

For the year ended 30 June 2011

	Note	*2011 Actual $000's*	*2011 Budget $000's*	*2010 Actual $000's*
FUNDS FROM OPERATING ACTIVITIES				
Funds were provided from:				
Water supply levies		23,460	23,460	23,460
Interest received		894	788	1,003
Other revenue		1,363	1,024	1,151
		25,717	**25,272**	**25,614**
Funds were applied to:				
Payments to suppliers and employees		15,869	16,367	15,114
Interest paid on public debt		2,538	2,756	2,923
		18,407	**19,123**	**18,037**
Net funds from operating activities	*10*	**7,310**	**6,149**	**7,577**
Funds from investing activities				
Funds were provided from:				
Proceeds from sale of non-current assets		29	93	55
		29	**93**	**55**
Funds were applied to:				
Purchase of non-current assets		176	463	208
Capital projects		7,264	9,700	6,037
		7,440	**10,163**	**6,245**
Net funds from investing activities		**(7,411)**	**(10,070)**	**(6,190)**
Funds from financing activities				
Funds were provided from:				
Appropriations/new Loans		7,264	9,700	6,037
Transfer from reserves		54	162	24
		7,318	**9,862**	**6,061**
Funds were applied to:				
Repayment of public debt		5,994	4,773	6,128
Transfer to reserves			-	162
Investment additions		1,223	1,168	1,158
Repayment of current account				
		7,217	**5,941**	**7,448**
Net funds from financing activities		**101**	**3,921**	**(1,387)**
Net increase in funds held		0	0	0
Add: opening funds brought forward		-	-	-
Ending funds carried forward		0	0	0

The accompanying notes and accounting policies should be read in conjunction with these financial statements.

NOTES TO THE FINANCIAL STATEMENTS
For the year ended 30 June 2011

1. STATEMENT OF ACCOUNTING POLICIES

A. Reporting entity

The Greater Wellington Regional Council is a regional local authority governed by the Local Government Act 2002. For the purposes of financial reporting Greater Wellington is designated as a public benefit entity. The entity, Greater Wellington Water (GWW) is part of the Utilities and Services Group of the Greater Wellington Regional Council. GWW collects, treats and distributes potable water to the four Territorial Authority customers.

These financial statements do not include any transactions arising from Greater Wellington's parks and forest activities and investments.

B. Statement of compliance

These financial statements have been prepared in accordance with the requirements of the Local Government Act 2002 and New Zealand Generally Accepted Accounting Practices (NZ GAAP).
These financial statements are prepared in accordance with New Zealand equivalents to the International Financial Reporting Standards (NZ IFRS), as appropriate for public benefit entities.

Accounting judgments and estimations

The preparation of financial statements in conformity with NZ GAAP requires management to make judgments, estimates and assumptions that affect the application of policies and reported amounts of assets and liabilities, income and expenses. The estimates and associated assumptions are based on historical experience and various other factors that are believed to be reasonable under the circumstances. These results form the basis of making the judgments about carrying values of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates.
The estimates and underlying assumptions are reviewed on an ongoing basis. Revisions to accounting estimates are recognised in the period in which the estimate is revised, when the revision affects only that period. If the revision affects current and future periods, it is reflected in those periods.

C. Accounting policies

Basis of preparation

The financial statements are presented in New Zealand dollars, rounded to the nearest thousand. The financial statements have been prepared on a historical cost basis except for certain infrastructural assets that have been measured at fair value. The accounting policies set out below have been applied consistently to all periods presented in these financial statements.

The following particular accounting policies, which materially affect the measurement of results and financial position, have been applied.

Budget figures

The budget figures are those approved by the Council at the beginning of the year in the Annual Plan. The budget figures have been prepared in accordance with NZ GAAP, using accounting policies that are consistent with those adopted by Greater Wellington for the preparation of these financial statements.

Water supply levies

Levies, a statutory annual charge, represent charges to the Territorial Authorities for the collection, treatment and distribution of potable water. Levies are recognised in the year the charges are raised.

Property, plant and equipment

Property, plant and equipment consists of operational and infrastructure assets. Expenditure is capitalised when it creates a new asset or increases the economic benefits over the total life of an existing asset. Costs that do not meet the criteria for capitalisation are expensed.
The initial cost of property, plant and equipment includes the purchase consideration and those cost that are directly attributable to bringing the asset into the location and condition necessary for its intended purpose.
Property, plant and equipment are categorised into the following classes:

Regional water supply infrastructural assets
Regional water supply administrative buildings
Regional water supply minor equipment
Regional water supply motor vehicles
Regional water supply capital work in progress

All property, plant and equipment are initially recorded at cost.

