

**8.11 WATER MANAGEMENT**  
**WHAKAHAERE-WAI**



precious  
**resource**

### ■ 8.11 WATER MANAGEMENT

Water is an important part of our daily activities. In our homes we use it in many ways – for drinking, cooking, cleaning, washing, flushing the toilet, watering the garden and washing the car. In the wider community water is used for fire fighting, irrigating pastures and crops, recreation, sustaining livestock and in industrial and manufacturing processes.

The Waikato River is the city's primary source of water. The river provides the city's drinking water and also receives its stormwater and treated wastewater. Flowing from Lake Taupo through and alongside farms, forests, towns and power stations, the river travels for 16.5 kilometres through the city and holds great cultural and spiritual significance for Maaori.

As Hamilton's population continues to grow, issues of water availability and conservation are becoming more important. There are around 140,000 people living in Hamilton now, but by 2050 that number is expected to grow to around 240,000. This has significant implications for how we manage our water resources.

Despite the size of the Waikato River, allowable water supply is not infinite and demand for water is increasing. The more water we use, the more it costs to collect, treat to drinking standards and to deliver to our homes. The more water we waste, coupled with a growing population in Hamilton could lead to water shortages and negative environmental effects in future. It is important to treat water as a valuable resource and conserve it as much as possible.

Council is committed to ensuring the long-term security over provision of an adequate supply of water for Hamilton from the Waikato River. In recent times the ability to respond proactively and appropriately to the demands on the water supply has been stretched. Environment Waikato's variation to the Waikato Regional Plan (Variation 6) influences the manner in which fresh water is used throughout Hamilton, such as dealing with current levels of demand

and competition for water. This involves a structured approach to the protection, allocation and use of the region's water resources including the efficient use of water.

Part of the regional initiative includes new water alert levels (introduced in Hamilton in December 2008) as part of the regional collaborative effort aimed at promoting proactive water conservation. The joint initiative, between Hamilton City Council, Environment Waikato and other territorial authorities, is designed to encourage residents to treat water as a 'limited and precious resource'.

Council's Water Management Activity Group includes the following activities:

#### Water Supply

Hamilton's water treatment, distribution and management systems ensure that when water reaches consumers it is free from harmful organisms. Raw water is drawn from the Waikato River into the Hamilton City Water Treatment Station, where it is treated to provide a high standard of drinking water. Every second of every day, the Water Treatment Station produces an average of 2,200 glasses of high quality water to residential properties and commercial/industrial premises. Only a very small percentage is used for drinking, the rest is used for bathing, toilet flushing, watering, swimming pools, etc.

#### Wastewater

Wastewater is the liquid that drains from showers and baths, sinks, washing machines, toilets and commercial/industrial premises. In Hamilton, wastewater is transported through a network of pipes to the Wastewater Treatment Plant where it is treated to a high standard, prior to being discharged into the Waikato River. An average of 40 million litres of wastewater is treated on a daily basis.

