

## Nature and Scope

### Customer Services

- Provide specialist and general advice on waterways, wetlands and drainage activities.
- Manage the use of waterways to promote community enjoyment, safety and accessibility.
- Advise on consents related to the city's waterways, wetlands and drainage systems.
- Research and plan for the sustainable management of the city's waterways and wetlands with community and stakeholder participation and in a way that is integrated with other planning initiatives and external influences.
- Build community partnerships by enabling volunteer participation and sponsorship of projects, and encouraging community guardianship of waterways.
- Provide opportunities to raise awareness and enhance learning of environmental issues through a variety of communication and project initiatives.

### Environmental

- Protect and enhance riverbanks and conservation areas to ensure scenic and ecological values and natural habitats are maintained.
- Manage and maintain the city's waterways, wetlands and drainage system and provide effective flood mitigation measures and facilities.
- Restore and enhance waterways and wetlands environments to promote ecological, recreation, cultural, heritage, landscape and drainage values.

The Christchurch's waterways and wetlands system is based on the land surface of the city and 295 km of waterways, 24 pumping stations, 130 km of utility waterways, 925 km of stormwater pipes and 36 retention basins.

## Waterways and Wetlands Management

The Council provide for the long term sustainable management of the city's waterways, which are used for land drainage, wildlife habitat, and to enhance the City's garden image.

### Performance Measures

Service	Performance Measure
<b>Environmental</b>	
Flooding is managed, to prevent inundation into dwellings, in accordance with design standards	No dwellings constructed in accordance with design standards are inundated in residential areas
Storm water retention and inline storage (such as ponding areas) for managing surface water are provided in new developments	No increase in peak discharges as a result of urbanisation
Managing waterways to meet drainage requirements while protecting and conserving environmental values	Protect at least one kilometre of waterway margins per year by covenant, reserve contribution or road stopping
	Residents believe waterways, drains and wetlands are well looked after (target 70%)
	Waterways cleared of vegetation at least 2 times per year, to maintain efficient drainage (target 100%)
<b>Social</b>	
Provide opportunities to raise people's awareness, involve communities, and develop understanding and guardianship of waterways	Six educational bus trips organised per year, at least three community groups involved in environmental monitoring and guardianship and maintenance of the WaterLink web site

# waterways and land drainage

## Contribution to Outcomes

Outcome	How Waterways and Wetlands Management Contributes to this Outcome
Healthy and Active People	Access to and along waterways is improved to encourage outdoor recreation such as walking and canoeing
A Sustainable City	Waterways are planned and managed to take advantage of naturally occurring drainage corridors, and to provide habitat for plants and wildlife. Naturally occurring wetlands are protected
A Safe City	The waterways system is designed to minimise the impact of 50-year floods. Waterways are designed to minimise risks from drowning
Strong and Inclusive Communities	Residents are encouraged to become involved in caring for waterways and wetlands in their neighbourhoods

## Negative Effects

Negative effects arising from this activity may be identified as follows:

- Water bodies in close proximity to urban housing areas can pose a physical danger to residents.
- Reduced base flow in streams may result in nuisance issues such as smell, algal growth and a lack of debris flushing.
- Waterways may provide breeding places for vermin and insect pests.

## Asset Information

The City's waterways and wetlands system has evolved over time to provide effective ground water control, flood mitigation and multiple value enhancement of the City environment. The system managed by the City Council comprises natural and utility assets. Examples of natural assets are spring fed creeks and natural ponding basins. Examples of utilities assets are constructed stormwater detention basins and the piping network.

The following tables show the extent and value of this asset.

### Asset Information – Natural Waterways

System Component	Extent	Book Value at 30 June 2003
Rivers	160km	\$8.5M enhancements *
Environmental Asset Waterways	156km	\$9.1M
Covenants and esplanade strips	5.4km	0.9
	\$170,000	1.97
Land held		57ha

## Asset Information – Utility Waterways

System Component	Extent	Book Value at 30 June 2003
Lined Drains	69km	\$3.09M
Unlined Drains	55km	\$0.12M
Stopbanks	12km	\$1.5M
Stormwater Detention Basins	36	\$2.7M
Stormwater Pumping Stations	26	\$1.2M
Pipe network	925km	\$219M
Land held	14.7ha	\$610,000#

\* Enhancements to natural waterways consist of planting and waterway restoration work. Natural waterways are not included in the valuation.

# Current book value. Further investigative work and better quality data records will improve the accuracy of this information in the future

## Assets to meet Growth Trends

Expansion and changes to the land drainage system are driven by two major influences: population growth leading to city growth and associated land development and demand for system enhancements to restore natural values, protect and improve environmental values and provide improved recreation opportunities.

City growth generates requirements for in-fill subdivision drainage, new and upgraded stormwater mains and stormwater treatment and detention facilities. The infrastructure mix is dependent on the location of growth areas and external drivers such as flood management strategies and regional water quality and quantity plans.

