

water supply

Nature and Scope

- Investigating and planning the sustainable management of the City's water supply
- Providing specialist and general advice on water supply services and promoting wise use of water resources
- Advising on the water supply component of resource consents and administering applications for services
- Operating and maintaining the water supply pumping and storage system and reticulation network, and supplying water of appropriate quality
- Continue to work co-operatively with Environment Canterbury to prepare an integrated water management policy
- Implementing a survey of industrial premises to reduce the risk of backflow into the public system
- The water supply system (comprising artesian supply from 86 80pumping stations utilising 32reservoirs and 1,360 km of watermain) supplies approximately 50 million cubic metres of water annually to 115,000 connections

Supply of Water

The Council supplies potable water to users within the urban area of the city via a piped network, including providing water at sufficient volume and pressure for fire fighting.

Performance Measures

Service	Performance Measure
Economic	
Water supply services are cost-effective	Water cost per connection (Target: \$113.00 per connection)
	Customer satisfaction with value for money (Target: 90% satisfaction)
Environmental	
High quality water is delivered to customers	Customer satisfaction with water quality and taste (Target: 90%)
	Achieving the highest Ministry of Health water grading possible without chlorination (B for source and treatment, a for the distribution system)
Managing water use to appropriate levels	Water use is reduced to 430 litres per person per day by 2020, measured by a five year rolling average
Social	
Water is delivered to customers at a suitable pressure and flow	Customer satisfaction with pressure and flow (Target: 90%)
A reliable and consistent supply of water is delivered to customers	Customer satisfaction with the reliability and consistency of the water supply (Target: 90%)
Human health is not compromised by the quality of the water supplied	Human health incidents due to water contamination reported to the Ministry of Health (Target: nil)

Contribution to Outcomes

Outcome	How Supply of Water Contributes to this Outcome
Healthy and Active People	The system ensures that enough water of a suitable standard is available at all times
A Sustainable City	Education programmes and other measures are used to help contain and even reduce the long term demand for water
A Safe City	Risks of water-borne diseases are minimised. Water in sufficient pressure and volume is always available for fire fighting

Negative Effects

- Salt water intrusion into the aquifer
- Reduced flows in the Avon and Heathcote Rivers



City Care staff testing fire hydrant water pressure

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Asset Information

The purpose of the City's water supply assets is to convey high quality groundwater from the aquifers beneath Christchurch to the City's domestic and commercial customers. The assets required to achieve this purpose are shown in this table.

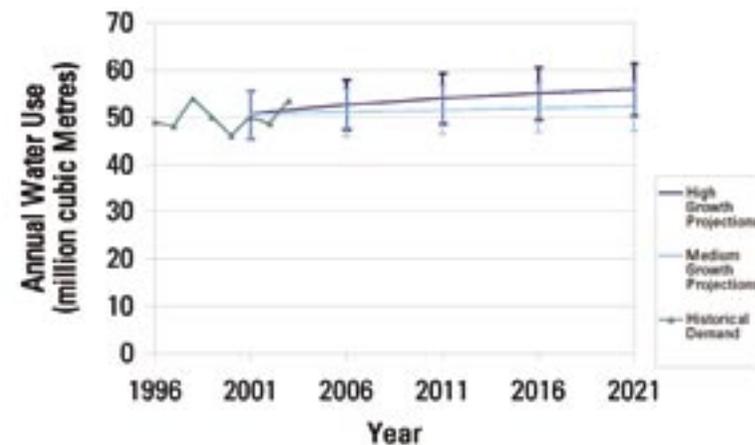
Asset Description	Quantity	Book Value at 30 June 2003
Water Mains (incl valves, hydrants etc)	1,360km	96
Submains	1,300km	30
Connections (boxes, valves & meters)	115,000	22
Land and Improvements	various	9
Pump Stations (including pumps, pipework, electrical and control equipment)	80	12
Wells	166	6
Standby Diesel Generators	26	2
Reservoirs and Tanks	32 sites	20
Total		197

Demands Trends

Only a small increase on the City's water requirements of 50 million cubic metres per year (+ 10% for climatic factors) is expected over the next two decades. This is because increased demand due to growth is expected to be offset by a reduction in per person demand.

