STRATEGY & POLICY COMMITTEE

15 NOVEMBER 2012

REPORT 4
(1215/52/IM)

WATER CONSERVATION & EFFICIENCY PLAN

1. Purpose of report

The purpose of this report is to update the Committee the implementation, progress and effectiveness of the activities as required by the Wellington City Council "Water Conservation and Efficiency Plan"[1].

The report also provides an updated report on Wellington City's current water consumption trends, a regional comparison and the latest population based consumption projections.

2. Executive summary

Wellington City's water consumption continues to trend downwards over the previous year (-4.5%). Overall the gross consumption for 2011/12 has been reduced by -5.3% from 399 litres per person per day to 377 litres per person per day over the 2010/11 consumption.

This reduction is summarised as follows:

1. Slight (-0.9%) reductions in overall residential consumption.
2. Reductions in commercial consumption (-2.2%).
3. Network improvements continue to generate significant reductions (-14.5%) in network water losses though the leak detection programme and renewals.

These reductions in consumption continue to contribute to the deferral of any regional decision required over the construction of additional bulk supply capability.

The latest advice from GWRC indicates that the region's "savings" in deferred interest costs from funding increased bulk supply capabilities is approximately $7m per annum – WCC's portion of these savings is approximately $3.78m per annum – and sees any requirement for a decision on regional bulk storage capabilities pushed back from 2014 until approximately 2020.

[1] Adopted by Council in 2011

3. Recommendations

Officers recommend that the Strategy and Policy Committee:

1. *Receive the information.*

2. *Note that the information contained in this report satisfies the reporting requirements of the Council's "Water Conservation and Efficiency Plan."*

4. Background

Wellington City Council's decision to develop and adopt a "Water Conservation and Efficiency Plan" (WC&EP) was made in late 2009 in order to allow the city to manage demand for treated water through a number of different approaches that did not impact predominantly on a particular sector of the community.

This approach recognised that the effects of population growth, potential economic and commercial growth and the forecast effects of climate change (as advised by Greater Wellington Regional Council (GW)) on the region's security of supply[2] could not be sustained over the medium term without a change in the region's consumption behaviours.

The overarching objective of the WC&EP was to maintain gross consumption at an annual level below the position where restrictions became an option for managing demand at 2004/05 levels.

For Wellington this equated to an annual consumption of 30,300 megalitres or 83.01 megalitres per day and reflected the gross water consumption for 2004/2005.

The ability to manage demand at 2004/05 levels enables the four cities to be supplied to the current level of service without the need for water restrictions.

Over the longer term the ability to maintain the desired level of gross consumption in the face or population growth and climate change reduces the need to invest in increased supply capacity or bulk storage.

At the beginning of the WC&EP development stage the projections indicated that the GW and the four Councils would be required to decide about long-term supply or demand options in 2014 – current projections indicate that this timeframe has been extended to 2020.

If the region can achieve a gross consumption level of 350 litres per person, per day, this timeframe can be extended until 2035.

5. Discussion

Water consumption can be presented in a number of ways for a number of different purposes.

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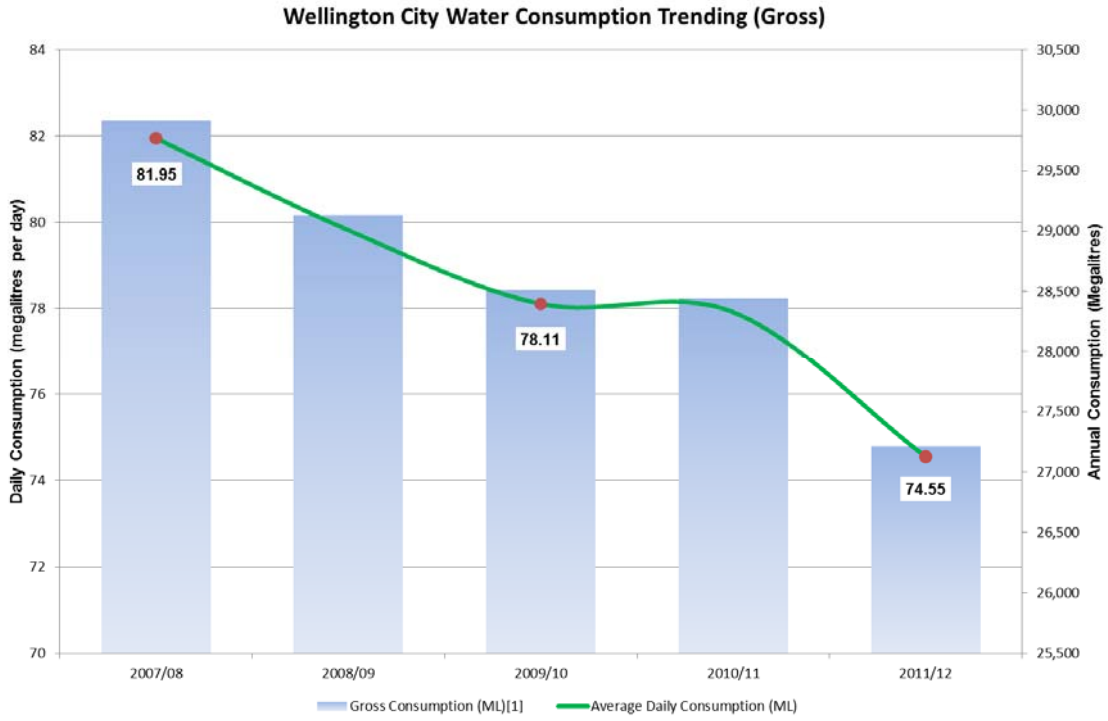
[2] The agreed security of supply for Wellington is a 2 per cent chance of outdoor watering restrictions (garden sprinklers) over and above the current garden sprinkler operating allowances being implemented.

For the purpose of showing overall trending the following data is presented as a "gross figure" and is calculated by taking the overall consumption figure and dividing it by the City's population served by the reticulated network.

The breakdown of residential versus commercial consumption, leakage and area consumption addressed following and expanded on in Appendix 2.

The following graph shows Wellington City's annual and daily gross water consumption trending over the previous five years.



Graph 1 Wellington gross water consumption trends (5 years)

This is tabulated following with each year's corresponding gross water consumption shown as litres per person per day.