Stocks

Chemical stocks and spares used for maintenance and construction purposes are valued at the lower of cost or net realisable value on a first-in first-out basis. This valuation includes allowances for slow moving and obsolete stocks.

Depreciation

Depreciation is provided on a straight-line basis on all tangible property, plant and equipment other than land and capital works in progress, at rates which will write off assets, less their estimated residual value over their remaining useful lives.

The useful lives of major classes of assets have been estimated as follows:

Regional water supply infrastructural assets 3 to 150 years
Regional water supply administrative buildings 10 to 50 years
Regional water supply minor equipment 3 to 15 years
Regional water supply vehicles 5 to 10 years

Capital work in progress is not depreciated

Intangible assets

Software is carried at cost less any accumulated amortisation and impairment losses. It is amortised over the useful life of the asset as follows:
Software 1 to 5 years

Accounts receivable

Accounts receivable are stated at estimated net realisable value after allowing for a provision for doubtful debts. Specific provisions are maintained to cover identified doubtful debts.
All known losses are expensed in the period in which it becomes apparent that the receivables are not collectable.

Goods and services tax

All items in the financial statements are stated net of GST, with the exception of receivables and payables, which are stated as GST inclusive.

Employee entitlements

A provision for employee entitlements is recognised as a liability in respect of benefits earned by employees but not yet received at balance date. Employee benefits include salaries, annual leave and long service leave. Where the benefits are expected to be paid for within 12 months of balance date, the provision is the estimated amount expected to be paid by the Group. The provision for other employee benefits is stated at the present value of the future cash outflows expected to be incurred. Obligations for contributions to defined contribution superannuation schemes are recognised as an expense in the Income Statement as incurred.

Funding statement

Cash means cash balances on hand, held in bank accounts, demand deposits and other highly liquid investments in which the Group invests as part of its day-to-day cash management.
Operating activities include cash received from all income sources of the Group and the cash payments made for the supply of goods and services.
Investing activities are those activities relating to the acquisition and disposal of non-current assets.
Financing activities comprise the change in equity and debt capital structure.

Changes in accounting policies

There have been no changes from the accounting policies adopted in the last audited financial statements.

2. Internal consultant costs and revenue

All significant internal charges have been eliminated. The internal consultant costs and revenue lines arise from GW Water's activities with other Council Divisions.

3. Operating expenditure

Operating expenditure comprises payments for transportation costs, plus materials and supplies, such as chemicals and power.

4. Balance sheet - presentation of working capital

GWW does not operate a separate bank facility. All transactions are processed through Greater Wellington Regional Council's bank accounts. Such amounts are described as Treasury Payables.

5. Long-term public debt

	2011 Actual $000's	*2010 Actual $000's*
Opening balance	42,196	42,287
New loans	7,257	6,037
Operating cash surplus applied to debt repayment	(5,986)	(6,128)
Closing balance	**43,467**	**42,196**

All public debt obligations are fully secured against the rateable property of Greater Wellington Regional Council. The interest rate charged on the facility as at 30 June 2011 was 6.00% p.a. (30 June 2010: 7.00% p.a.). Any operating cash surplus is used to retire debt.

6. Property, plant and equipment

2011	*Deemed cost $000's*	*Revaluation reserve $000's*	*Accumulated depreciation $000's*	*Net Book Value $000's*
Land	2,925	4,941	-	7,866
Water supply infrastructure	242,910	96,451	22,633	316,728
Office equipment	311	-	249	62
Plant and equipment	416	-	315	101
Motor vehicles	1,415	-	1,054	361
Work in progress	3,248	-	-	3,248
	251,225	**101,392**	**24,251**	**328,366**

2010	*Deemed cost $000's*	*Revaluation reserve $000's*	*Accumulated depreciation $000's*	*Net Book Value $000's*
Land	2,925	4,941	-	7,866
Water supply infrastructure	236,462	96,458	14,780	318,140
Office equipment	304	-	198	106
Plant and equipment	370	-	315	55
Motor vehicles	1,366	-	976	390
Work in progress	2,529	-	-	2,529
	243,956	**101,399**	**16,269**	**329,086**