This chart shows the projected demand over the next twenty years using current demand management strategies (for Statistics New Zealand high and medium growth projections).

Water Supply Demand Projections



The Council has set a goal of keeping demand at or near the 50 million cubic metres per year mark, and will do this by implementing measures to reduce water use per person where they can be shown to be cost effective. The Council currently manages demand through an education programme and a leak detection and repair programme, which is expected to reduce demand per person by 10% over a 20 year period. Other (more expensive) conservation measures can be progressively implemented if resource constraints require it (for example, incentives for low water use fittings, Commercial water audits, rainwater or effluent reuse).

Levels of Service

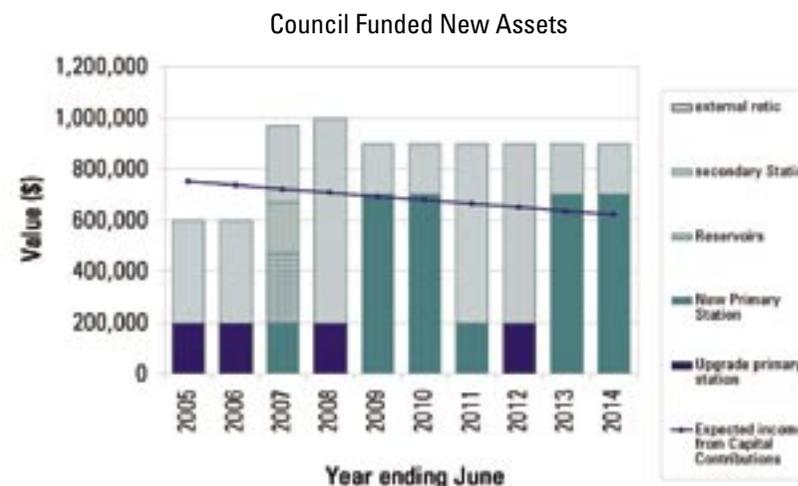
The tabled levels of service are currently being met and have been confirmed through the Council's asset management planning processes (which includes customer research). They are not expected to change significantly over the next 10 years.

Characteristic	Target L.O.S.
Pressure and flow	Minimum 25 l/min @ 250 kPa from standard connection
Water quality	NZ Drinking Water Standards and B-a Ministry of Health grading
Restrictions	Required less often than once in 20 years
Responsiveness	Related to nature of enquiry, e.g. safety issues, within an hour; notification of poor pressure and leaks with flowing water, by end of next working day
Reliability	Number of unplanned shutdowns per year resulting in loss of supply to customers exceeding 4 hours: 12 for reticulation, nil for pump stations and reservoirs
Risk	Progressively reduce the severity and magnitude of risks evaluated through the Council's risk assessment process (currently 11 identified "high" risks)