	Gross Consumption (ML)[3]	Average Daily Consumption (ML)	Litres Per Person Per Day (Gross)
2007/08	29,913	81.95	429
2008/09	29,134	79.82	414
2009/10	28,511	78.11	404
2010/11	28,441	77.92	399
2011/12	27,212	74.55	377

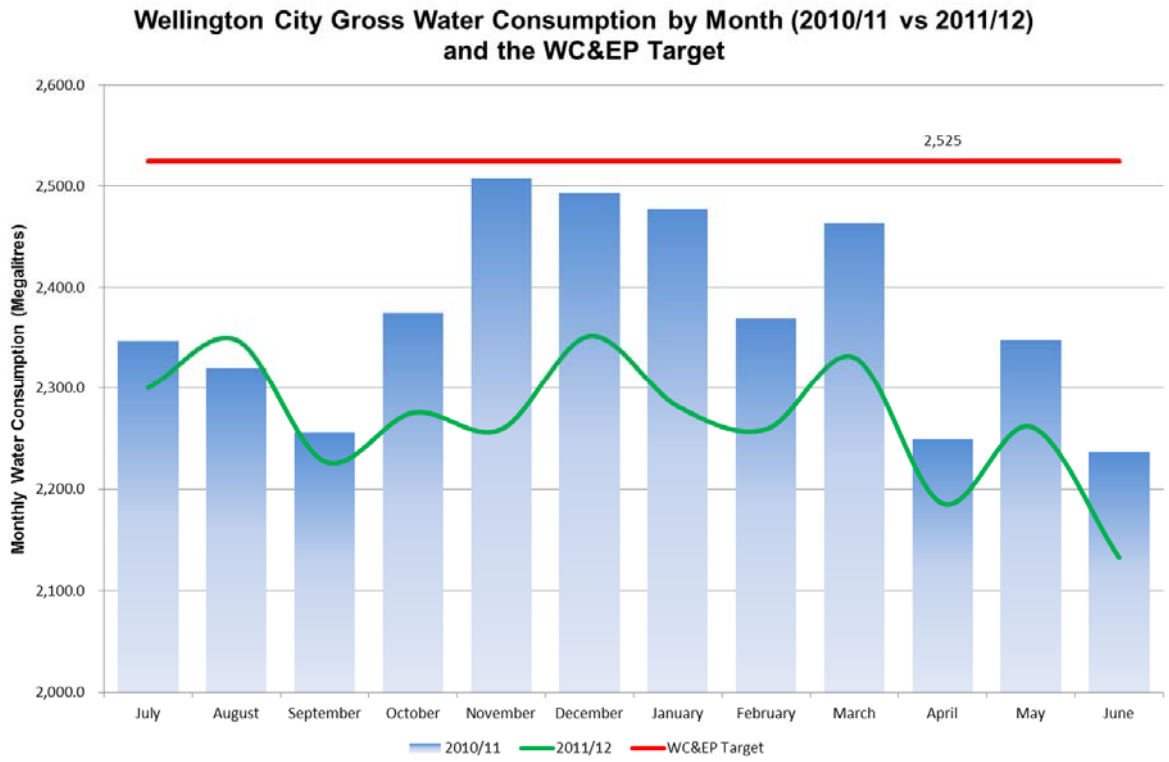
Table 1: Wellington City gross water consumption trending (2007-2012)

[3] 1 megalitre equals 1,000 cubic metres

Overall Wellington City's gross water consumption has continued to trend downwards during 2011/12. This resulted in an overall reduction in water consumption for the Wellington region as well.

This has largely been achieved through a comprehensive leak detection programme, increased consistent messaging about water conservation, favourable weather patterns and reduced consumption in some commercial areas.

A direct comparison by month indicates the effect of "favourable" weather conditions on the City's water consumption in the following graph.



Graph 2: Wellington City water consumption by month (2010/11 vs. 2011/12) and WC&EP targets

Along with the consumption patterns expanded on in Appendix 2 the seven activities contained in the WC&EP are covered in Appendix 1 with respective details on their implementation, progress, effectiveness and on-going scope for expansion.

5.1 WC&EP activity status

The following table indicates the current status of the seven activities that provide the actions being undertaken to manage water consumption across the Wellington City area.

The table also shows the actions being undertaken to improve the application of the activity to in order to increase the likeliness of a positive uptake or to reflect information collected over the past twelve months.

Activity		Status	Comment & 2012/13 work streams	Priority
1.	Community engagement, education & information programme	Underway	A joint approach with GW and other councils has created a consistent approach. A recent GW survey indicates that there are gains that can be made in this area across the region but within specific areas for Wellington City. This will be linked with Activity 3 to increase water conservation options and general awareness in the Wellington City area. Also overlaps with Activity 2 and follow-up work on the community's knowledge of the bylaw.	High (2)
2.	Establish a water supply bylaw	Completed	The Water Bylaw came into effect in June 2012. To date no breaches have come to the attention of Officers. Work for 2012/13 includes a survey to assess the knowledge of the bylaw across the community.	Medium (3)
3.	Analysis and publication of Wellington's water consumption figures	Underway	Analysis of 2011/12 consumption has been done at high level – these figure are being drafted into an article for the Our Wellington Page	Medium (1)
4.	Engage retailers and service providers in order to advance water efficiency and conservation goods and services.	Not started	This activity has been assessed as being the most intensive in terms of Officer hours with limited control over outcomes or sustainable results. The proposed action is to develop a project plan for engaging retailers during the 2013/14 year to complement the WELS system already in place and the work with retailers looked at by GW.	Medium (4)
5.	Investigating the scope and options for supporting the implementation of water conservation initiatives.	Not started	This activity has been deferred with priorities in other areas which yield more immediate and measurable outcomes. To date work in this area has been limited to the removal of the need for a building consent for rainwater tanks that are not connected to the building's plumbing. Future enhancements to this activity include the development of a "Contestable Research" fund (current planning indicates $50k may be required for this activity in order to entice the development of new initiatives). This requires further investigation and would be brought to Council seeking support for inclusion in future Annual Plans.	Low
6.	Targeting "top 25" commercial users to establish opportunities to make their operation more water efficient.	Underway	Analysis of two years of consumption within this group and early discussions with three of the top consumers indicates that there is a willingness to reduce consumption in this area but knowledge on how is "sparse". The activity approach is being reviewed with each organisation's consumption being	High (1)

Activity		Status	Comment & 2012/13 work streams	Priority
			trended before contact is made. Contact will be made first with the organisations that show the greatest increase in consumption – this may be assessed across a greater number of consumers to assess the viability of extending the communication. A straight top down approach will be used for communicating consumption to the community as part of Activity 3.	
7.	On-going analysis of active leak detection and cost / benefit for pressure management within the public network.	Underway	Analysis of the active leak detection programme indicates that leaks are being detected and responded to more rapidly than they were three years ago. This work is planned based on the analysis of the city's area meters and suburban consumption trends with different suburbs also being surveyed on a rotational basis. The exception to this is the CBD area which is surveyed on an ongoing basis due to the difficulties in detecting leaks from ambient noise, commercial activity and traffic volumes.	Medium (2)

Table 2 WC&EP activity status and work planned for 2012/13

5.2 Consultation and Engagement

No consultation or public engagement activities were undertaken in relation to the development of this report.

Consultation was undertaken during the development phase of the WC&EP with written submissions sought following public meetings where the plan's options where presented.

5.3 Financial considerations

In terms of financial considerations the work planned over the following year is contained within existing budgets.

Currently the only item that may require additional funding is the implementation of a "Contestable Research" fund as discussed in brief in the preceding table.

Officers estimate that $50k may be required in order to entice the development of water conservation and efficiency initiatives for the City. If, following officer investigations, this approach forecasts tangible savings it will be brought to Council for further discussion and approval.

The reduction in water consumption and water losses produces a corresponding savings in the amount spent in supplying the city's water supply.

For the second year in a row Wellington made savings over the bulk water supply cost projections. The reduction in consumption in2011/12 resulted in

almost $100,000 worth of bulk water levy being returned to Wellington City Council.

The bulk supply cost distribution is dependent on the volume of savings achieved by each of the four cities as individual entities – the council that achieves the greatest percentage of the reduced consumption savings collects the larger rebate.