Regional water supply plant and equipment assets were revalued by John Freeman, FPINZ, TechRICS, MACostE, Registered Plant and Machinery Valuer, a Director of CB Richard Ellis at 30 June 2008 using Optimised Depreciated Replacement Cost (ODRC) methodology. Water supply buildings were revalued by Paul Butcher, BBS, FPINZ, Registered Valuer, a Director of CB Richard Ellis at 1 July 2008 using Optimised Depreciated Replacement Cost (ODRC) methodology. Further asset revaluations are planned and these will be undertaken regularly. Water Supply Infrastructure Assets are defined as those assets which make-up the supply and distribution of water and these are valued at their component levels respectively. GWW's asset information system holds detailed valuation information on each item. Property, plant and equipment have been accounted for in accordance with NZ IAS 16.

7. Intangible Assets

2011	*Deemed cost $000's*	*Revaluation reserve $000's*	*Accumulated depreciation $000's*	*Net Book Value $000's*
Computer software	1,439	-	972	467

2010	*Deemed cost $000's*	*Revaluation reserve $000's*	*Accumulated depreciation $000's*	*Net Book Value $000's*
Computer software	1,389	-	842	547

8. Investments

	2011 Actual $000's	*2010 Actual $000's*
Asset rehabilitation fund	16,835	15,612
General reserve	108	162
	16,943	**15,774**

The interest rate charged on the facility as at 30 June 2011 was 5.62 % p.a (30 June 2010: 6.63% p.a.).

9. Stocks

	2011 Actual $000's	*2010 Actual $000's*
Chemicals	353	339
Capital spares	1,864	1,668
	2,217	**2,007**

10. Reconciliation of funds from operations to operating surplus

	2011 Actual $000's	*2010 Actual $000's*
Reported surplus/(deficit)	(901)	(502)
Add/(less) non-cash items:		
Depreciation	8,221	7,953
Doubtful debt provision reduced	-	-
Loss/(gain) on sale	(10)	126
Total non-cash items	8,211	8,079
Net cash flow from operating activities	**7,310**	**7,577**

11. Financial Instruments

Currency Risk

Foreign exchange currency contracts have a fair value of $4,766. Based on a current valuation, a foreign exchange rate movement of plus 10% results in an additional charge of $3,612 and if the rate reduces by 10% costs reduce by $4,415.

Credit Risk

Financial instruments which expose GWW to credit risk are principally bank balances, receivables and investments. A provision for doubtful receivables has been maintained and the subject of a regular review. Bank accounts are held with New Zealand registered banks in accordance with GWW's policy.

Concentration of Credit Risk
GWW derives the majority of its income from the regional water supply levy. Regional water supply levies are collected from the four Wellington metropolitan city councils.

Interest Rate Risk
GWWs debt is managed by the GWRC Internal Treasury unit. A fixed rate of interest is charged by the unit which minimises the exposure of GWW to interest rate fluctuations.

Fair Values
The estimated fair values of all of the financial instruments of GWW are the book value of those investments.

12. Related Parties

GWW contracts other Divisions of the Greater Wellington Regional Council for some operational services. All such transactions are carried out on normal commercial terms.

13. Contingencies

As at 30 June 2011, GWW had contingent liabilities of $314,000 (June 2010: $264,000).

14. Commitments

GWW leases Level 4, Regional Council Centre from the GWRC on an arm's length basis. As at 30 June 2011 GWW had capital works programme contractual commitments of $2,185,000 (30 June 2010: $1,936,000).

Social and Cultural Wellbeing Committee members

Greater Wellington Regional Council established the Social and Cultural Wellbeing Committee following a review of its committee structure in October 2010. The committee comprises eight members. Its membership at 30 June 2011 was:

Cr Nigel Wilson (Chair)

Cr Sandra Grieg (Deputy Chair)

Cr Judith Aitken

Cr Jenny Brash

Cr Paul Bruce

Cr Pru Lamason

Cr Paul Swain

Cr Fran Wilde

Liz Mellish
Appointee, representing the interests of the Iwi of the Wellington region

Water Supply management team

At 30 June 2011, the management team members of the Utilities and Services group with responsibilities for wholesale water supply were:

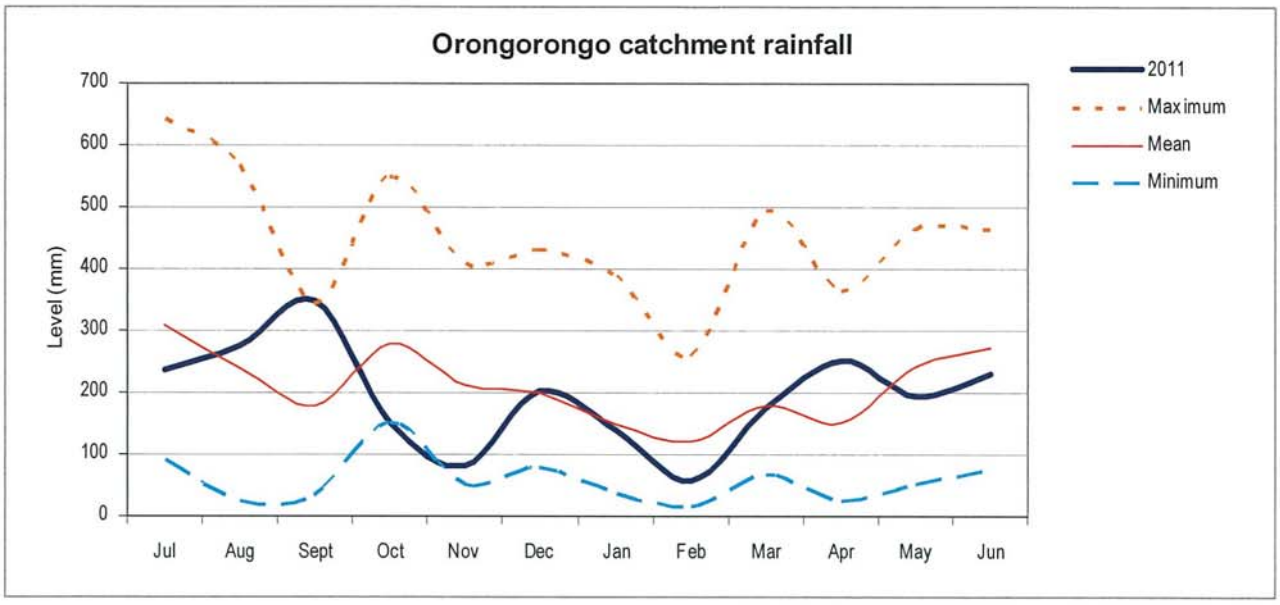
Murray Kennedy
(Group general manager)

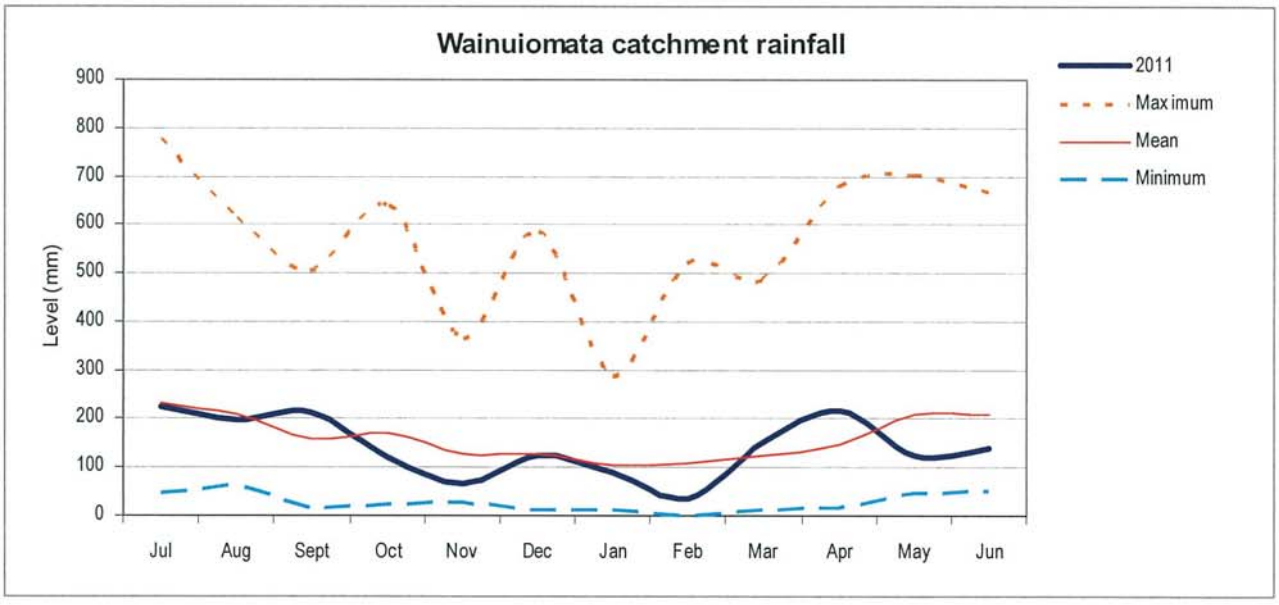
Chris Laidlow
(Water Supply manager)