Requirements for Additional Assets and Financial Implications

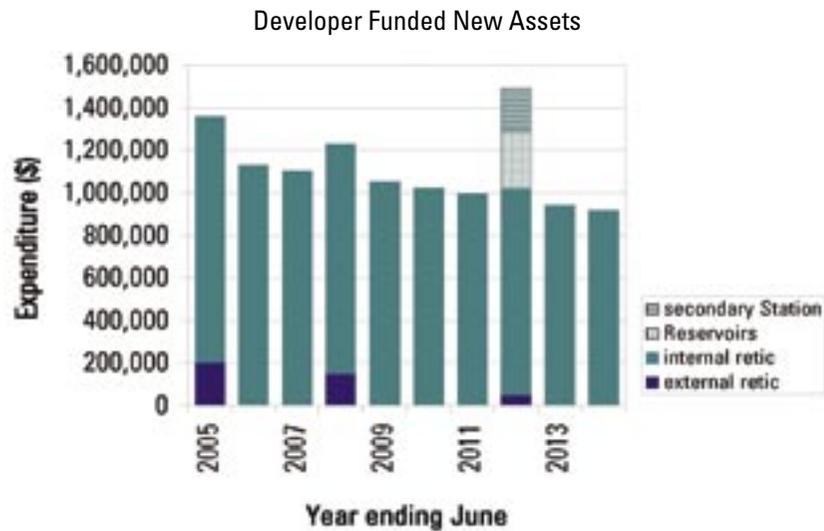
Assets for Growth

Although total water use is not expected to increase greatly for the foreseeable future, new infrastructure (Wells, pump stations and reticulation) will still be required as the city grows. The accompanying chart shows budgeted Council expenditure on new assets for the next ten years, along with expected revenue from capital contributions, as set out in the Council's Capital Contributions Policy. The difference between Capital expenditure and revenue will be funded in accordance with the Council's Funding Policy.



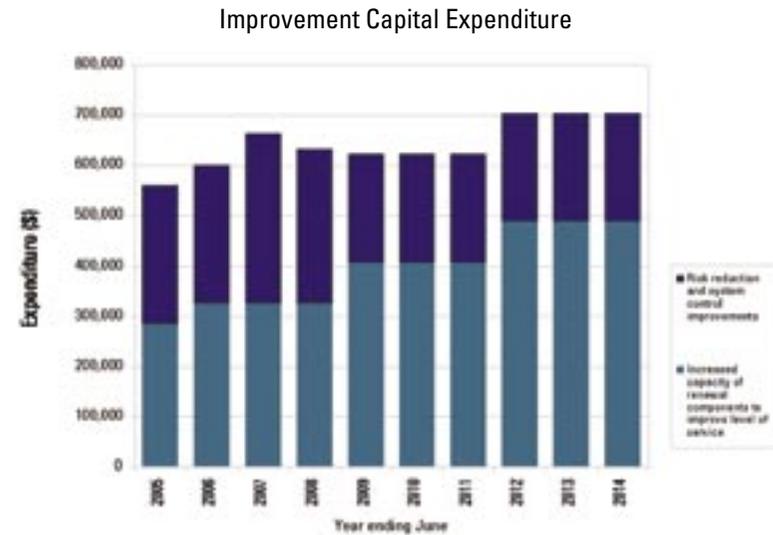
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In addition to new capital works programmed by the Council, new assets to service new lots are provided by developers and vested in the Council. This chart shows the value of new infrastructure expected to be vested over the next ten years (assuming Statistics NZ medium growth projections).



Assets for Level of Service Improvements

Although no changes to levels of service are planned, some expenditure in the Levels of Service Improvement category is still required to manage risk and take advantage of new technology to reduce long term operational costs. An estimated 20% of the mains renewal budget is also required to increase the capacity of renewal candidates to improve security of supply to existing customers, as shown in this chart.