If all the four council achieve a similar percentage the rebate is evenly distributed – or if no savings are made the projected cost for the year is increased for the "offending" Council.

Although not a direct savings per se –the latest Annual Report from GWRC indicates that "over $7 million a year in interest"[4] is being saved by deferring the construction of additional bulk storage.

Based on Wellington City's consumption share this represents a "savings" of approximately $3.78 million per annum in interest cost.

5.4 Climate change impacts and considerations

Climate change is expected to produce weather extremes that could affect the delivery of the WC&EP – on the flip side of the expected increase of consumption over summer the longer than normal periods of dryer or warmer weather can be used to increase community awareness of conservation efforts.

Modelling for projected consumption includes a "peaking factor" which indicates that a one in fifty year event (as the current level of service) would require approximately ten weeks without rain – over the past five years there has only been one year where there has been more than one week without at least 2.0 mm of rain.

The following table shows how the peaking factors have been affected by the region's summer weather pattern.

	GW Ave Winter Day (ML)	GW Ave Day of Max Week (ML)	Peaking factor (max/winter average)	Count of summer weeks with <2.0mm rain
2008	146.7	183.6	1.25	7
2009	144.3	174.2	1.21	5
2010	142.0	168.5	1.19	3
2011	141.3	166.9	1.18	6
2012	138.6	151.5	1.09	1

Table 3: Variances between winter summer consumption

[4] GWRC "Water Supply Annual Report, for year ended 30 June 2012, page 5

5.5 Long-term plan considerations

The activities and goals of the WC&EP support the goals and strategies of the 2012/13 Long-Term Plan.

Nothing contained within the WC&EP over the coming years affects the information contained in the 2012/13 LTP.

6. Conclusion

Although Wellington's water consumption continues to trend downward it is clear that there are more gains that can be made in both the communication of the water conservation and efficiency message and the levels of consumption in the commercial sector.

It is also clear the levels of consumption in the commercial sector can provide further reductions. As a result the analysis of the commercial sector's consumption will become the priority for the upcoming twelve months with an increased emphasis on communicating the trends and opportunities for increased efficiency and reduced consumption.

Overall the consumption trends are favourable in that they are continuing to move in a downward direction - however it is important that work continues so that a wider base of water conservation and efficiency efforts is created to enable a sustainable level of consumption across the city.

Contact Officer: *Paul Glennie,Policy Analyst, Capacity Infrastructure Services and Haydn Read, Manager Strategic Asset Planning, Infrastructure Planning and Data.*

SUPPORTING INFORMATION

1) Strategic fit / Strategic outcome

The Water Conservation & Conservation Plan complements the work being undertaken to achieve the Council's LTP outcome of being an Eco-City and also contributes to the city's resilience.

2) LTP/Annual Plan reference and long term financial impact

There are no LTP implications.

3) Treaty of Waitangi considerations

There are no aspects to the Water Conservation and Efficiency Plan or its implementation that are affected by Treaty of Waitangi considerations.

The Council's Memorandum of Understanding with Port Nicholson Block Settlement Trust was taken into consideration in the writing of this report and the continued implementation of the WC&EP activities.

4) Decision-making

There are no significant decisions associated with this paper.

5) Consultation
a) General consultation

Consultation was not undertaken in the preparation of this paper.

b) Consultation with Maori

Consultation with iwi was not undertaken in the preparation of this paper.

6) Legal implications

There are no legal implications arising from this paper or the continued implementation of the WC&EP activities.

7) Consistency with existing policy

This paper is consistent with current polices.

Appendix 1

Water Conservation & Efficiency Plan activity update

Activity 1: Community engagement, education and information programme

Wellington City Council, along with GWRC and the other councils of the region have been working together to ensure that the messaging about water conservation is consistent.

This work is programmed to be stepped up as we head into the summer months and what is traditionally a higher demand period.

The development of the "Aquarius" education tool (pictured below) has enabled the WC&EP to be taken into primary schools with positive responses received from teachers as to the benefits of students being able to visualise the effects of leaking taps and fittings.

Photograph 1: Capacity staff present the water conservation message to a local primary school

Photograph 2: Capacity staff at the 2012 Home Show

A recent survey by GWRC indicated that 78 per cent of people surveyed "could do more to conserve water if I thought there was a need".

Within this activity specifically the survey established that 20 per cent of those surveyed felt that they did not have "the information I need to be able to conserve more water."[5]

The survey also established that 45 per cent of those surveyed perceived that there was a risk of water shortages in the Wellington region.

Unfortunately 48 per cent Wellington City residents surveyed identified that there was "hardly any" risk of shortage

The information available to the public on the WCC and Capacity website on water conservation and efficiency options has been enhanced to include more information on rainwater tanks, water conservation and efficiency approaches for gardening and lawns, and the importance of dealing with small leaks quickly.

Discussions are also underway with Wellington Zoo on a joint signage/education approach that will challenge zoo visitors to develop water conservation programmes for their homes and businesses.

[5] GWRC "Water conservation insights, Summer 2011/12"

This approach will also be used to assist with Activity Two in increasing the community knowledge about the Water Bylaw, its application and the City's garden watering hours.

Activity 2: Establish a Water Bylaw

This activity was completed earlier this year with the Water Supply Bylaw 2012 coming into effect in June.

Increasing community knowledge about the bylaw and what is contributes to the City is planned with a flyer being inserted in the next rates notice being sent out by the Council.

A survey of the community about the knowledge of the Bylaw and how it affects the community is planned for March 2013.

Reporting back on the survey will be included in the 2013 "WC&EP Report" and will provide any relevant statics gathered from the survey as well as any breaches that have been reported and/or acted upon.

Activity 3: Analysis and publication of Wellington's water consumption figures

The figures published in this report, including the breakdown of "suburban" consumption will be published in the Our Wellington Page in November.

Analysis of the city's consumption is being undertaken on an on-going basis with more information planned for publication after the summer consumption has been assessed.

This activity links with Activity 1 and may see targeted messaging if the consumption trends indicate that a particular suburb or community sector displays significant change in consumption patterns.

Activity 4: Engage retailers and service providers in order to advance water efficiency and conservation goods and services

This work has not commenced as yet. A project plan is being created for implementation in 2013/14.

The basis of this work will be to enhance the WELS (Water Efficiency Labelling System) programme and establish mechanisms that enable water efficient appliances to be seen as suitable alternatives to cheaper or less efficient appliances.

It is envisaged that this activity will be highly intensive in terms of officer hours but potentially delivering long-term benefits (desktop assessment of reduced consumption through more efficient appliances).

Activity 5: Investigating the scope and options for supporting the implementation of water conservation initiatives

Currently water conservation initiatives have been limited to the investigation of using rain water tanks as an emergency supply for some schools and bowling clubs.

The potential for rainwater tanks to be used to provide an alternative source for the irrigation of bowling greens or provide a non-potable source for toilets etc. has been investigated on an ”as required” basis.

This activity is expected to remain as a case by case approach unless either the demand increases to a point where further investment is warranted or technology changes make a specific water conservation or efficiency approach more attractive or readily acceptable to the community.

An option being considered here is the appropriateness of a “contestable research” fund that would encourage residents and/or business to look at new options to increase their water efficiency or reduce consumption in an innovative and sustainable way.