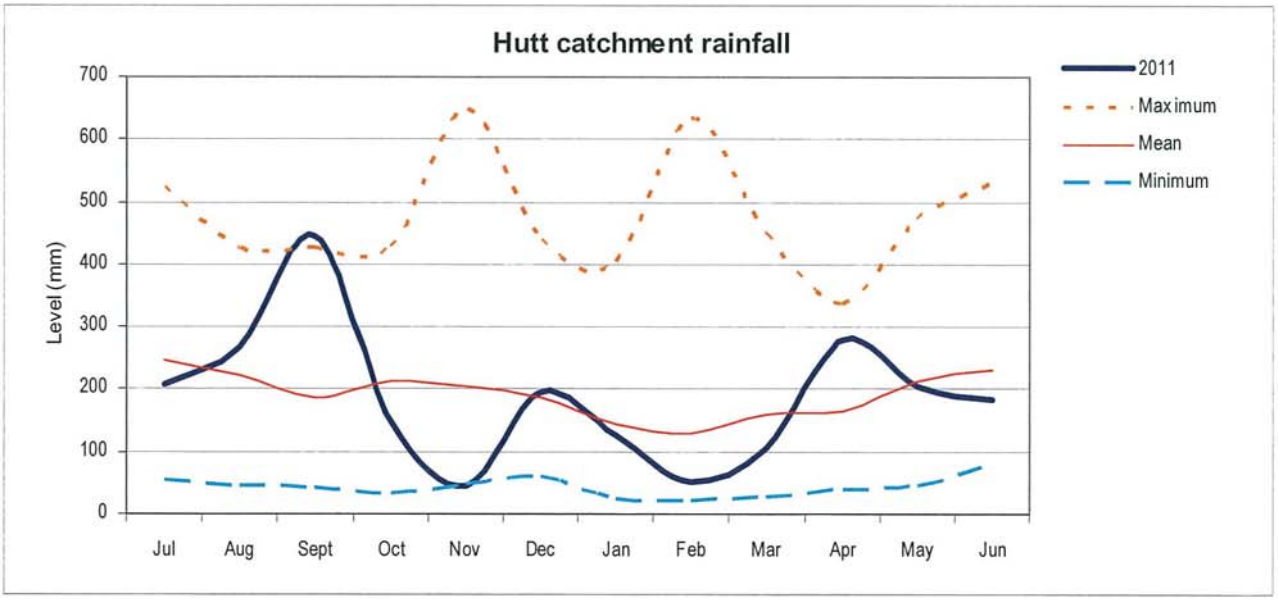
Tony Shaw
(Development and Strategy manager)