The medium growth projected increase in the number of households for the next 10 years is 11,000 constituting a principal demand driver for the provision of new natural waterways and utility waterway assets listed above.

Current demand trends are based on land development averaging 100 ha annually creating a demand for 4 ha of waterway basins and associated facilities together with pipe network requirements at \$12,000 per ha plus mains and facilities costs.

## Assets for Level of service Improvements

The current level of service provided in the waterways and land drainage system is shown in the following table.

Annual resident surveys and customer feedback indicate that current levels of service are appropriate and are not expected to change significantly over the next 10 years.

Performance Measure	Target Level Of Service
Flood Management	No dwellings constructed in accordance with design standards are inundated in residential areas
Waterways Maintenance	Waterways are cleared of vegetation at least 3 times a year
Drainage Maintenance	Critical structures are checked in times of high rainfall
Customer Responsiveness	95% of complaints relating to land drainage are responded to within 5 working days
Future Growth	Stormwater from new greenfields developments is controlled within the subdivision and does not increase the risk of flooding off-site.
Environment-sensitive waterway management	Waterways are managed so that natural values and drainage function are maximised
Risk	Progressively reduce the severity and magnitude of risks evaluated through the Council's assessment process in order for the Council to function to the fullest possible extent, even though this may be at a reduced level, during and after an emergency (as required by the Civil Defence Emergency Management Act 2002).

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## Requirements for additional Assets and Financial Implications

### Assets for Growth

The majority of additional asset capacity required for city growth is expected to be created during sub-divisional development, and vested in the Council. Additional pipe capacity required in established areas is installed in conjunction with road improvements. Open drain capacity is increased in the course of drain relining or naturalisation, and opportunities are sought to locate stormwater detention within developed neighbourhoods. The costs and timing for these activities are summarised in the graph Council Funded Assets for Growth below.

Projected natural waterways costs have been smoothed over a period including the next 10 years and include anticipated external cost share contributions toward total project costs. Cost share partners are developers, private property owners and other Council funding programmes.

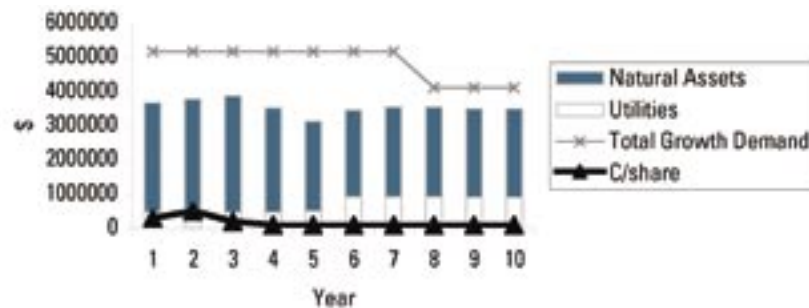
The utilities component of the graph depicts the estimated cost of providing additional asset capacity to meet stormwater growth demand.

'Total Growth Demand' comprises demand for new natural and utility waterway assets while the funding availability is drawn from the Waterways and Land Drainage capital expenditure programme, developer contributions and cost share contributions.

Natural and Utility waterway assets represent the funding for New Assets and the proportion of Asset Improvements funding which stems from growth demand. An example is demand from residents of a new subdivision adjacent to a drain for it to be restored by reshaping and planting. This then would become a new asset.

There is an approximate average Council funding shortfall of 1.1 million dollars per year for new assets. Predicted demand for new natural and utility waterway Assets and Improvements will not be satisfied over this period if the assumptions in the above demand projections are realised. The Council is considering the implications of this shortfall.

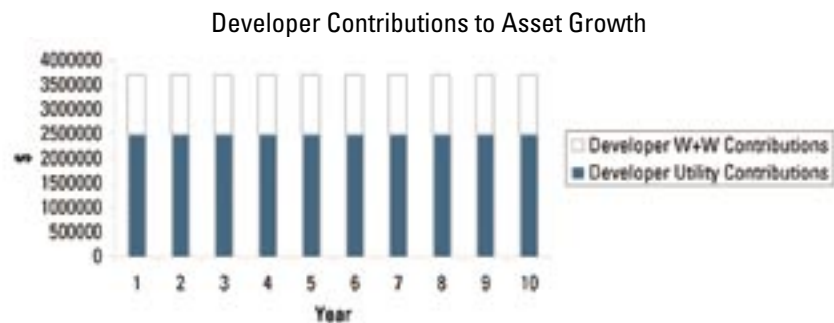
Council Funded Assets for Growth



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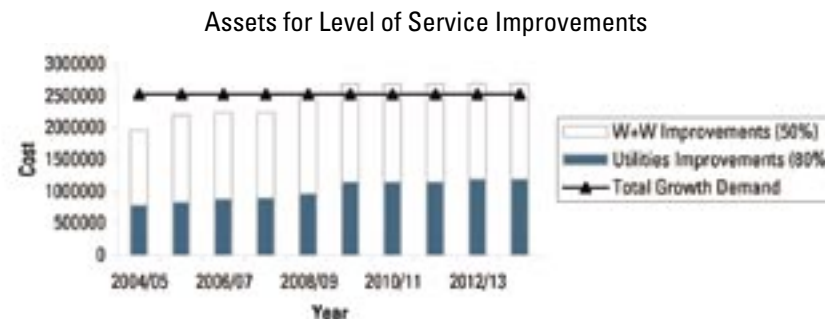
## Developer Contributions