Additional emphasis on the relative ease and cost of installing simple rainwater tanks to ease external consumption will also be looked at beyond what is currently advised on WCC, Capacity and GWRC websites.

The use of rainwater tanks to ease demand over drier periods sits alongside the Council’s efforts to improve public and private resilience across the city in order to provide some assistance in the event of a major supply disruption

Increased focus on this is planned for 2014/15.

Activity 6: Targeting 25 top commercial users to establish opportunities to make their operation more water efficient

The original approach for targeting the “Top 25” consumers was centred on identifying the top users and approaching them directly.

A review of the ‘customer base’ and their respective consumption trends identified a number of difficulties with this method of raising commercial awareness of water conservation and efficiency.

Largely the difficulties experienced are driven by a lack of knowledge able to be determined from the metered information and producing enough interest within the “targeted” organisation.

Although overall consumption has fallen for a number of commercial consumers there are number of customers who have seen significant increases.

It is now the intention to work with the largest users as a matter of course (such as Taylor Preston, CentrePort, CCDHB and Victoria University of Wellington etc.) but to focus energies on the commercial users that have increased their consumption over the past three years.

It is important to realise that consumption does not necessarily indicate inefficiency or waste and for this reason discussions are being held with customers like Taylor Preston and research agencies such as Agresearch NZ and the Meat Industry Association to ensure efficiency targets are achievable and practical.

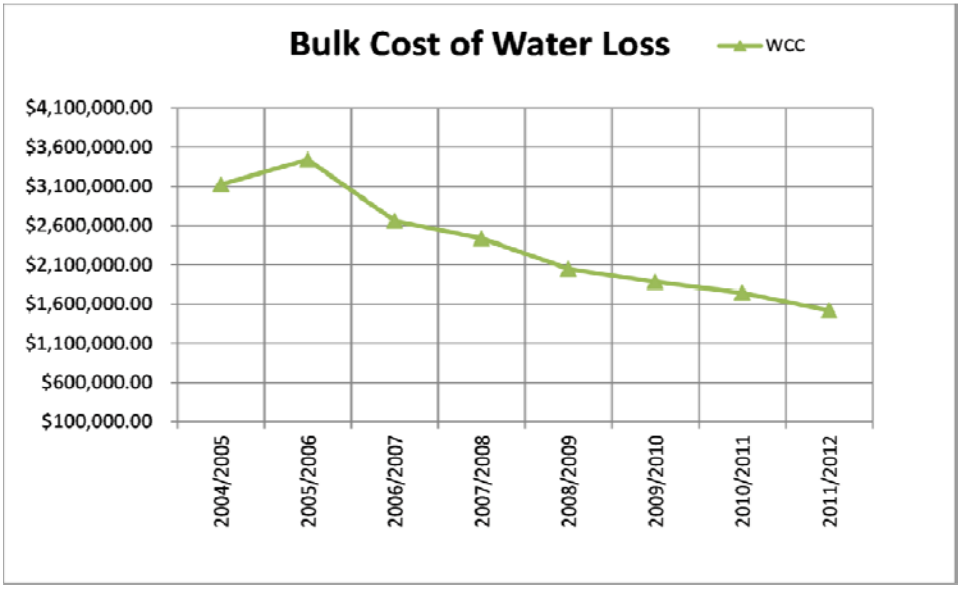
Once this information discussed with the customer (Taylor Preston in this case) a water conservation and efficiency project will be developed.

This work is ongoing but remains critical to the success of the City's water conservation and efficiency efforts.

The water consumption of the Top 25 commercial users over the previous three years is shown in Appendix 3.

Activity 7: On-going analysis of active leak detection work and cost / benefit for pressure management within the public network

The following graph indicates the benefits realised by the Council through the leak detection and repair programmes operated by Capacity.



Graph 3: The cost of water loss for Wellington City Council

The graph reflects the reduction in water losses as discussed earlier in this paper and the subsequent savings to the Council through less water being "purchased" from GWRC.

The following table indicates the cost of leak detection over the previous three years versus the volume of water saved over the same period.

Year	Cost	Savings	Gross savings	Cost/Benefit Ratio
2009/10	$ 175,481	$ 215,909	$ 40,428	0.23
2010/11	$ 166,499	$ 144,695	$ (21,804)	- 0.13
2011/12	$ 200,723	$ 228,943	$ 28,220	0.14
Total	$ 542,703	$ 589,547	$ 46,884	0.09
Three year average	$ 180,901	$ 196,516	$ 15,615	0.09

Table 4: WCC Leak detection - costs versus gross savings

Appendix 2

Water Consumption Trending

This section expands on the information pertaining to the gross consumption figures discussed in the body of the paper.

Where possible this information is presented for the previous five years otherwise the data is for the maximum period that data is available to the level presented.

The format of the section is as follows:

1. Gross consumption
    i. Un-accounted for Water
    ii. Leakage from the public network

2. Commercial consumption
    i. Top 25 commercial users

3. Residential consumption
    i. Overall trending
    ii. Suburban breakdown (2010/11 versus 2011/12)

4. Annual consumption comparison by month (2010/11 versus 2011/12)

5. Water consumption projections

Gross Consumption

Gross consumption is represented as the total amount of treated water supplied to Wellington City by GW divided by the population served by the water supply network.

	Gross Consumption (ML)[6]	Average Daily Consumption (ML)	Litres Per Person Per Day (Gross)
2007/08	29,913	81.95	429
2008/09	29,134	79.82	414
2009/10	28,511	78.11	404
2010/11	28,441	77.92	399
2011/12	27,212	74.55	377

Table 5: Wellington City gross water consumption trending (2007-2012)

[6] 1 megalitre equals 1,000 cubic metres

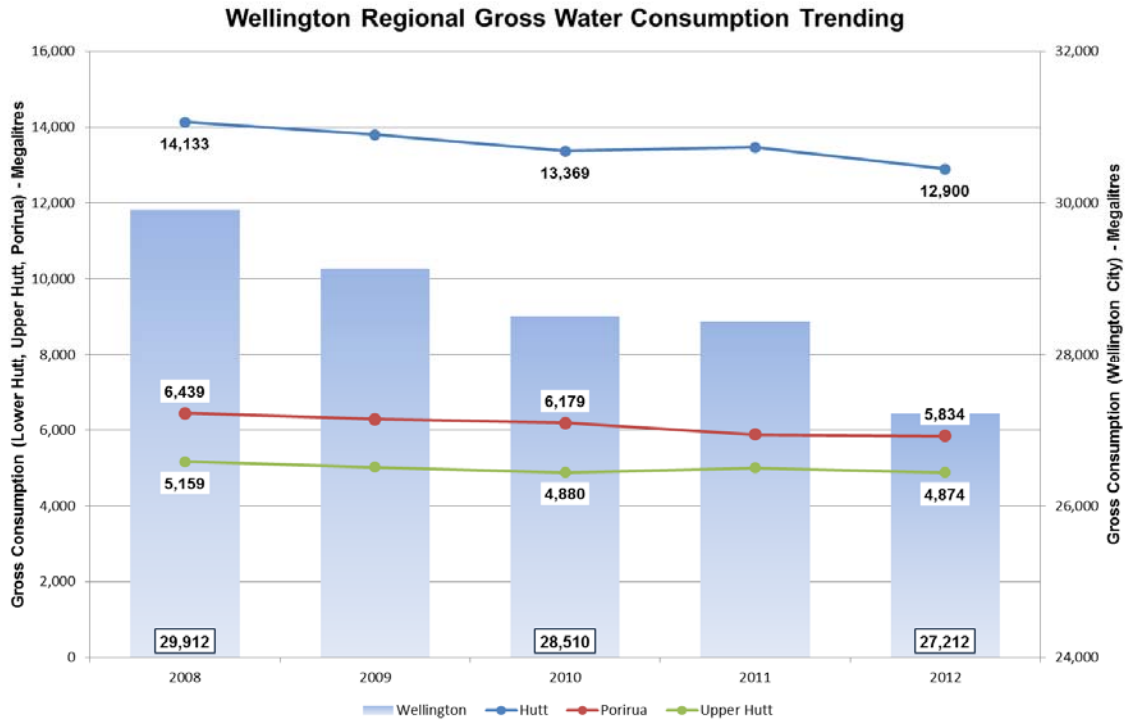
	Gross Consumption (ML)	Regional Annual Consumption (ML)	WCC %
2007/08	29,913	55,642	53.8%
2008/09	29,134	54,228	52.7%
2009/10	28,511	52,939	53.9%
2010/11	28,441	52,777	53.9%
2011/12	27,212	50,722	53.6%