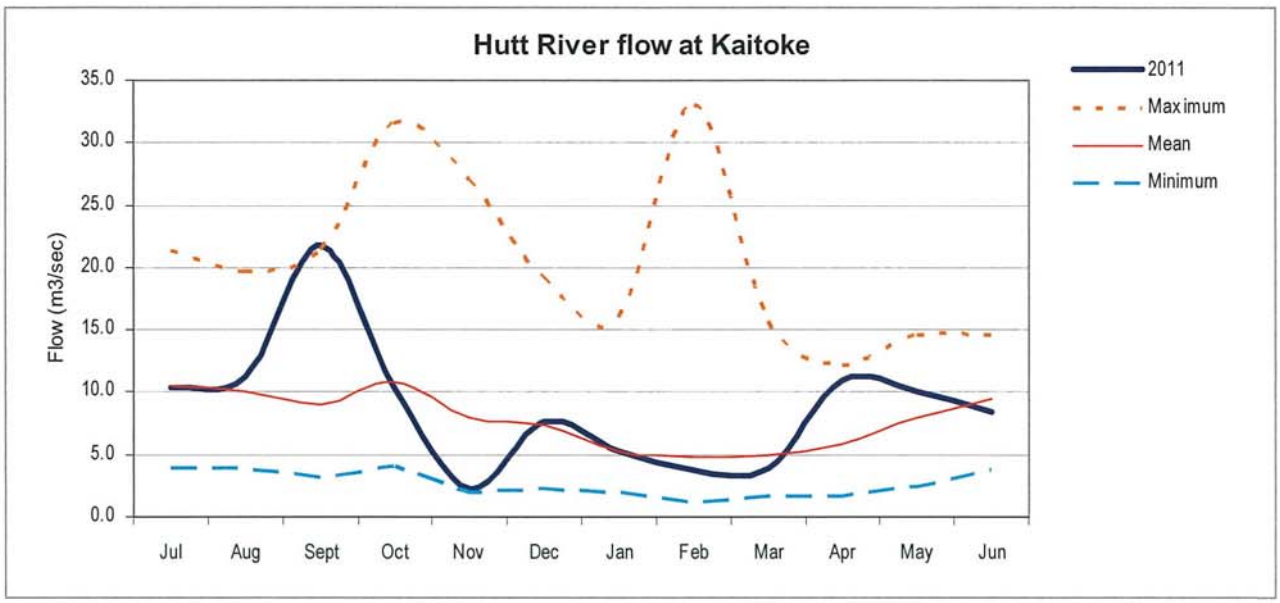
Amanda Cox
(Marketing and Design manager)

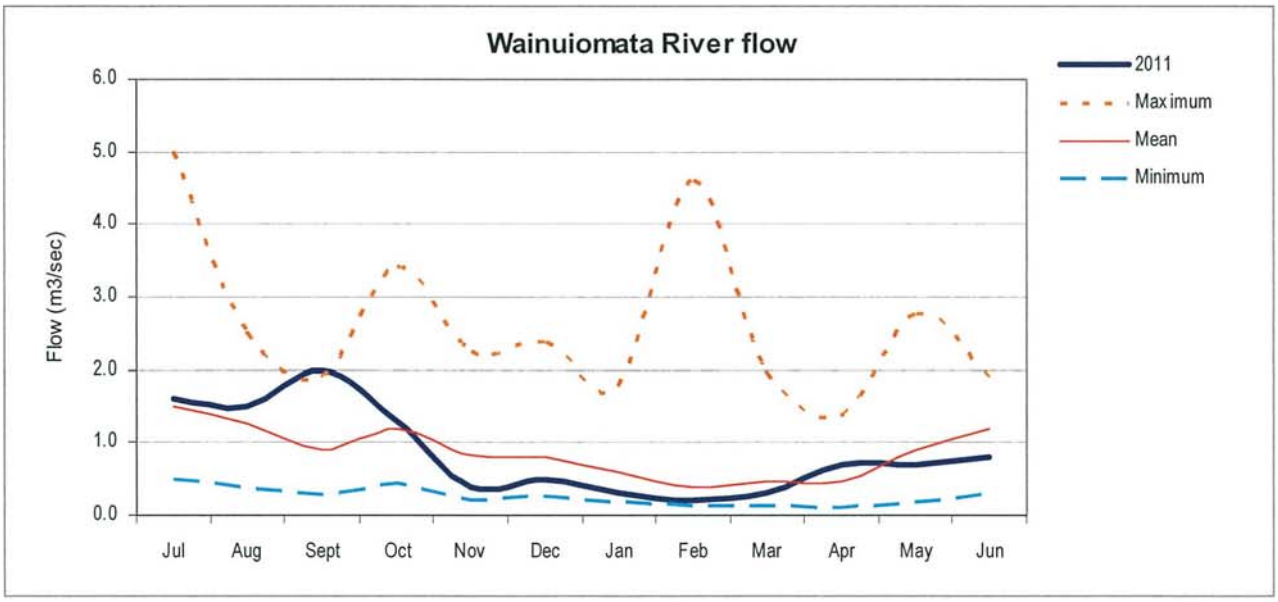
Richard Waddy
(Finance and Services manager)