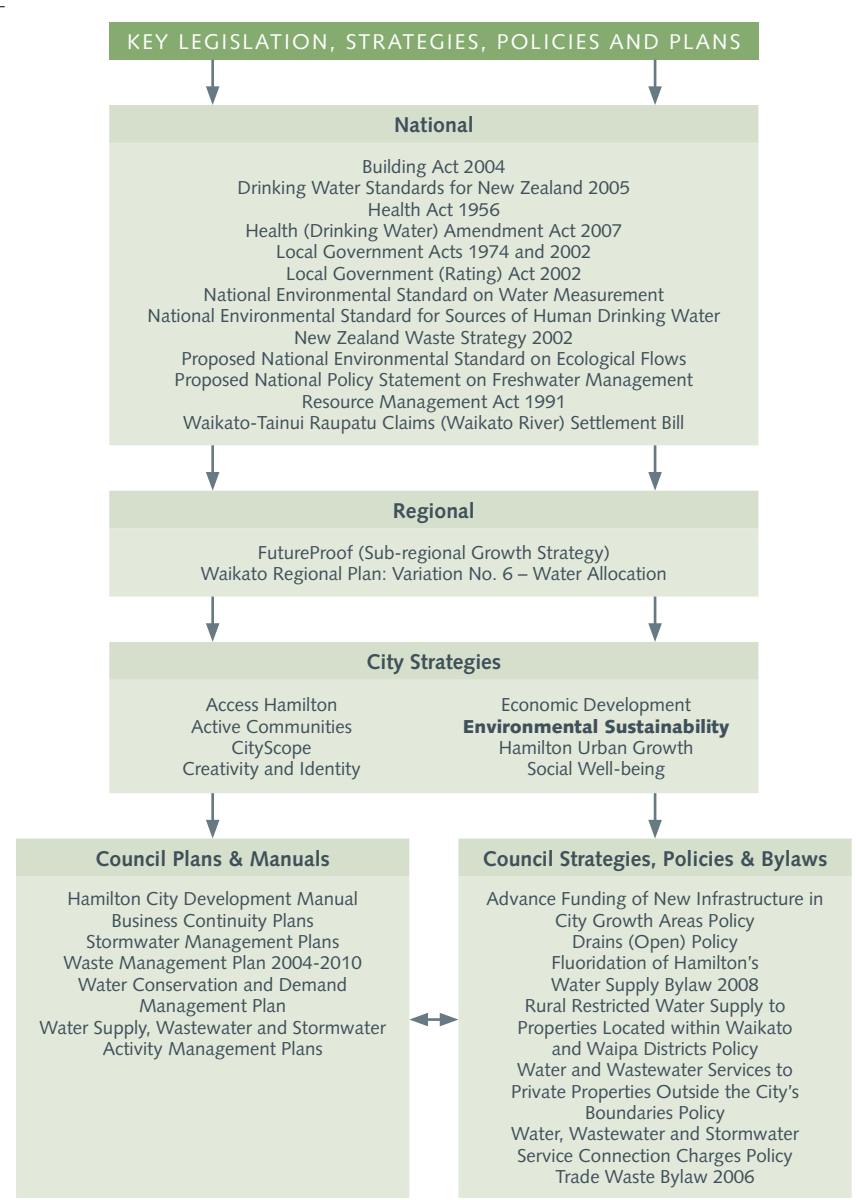
#### Stormwater

Urban development, such as roads, buildings, car parks and other recreation facilities create large areas of hard surfaces that rainwater cannot penetrate. The water that collects and runs off these surfaces is called stormwater runoff. The stormwater network drains stormwater runoff from the roadways and public land through pipes and open watercourses to the city's streams, lakes and the Waikato River.

**■ POLICY AND PLANNING CONTEXT**

Council's planning and operating environments are shaped by a wider context of national, regional and city wide priorities and objectives. The following diagram identifies the key legislation, strategies, policies and plans that link to and provide direction for the Water Management Activities.

“a limited and precious resource”



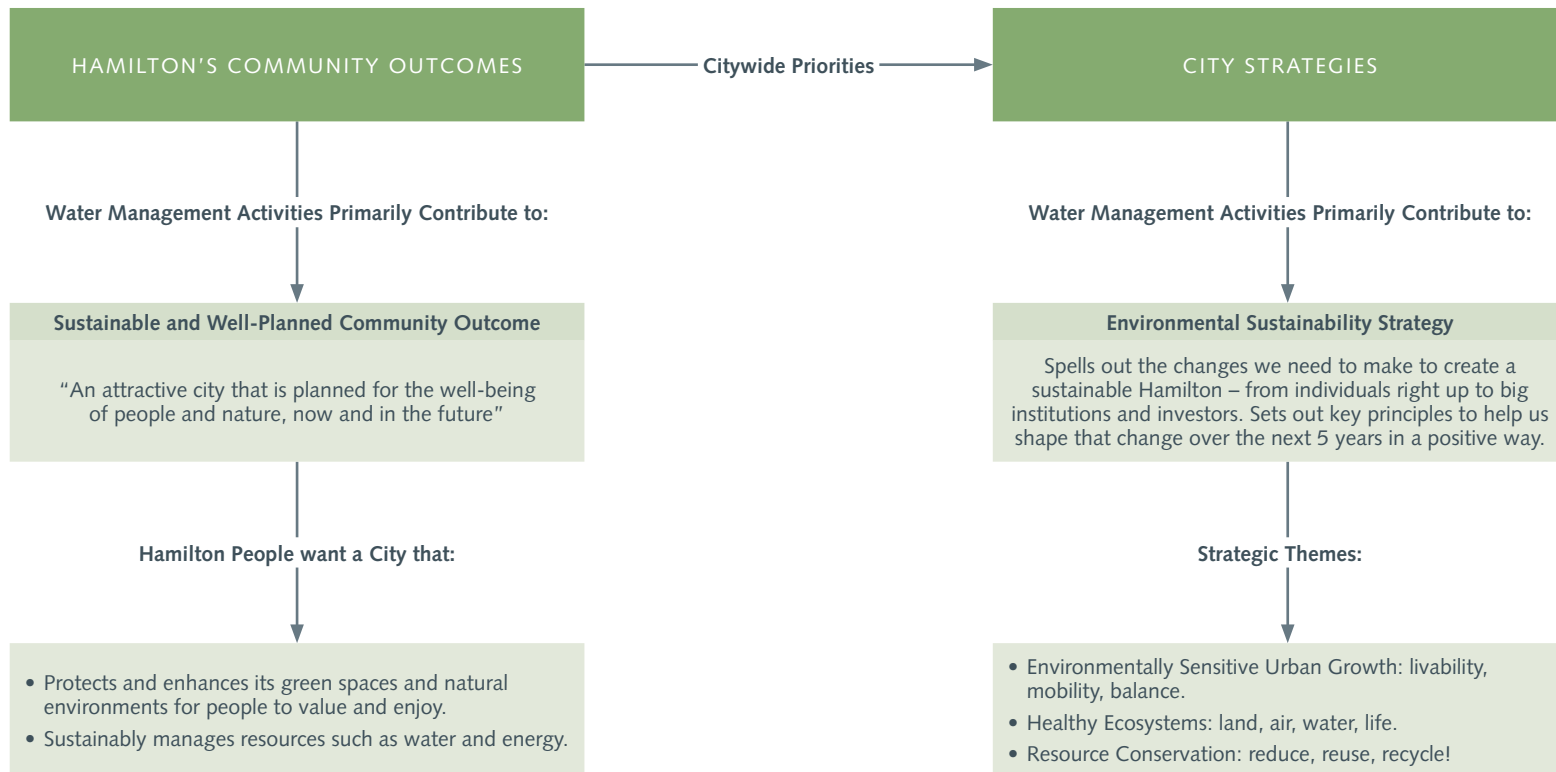
**REASON FOR PROVIDING THIS ACTIVITY GROUP**