Table 6: Wellington City gross water consumption as a percentage of regional consumption

Regional Consumption by City

The following graph shows Wellington City's consumption in relation to the consumption trending of the other cities.

In the table following is the variation in gross consumption for 2011/12 against each city's gross consumption for 2010/11.



Graph 4: Gross Water Consumption Trending by City

	Gross Consumption 2010/11 (ML)	Gross Consumption 2011/12 (ML)	Variance %
HCC	13,470	12,900	-4.42%
UHCC	5,877	5,834	-0.01%
PCC	4,990	4,784	-4.31.%
WCC	28,441	27,212	-4.52%
Total	52,778	50,730	-4.04%

Table 7: Variations in Gross Consumption by City (2010/11 vs. 2011/12)

Gross consumption is also represented in the table on the following page as a simplified geographic or community breakdown. This is achieved through the analysis of the area water meters that are located throughout the city.

Zone	Consumption 2010/11 (ML)	Consumption 2011/12 (ML)	Variance (%)
Eastern Suburbs Zone	2,481.48	2,328.85	-6.15%
Southern Suburbs Zone	2,453.99	2,356.14	-3.99%
Central Wellington Zone	9,680.36	9,458.54	-2.29%
Brooklyn Zone	1,121.57	1,060.46	-5.45%
Kelburn Zone	1,365.25	1,379.18	1.02%
Karori Zone	1,713.88	1,651.11	-3.66%
Wadestown Zone	772.49	758.11	-1.86%
Onslow Zone	1,569.31	1,440.37	-8.22%
Tawa Zone	1,700.38	1,686.23	-0.83%
Churton Park Zone	447.92	451.71	0.84%
Johnsonville Zone	4,312.76	4,029.20	-6.57%
Total of Zones	27,619.36	26,599.89	-3.69%

Table 8: Wellington City gross consumption by supply zone

The above table reflects the amalgamation of drinking water zones into identifiable geographic boundaries rather than representing the more traditional boundaries that make up the city's suburbs.

The variations are difficult to quantify accurately but reflect the application of the leak detection programme, pipe renewals and reduced commercial and residential consumption to varying degrees.

For example – the increase in Churton Park could be due to a new commercial sector or the opening of a new primary school however this has not been investigated at any significant depth.

To an extent it also reflects the vastly different rainfall patterns that affected different areas of the city last year and the effect these weather patterns had on outside water consumption.

This information forms the basis for establishing the leak detection programme and how suburbs are prioritised for increased or reduced attention.

NOTE: The variation in the above totals versus the total gross supply discussed in this document (27,212 megalitres) is reflective of the water losses experienced between the GW point of supply meters and reservoirs and the area meters operated by WCC.

This volume, which totals 612.11 megalitres, reflects a total loss of 2.25 per cent.

Un-accounted for Water

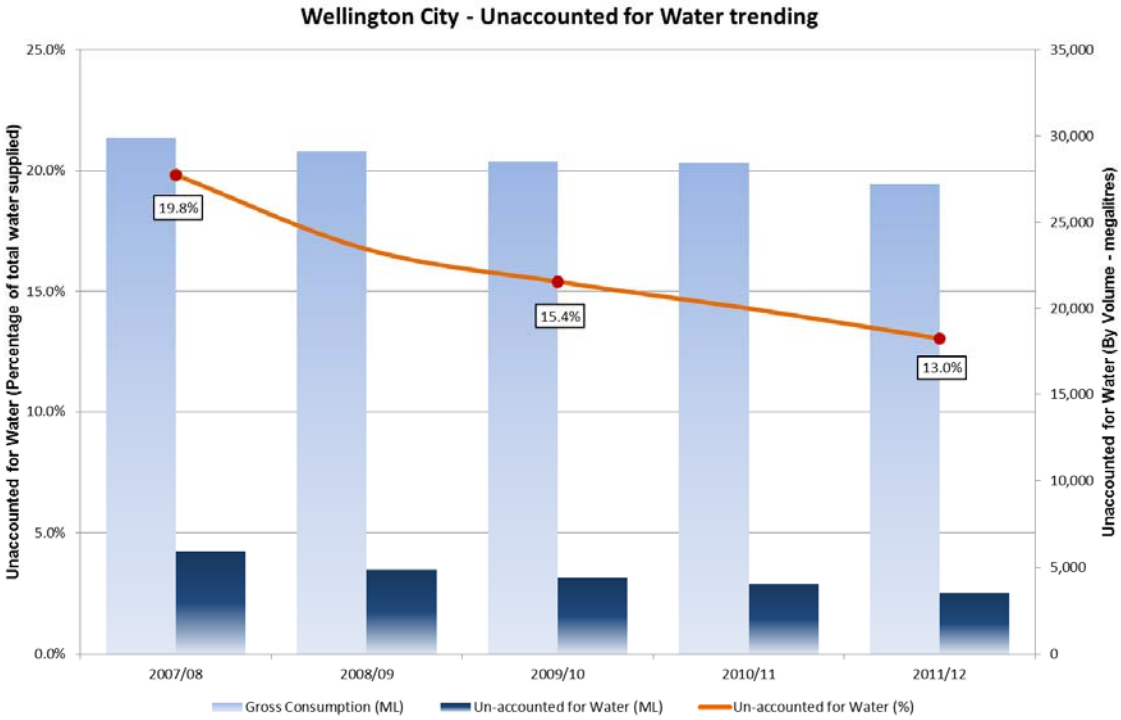
"Un-accounted for Water" (UFW) is how the water supply industry identifies and calculates the difference between the quantity of water supplied to the city's network and the quantity of water consumed by the customers.

UFW has two components:

- physical losses – consisting of:
    - leakage on mains (including hydrants and other fittings)
    - leakage and overflows at reservoirs
    - leakage on service connections and/or tobies
- administrative losses – consisting of:
    - un-billed authorised consumption
        - Fire-fighting operations
        - Council operations
    - unauthorised consumption
        - theft

UFW does not include losses on the customers' side of the network (private leaks).