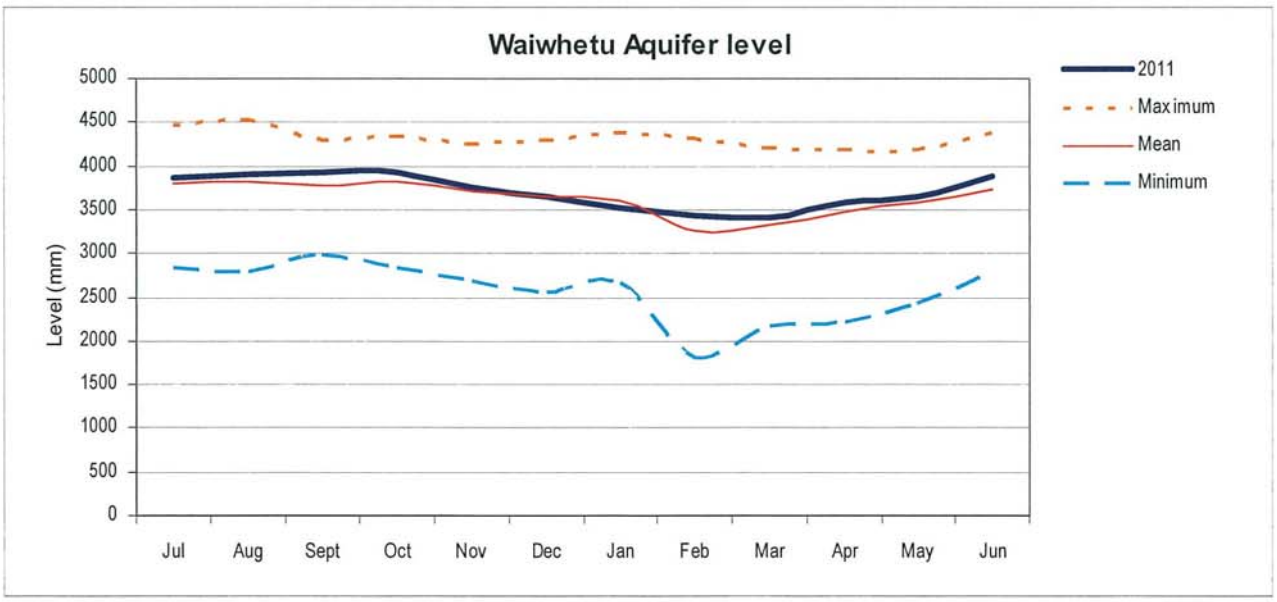

Orongorongo catchment rainfall
Level (mm)
700
600
500
400
300
200
100
0
Jul
Aug
Sept
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
2011
Maximum
Mean
Minimum