Anticipated contributions as city development occurs is illustrated in the graph below. These contributions, provided by the Developer and vested in the Council, comprise utility assets including piping, detention basins and flood control structures and natural assets including land and improvement to existing waterways.



## Assets for Level of Service Improvements

The following graph represents demand for Levels of Service Improvements and shows available funding (Waterways and Land Drainage capital programme for asset improvements).



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## Maintenance and Renewals

Maintenance on the utility and natural waterways is carried out under a number of specialist contracts of medium duration. Maintenance costs will increase with the acquisition of additional assets and resulting from external influences such as fuel, dumping costs and traffic management requirements

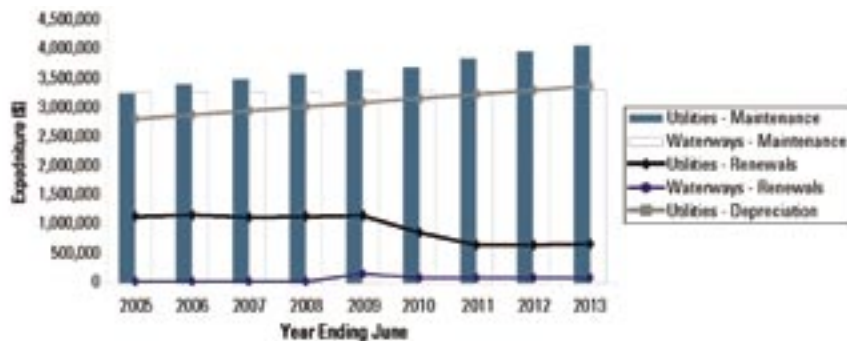
Renewal of the assets is based on condition assessments, particularly for utilities and may also create increased levels of service where opportunities are available. An example of this would be where timber lining on a drain has failed and the opportunity is taken to restore the natural stream values.

The details in the graph below show expected changes in the maintenance and renewals area.

Funding for maintenance comes from the Council's land drainage rate.

Depreciation funding exceeds current renewals because the majority of depreciable Waterways and Land Drainage assets are in an early part of their life cycle. Increased renewal demands are anticipated beyond the ten year time frame of this Plan.

Utilities and Waterways - Renewals, Maintenance and Depreciation



## 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
10,470	Expenditure (After Internal Recoveries)	10,957	11,276	11,591	11,926	12,301	12,585	12,905	13,228	13,558	13,895
(135)	Revenue	(387)	(587)	(387)	(267)	(267)	(137)	(137)	(137)	(137)	(137)
<b>10,335</b>	<b>Net Cost of Service</b>	<b>10,570</b>	<b>10,689</b>	<b>11,204</b>	<b>11,659</b>	<b>12,034</b>	<b>12,448</b>	<b>12,768</b>	<b>13,091</b>	<b>13,421</b>	<b>13,758</b>

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

10,435	Waterways and Wetlands Management	10,920	11,239	11,554	11,889	12,264	12,548	12,868	13,191	13,521	13,858
(100)	Capital Revenue (*)	(350)	(550)	(350)	(230)	(230)	(100)	(100)	(100)	(100)	(100)
<b>10,335</b>	<b>Net Cost of Service</b>	<b>10,570</b>	<b>10,689</b>	<b>11,204</b>	<b>11,659</b>	<b>12,034</b>	<b>12,448</b>	<b>12,768</b>	<b>13,091</b>	<b>13,421</b>	<b>13,758</b>

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
1,396	Renewals and Replacements	1,143	1,230	1,195	1,192	1,326	1,306	1,306	1,356	1,406	1,406
2,558	Improved Service Levels	2,255	2,482	2,572	2,626	2,720	2,649	2,649	2,699	2,746	2,796
3,008	Increased Demand	3,555	3,607	3,812	3,446	3,237	3,688	3,688	3,738	3,750	3,800
<b>6,962</b>	<b>Total Capital Expenditure</b>	<b>6,953</b>	<b>7,319</b>	<b>7,579</b>	<b>7,264</b>	<b>7,282</b>	<b>7,643</b>	<b>7,643</b>	<b>7,793</b>	<b>7,902</b>	<b>8,002</b>

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.