The following graph demonstrates the reduction in UFW for Wellington City over the past five years.



Graph 5: Wellington City Un-accounted for Water (Megalitres and percentage of consumption)

This is presented in a tabulated form below.

	Gross Consumption (ML)	Un-accounted for Water (ML)	Un-accounted for Water (%)
2007/08	29,913	5,929	19.8%
2008/09	29,134	4,879	16.7%
2009/10	28,511	4,392	15.4%
2010/11	28,441	4,066	14.3%
2011/12	27,212	3,551	13.0%

Table 9: Wellington City Un-accounted for Water (Megalitres and percentage of consumption)

The percentage of physical losses can be influenced by the age, condition and material types found in the network, the total amount of water used, the system pressure, and the degree of supply continuity.

Leak detection programmes are used to mitigate the impacts of the factors above that materialise in the form of a network leak.

The percentage of administrative losses depends on the degree of effort exerted in identifying illegal connections, repairing meters and managing unauthorised consumption.

The level of UFW is generally considered by the water supply industry to a benchmark indicator of how well a utility is managed.

Network Leakage

Along with the continued downwards trending of Wellington City's water consumption is the reduction in leakage during 2011/12 over previous years.

International industry practice refers to leakage as Current Annual Real Losses (CARL) – effectively the physical loss on the network.

Leakage is detected though the following means:

- Public reporting
- Active leak detection (ALD)

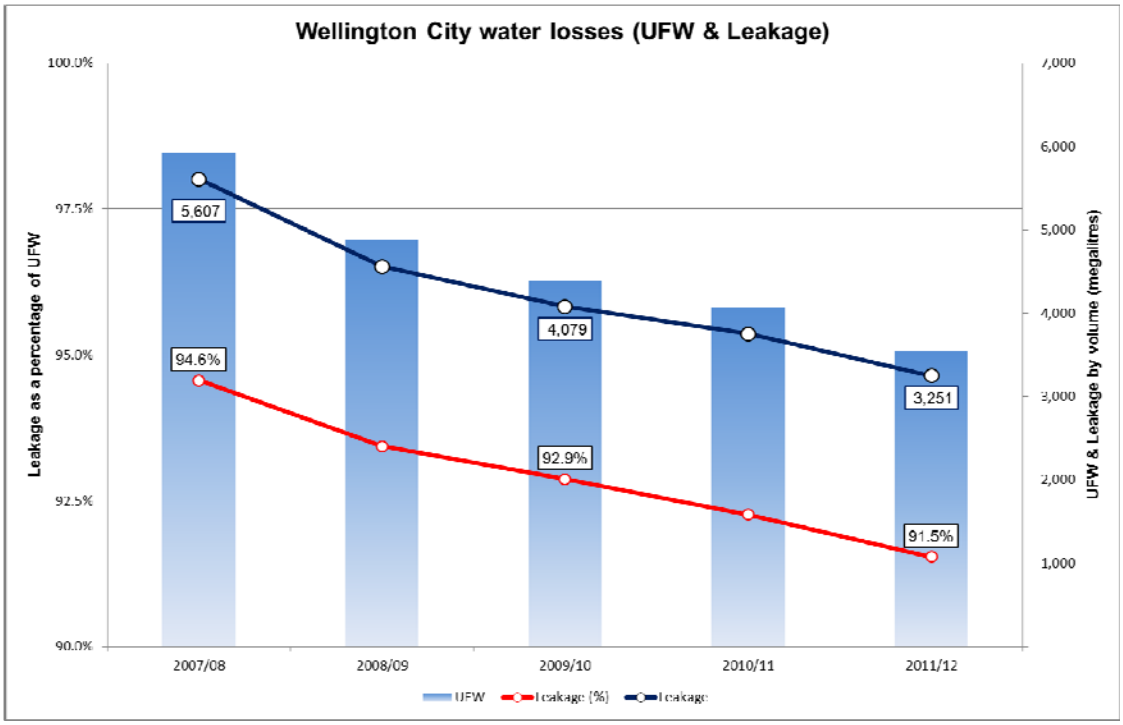
The following table shows the pattern of reporting in relation to leaks being observed by the public or detected through the active leak detection programme.

	Reported Leaks (via WCC)	Detected Leaks (via ALD)*	
		Public	Private
2009/10	3700	-	-
2010/11	3824	604	156
2011/12	3092	548	160

Table 10: Network leak reporting mechanisms

Prior to 2010/11 leaks identified via the active leak detection programme were not recorded separately. This is now done to test the efficiency of the programme (leaks detected versus area meter data analysis) and to plan for follow-up audio monitoring of the network and data analysis.

The following graph shows leakage as a percentage of gross consumption against the UFW volumes over the previous five years.



Graph 6: Water losses (UFW & network leakage)

The savings realised by the Council's active leak detection program are shown in the following table.

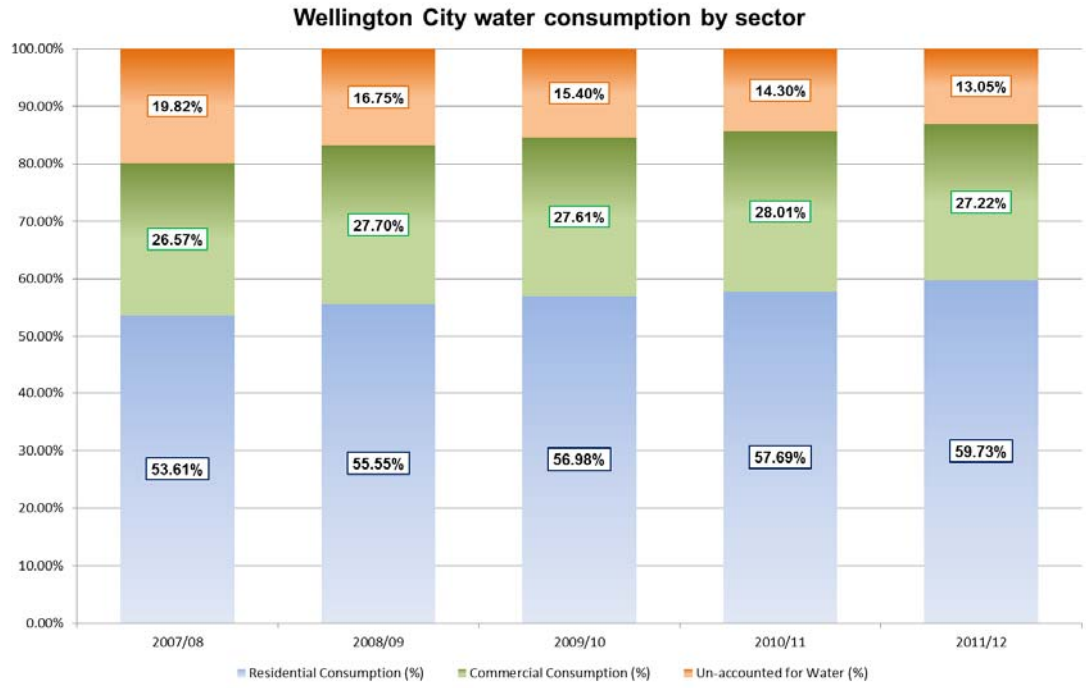
Year	Cost	Savings	Gross savings	Cost/Benefit Ratio
2009/10	$ 175,481	$ 215,909	$ 40,428	0.23
2010/11	$ 166,499	$ 144,695	$ (21,804)	- 0.13
2011/12	$ 200,723	$ 228,943	$ 28,220	0.14
Total	$ 542,703	$ 589,547	$ 46,884	0.09
Three year average	$ 180,901	$ 196,516	$ 15,615	0.09

Table 11: WCC Leak detection - costs versus gross savings

Commercial consumption

Wellington's water consumption is effectively broken into three components as far as the WC&EP is concerned – Residential, Commercial and UFW. The "commercial" component is discussed following.