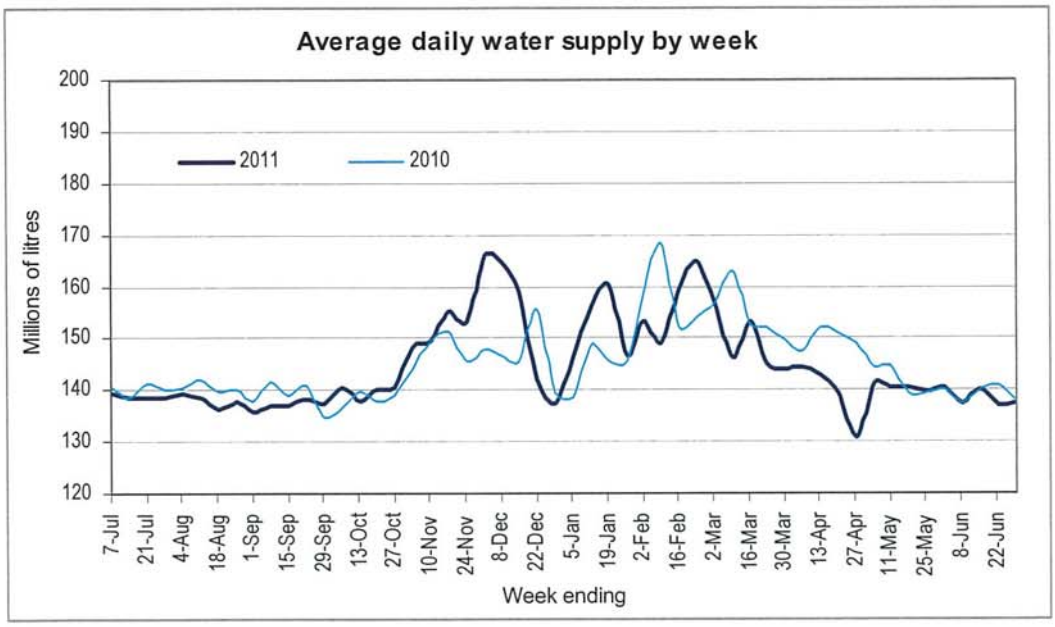

Wainuiomata catchment rainfall
Level (mm)
900
800
700
600
500
400
300
200
100
0
Jul
Aug
Sept
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
2011
Maximum
Mean
Minimum

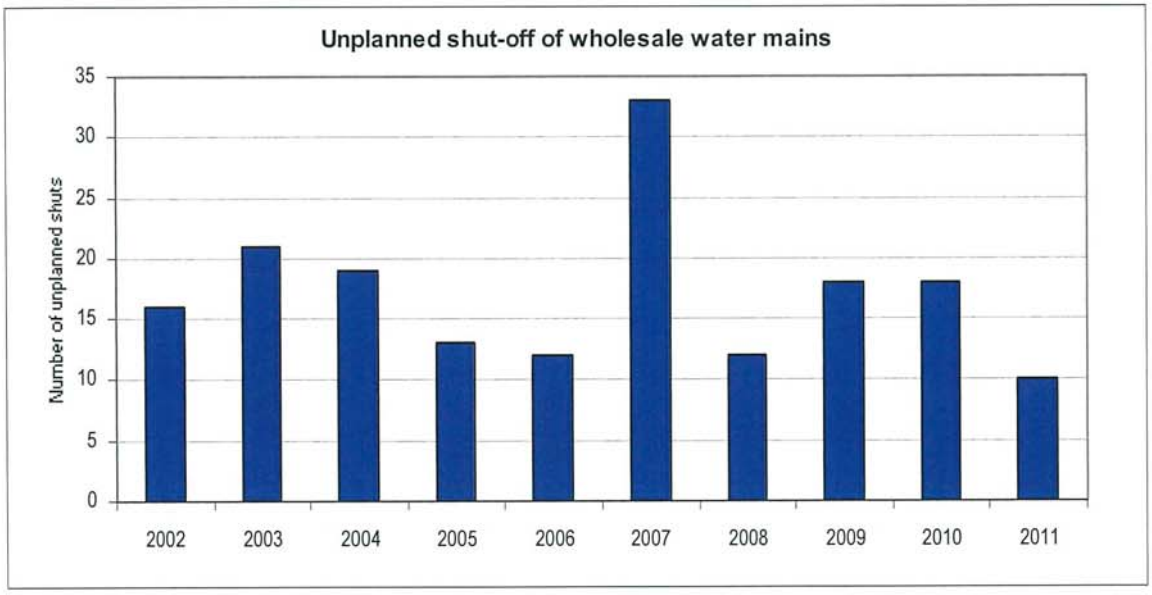

Hutt catchment rainfall
Level (mm)
700
600
500
400
300
200
100
0
Jul
Aug
Sept
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
2011
Maximum
Mean
Minimum


Hutt River flow at Kaitoke
Flow (m3/sec)
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
Jul
Aug
Sept
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
2011
Maximum
Mean
Minimum


Wainuiomata River flow
Flow (m3/sec)
6.0
5.0
4.0
3.0
2.0
1.0
0.0
Jul
Aug
Sept
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
2011
Maximum
Mean
Minimum


Waiwhetu Aquifer level
Level (mm)
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
Jul
Aug
Sept
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
2011
Maximum
Mean
Minimum


Average daily water supply by week
Millions of litres
200
190
180
170
160
150
140
130
120
2011
2010
7-Jul
21-Jul
4-Aug
18-Aug
1-Sep
15-Sep
29-Sep
13-Oct
27-Oct
10-Nov
24-Nov
8-Dec
22-Dec
5-Jan
19-Jan
2-Feb
16-Feb
2-Mar
16-Mar
30-Mar
13-Apr
27-Apr
11-May
25-May
8-Jun
22-Jun
Week ending


Unplanned shut-off of wholesale water mains
Number of unplanned shuts
35
30
25
20
15
10
5
0
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011