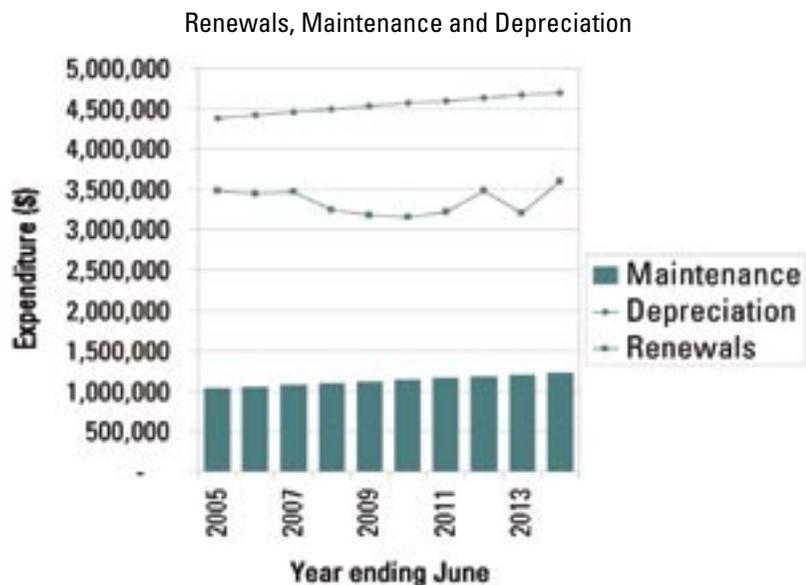


Maintenance and Renewals

Maintenance on water supply assets is carried out by a medium-to-long-term contract. Maintenance costs are expected to gradually increase as the system grows and existing assets age.

Assets are renewed based on their condition and ability to provide the required level of service and renewal projects are competitively tendered. The accompanying graph shows that renewals expenditure is less than the calculated depreciation, due to the assets presently being relatively new (the water supply assets are on average about two thirds through their life cycle).

Maintenance and depreciation charges form part of the annual operating budget for water supply. These costs are recovered annually, being apportioned to targeted water rates and water charges according to the Councils Funding Policy.



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Cost of Proposed Services

Budget 2003/04 \$000's		Plan 2004/05 \$000's	Forecast 2005/06 \$000's	Forecast 2006/07 \$000's	Projection 2007/08 \$000's	Projection 2008/09 \$000's	Projection 2009/10 \$000's	Projection 2010/11 \$000's	Projection 2011/12 \$000's	Projection 2012/13 \$000's	Projection 2013/14 \$000's
13,741	Expenditure (After Internal Recoveries)	15,067	15,461	15,814	16,141	16,512	16,828	17,042	17,304	17,581	17,884
(2,907)	Revenue	(3,429)	(3,400)	(3,371)	(3,342)	(3,313)	(3,284)	(3,255)	(3,226)	(3,197)	(3,168)
10,833	Net Cost of Service	11,638	12,061	12,443	12,799	13,199	13,544	13,787	14,078	14,384	14,716

The Net Cost of Service is funded from rates and other revenue. See the Funding Impact Statement in volume 3 for details.

Consisting of the following Activities

12,195	Supply of Water	13,274	13,668	14,021	14,348	14,719	15,035	15,249	15,511	15,788	16,091
(1,361)	Capital Revenue (*)	(1,636)	(1,607)	(1,578)	(1,549)	(1,520)	(1,491)	(1,462)	(1,433)	(1,404)	(1,375)
10,833	Net Cost of Service	11,638	12,061	12,443	12,799	13,199	13,544	13,787	14,078	14,384	14,716

Notes

(*) Capital revenue is referred to under the capital comment below.

Capital Expenditure

2003/04 \$000's		2004/05 \$000's	2005/06 \$000's	2006/07 \$000's	2007/08 \$000's	2008/09 \$000's	2009/10 \$000's	2010/11 \$000's	2011/12 \$000's	2012/13 \$000's	2013/14 \$000's
3,102	Renewals and Replacements	2,865	3,338	3,262	3,008	2,932	2,876	2,932	3,142	2,897	3,275
688	Improved Service Levels	689	740	643	652	601	622	622	744	704	704
1,513	Increased Demand	1,501	1,701	2,080	1,961	1,913	1,823	1,984	1,924	1,812	1,819
5,302	Total Capital Expenditure	5,055	5,780	5,984	5,621	5,446	5,321	5,538	5,811	5,413	5,798

Notes

Capital Expenditure is corporately funded from asset sales, rates (depreciation and surplus), capital revenues, special funds, and loans. See Capital Funding Summary in volume 1, and the Funding Impact Statement in volume 3 for details. For details of capital projects, see the 5 year Capital Works Programme pages in volume 1.