The proportional trending of the three components is shown in the following graph.



Graph 7: Wellington City water consumption by sector

"Top 25" Commercial users

The identification and trending of the "Top 25" commercial customers has grown from Activity 6 of the WC&EP – this reflects the desire to spread the water conservation and efficiency message across the whole community.

This approach can also be used to identify leaks on commercial premises (where analysis has been undertaken) or where there may be a need to repair or replace a water meter.

The following table reflects the role of the top 25 customers' water consumption in relation to the overall commercial consumption.

	Commercial Consumption (ML)	"Top 25" Commercial Consumption (ML)	"Top 25" Commercial Consumption (%)[7]
2009/10	7,872	3,068	38.97%
2010/11	7,795	3,159	39.67%
2011/12	7,406	2,972	40.13%

Table 12: "Top 25" Commercial customers as a percentage of overall commercial consumption

[7] As a percentage of gross consumption

Further discussion on introducing the Council's water conservation and efficiency goals to Wellington's commercial sector is contained in Appendix 2 – this includes:

- Consumption trends in across the Top 25 commercial users
- Alterations to the approaches used for Top 25 commercial users.

Residential Consumption

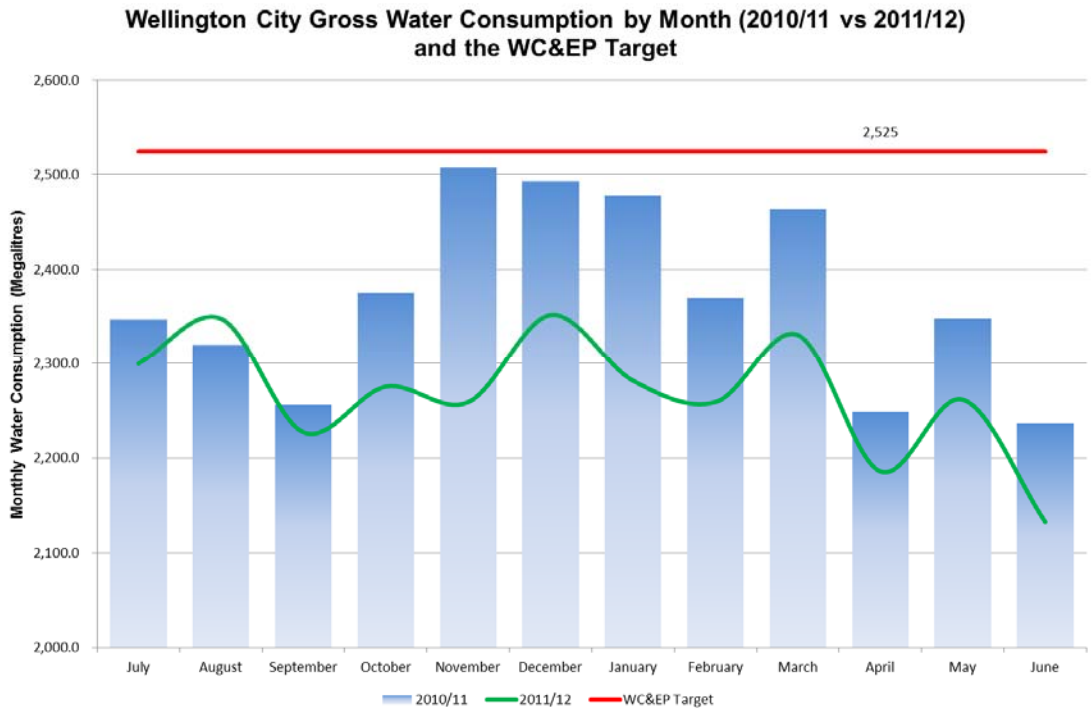
The gross and residential consumption trending is shown in relation to each year's population count for the reticulated water supply network as follows.

	Gross Consumption (ML)	Residential Consumption (ML)	Gross L/P/D	Residential L/P/D
2007/08	29,913	16,036	428	229
2008/09	29,134	16,185	421	229
2009/10	28,511	16,246	400	228
2010/11	28,441	16,408	395	228
2011/12	27,212	16,254	374	223
L/P/D = Litres per Person per Day				

Table 13: Wellington City Residential consumption as a percentage of gross consumption

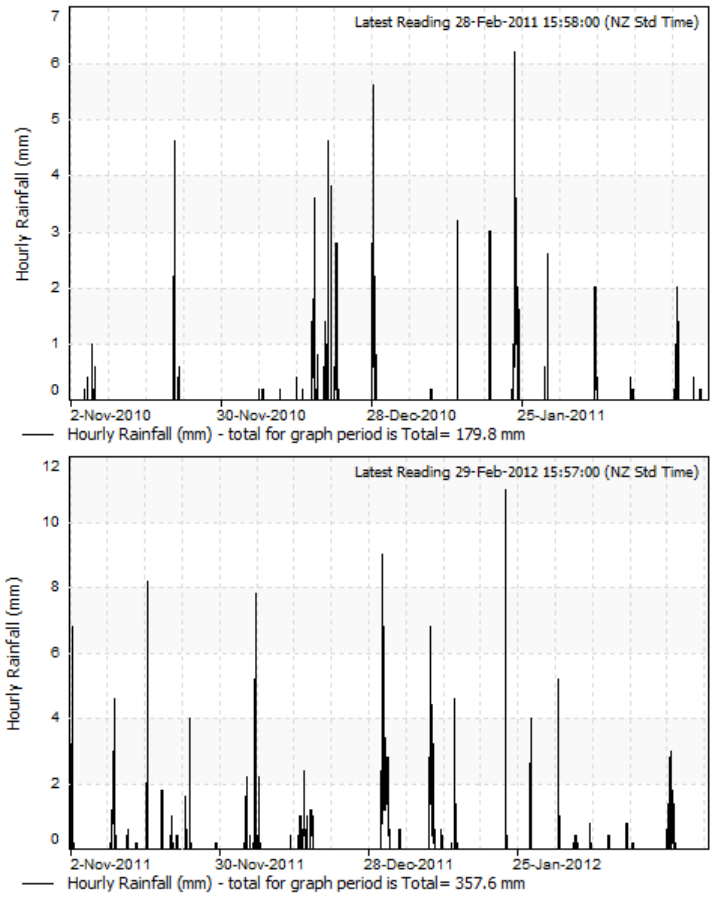
Annual consumption comparison by month (2010/11 versus 2011/12)

The following graph shows the water consumption trending over the past two years against the performance targets of the WCEP.

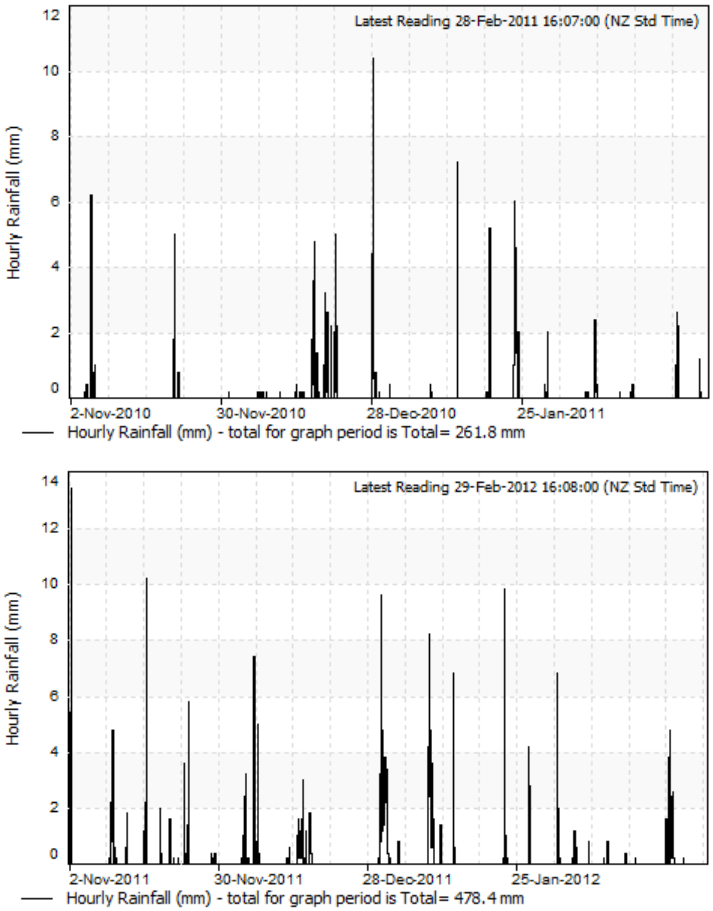


Graph 8: Wellington City gross water consumption comparison by month (2010/11 vs. 2011/12)

On the following page is a comparison between the recorded rainfall data for the months of November through February of the same two years.

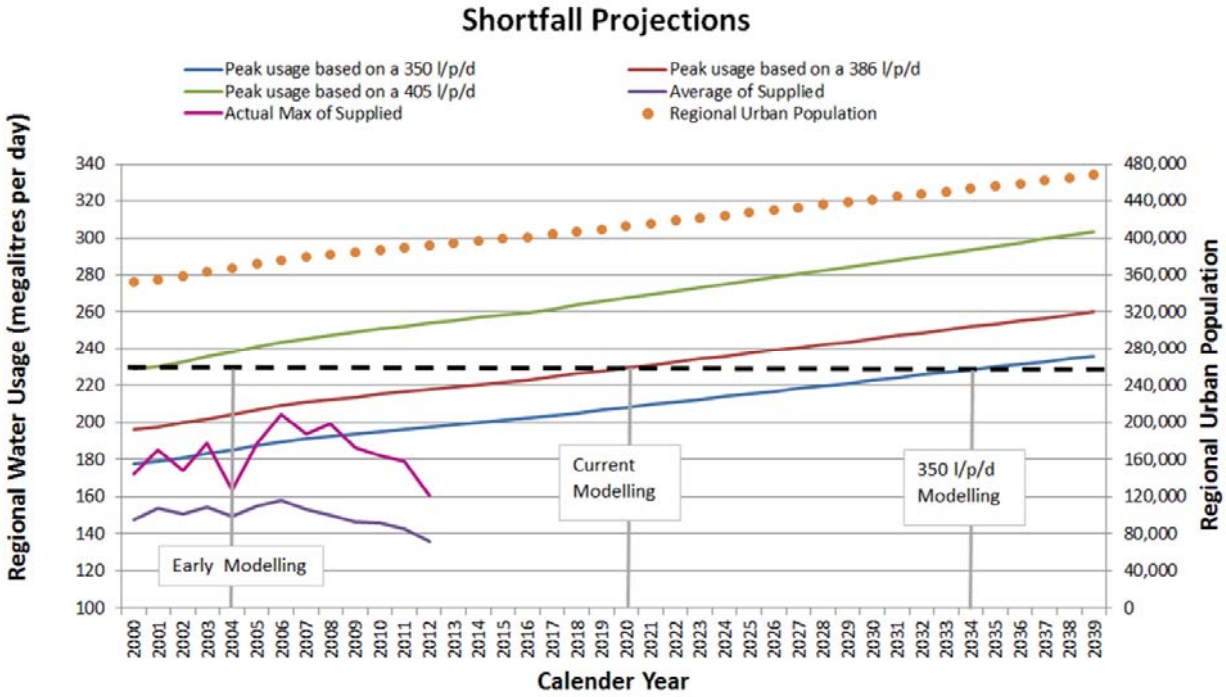


Graph 9: Wellington CBD rainfall (2010/11 vs. 2011/12)



Water consumption projections

Water consumption projections provided by GWRC are provided in the graph below – as can be seen the current levels of consumption across the region have already 'deferred' the requirement for security of supply augmentation.



Graph 11: Wellington Region water supply shortfall projections

The goal of the WC&EP is to ensure that every effort is made to maintain consumption so that the security of supply target of no water restrictions are considered for any demand situation of less than a one in fifty year event.

Appendix 3: Top 25 Commercial users 2009/10 - 2011/12

Commercial Customer Ranking	Total 2009/10	Total 2010/11	Total 2011/12	Variation 2010/11 vs. 2011/12	Variation 2011/12 vs. 3 Year Ave
1	1,185,542	1,169,984	1,027,024	-12.22%	-8.9%
2	285,641	303,240	262,356	-13.48%	-7.5%
3	188,825	222,727	262,453	17.84%	16.8%
4	157,026	156,088	164,125	5.15%	3.2%
5	117,887	106,618	137,767	29.22%	14.1%
6	112,765	112,545	115,392	2.53%	1.6%
7	104,233	172,820	104,310	-39.64%	-17.9%
8	76,452	83,631	97,256	16.29%	13.4%
9	75,754	66,826	79,123	18.40%	7.1%
10	71,395	69,504	69,695	0.27%	-0.7%
11	67,916	67,479	58,715	-12.99%	-9.3%
12	55,560	63,701	48,858	-23.30%	-12.8%
13	58,907	29,308	36,361	24.07%	-12.4%
14	50,589	54,229	60,957	12.41%	10.3%
15	51,380	48,539	50,833	4.73%	1.2%
16	48,010	44,085	43,736	-0.79%	-3.4%
17	40,878	58,224	39,741	-31.74%	-14.1%
18	55,720	34,764	23,826	-31.46%	-37.5%
19	40,672	45,591	43,940	-3.62%	1.2%
20	38,467	42,227	35,120	-16.83%	-9.0%
21	36,559	36,025	26,343	-26.88%	-20.1%
22	35,712	37,794	35,965	-4.84%	-1.4%
23	31,959	32,211	31,837	-1.16%	-0.5%
24	25,649	43,652	35,050	-19.71%	0.8%
25	31,412	27,465	40,392	47.07%	22.1%
Grand Total	3,044,910	3,129,277	2,931,175	-6.33%	-3.42%

Table14: Wellington City "Top 25" Commercial users