Council's Water Management Activities are essential for the well-being of the community. Wastewater, stormwater and water supply networks are necessary to maintain public health and safety, minimise impacts on the environment and protect property from flood damage. Reliable and high quality water services are a fundamental part of any modern city and a basic day-to-day necessity that is expected by residents and businesses.

Council has historically provided wastewater, stormwater and water supply services and there are several statutes relevant to Council's involvement in these activities. Under legislation, Council is required to retain ownership of drinking water networks and treatment stations.

The Water Management Activities primarily contribute to the 'Sustainable and Well-Planned' Community Outcome and the Environmental Sustainability Strategy, both of which have a strong focus on the protection of Hamilton's environment and the sustainable management of water resources.

**CONTRIBUTION TO HAMILTON'S COMMUNITY OUTCOMES AND THE CITY STRATEGIES**



## HOW THE WATER MANAGEMENT ACTIVITIES CONTRIBUTE TO HAMILTON'S COMMUNITY OUTCOMES

The wastewater, stormwater and water supply systems are designed and managed for long-term sustainability. Planning for the future security of Hamilton's water supply and ensuring that natural water resources are not depleted or adversely affected are fundamental to Council's Water Management Activities. Council aims to reduce long-term costs and enhance environmental quality through the efficient use of water, the generation of less wastewater and the reduction of stormwater runoff.

### Water Supply:

In response to the increasing demand on water resources, Council has developed and implemented a Water Conservation and Demand Management Plan (WCDMP). The WCDMP is a core document outlining the future direction of water management within the city, as well as assuring other resource users that the city is effectively and efficiently managing the natural water resource. The WCDMP is also a significant contributor to meeting the requirements of Variation 6 and Council's water take consent conditions.

All water users, including Council, are responsible for conserving water. Drinking water and wastewater treatment costs are significant (energy, chemicals and plant deterioration), so reduced water use also has potential cost savings at all stages of the treatment process as well as being beneficial for the environment.

As well as using water efficiently in its own operations, Council also undertakes education and publicity campaigns to encourage water conservation in the community, especially during summer when Hamilton householder's water requirements are greatest.

As part of the new 'Smart Water' initiatives, Council has introduced water alert levels which are a more comprehensive water conservation approach than the alternate day sprinkler restrictions. Council will initiate a rise in water alert levels when a high volume of water has been consumed over a sustained period. Alternatively, when consumption volumes are reduced over a sustained period, alert levels can be lowered. The water alert levels and their corresponding restrictions aim to guide water use in a sustainable manner and ensure consistent supply throughout the year.

Hamilton's Water Treatment Station was recognised with a 'highly commended' at the 2007 INGENIUM Excellence Awards for physical works projects in New Zealand (INGENIUM is the Association of Local Government Engineering

New Zealand Incorporated). The project was judged mainly on the criteria of economics, environmental, social, cultural, consultation and innovation strategies.

The Water Treatment Plant upgrade also received a Silver Award from the Association of Consulting Engineers New Zealand in their 2008 Awards of Excellence.

### Wastewater:

Council ensures that wastewater is managed so that it does not contribute to air pollution (including odours and undue noise from machinery and other operations) and so that spills or overflows and the production of waste are minimised.

A 20 year resource consent was granted for the management and discharge of wastewater at Pukete's Wastewater Treatment Plant in August 2007. The application identified conditions that deliver a high level of public health, environmental protection and the best practical solution for Hamilton's future wastewater management – all in keeping with sustainable management principles.

### Stormwater:

If land surfaces and stormwater runoff are not managed properly, flooding of properties, erosion and pollution of our waterways can occur. Council manages stormwater in the city through a policy of encouraging ground soakage, the availability of a network of pipes and open drains, as well as landscaping, street maintenance and development and planning controls.

Increasing the amount of water that soaks into the soil replenishes precious groundwater reserves and helps sustain adequate water levels in streams during dry spells. It also filters out many of the pollutants that end up in our stormwater.

## CITY STRATEGY FLAGSHIP PROJECTS

The City Strategies contain what are known as 'flagship projects'. These projects have been agreed to by and are in alignment with the work programmes of a number of stakeholder agencies across the city. Flagship projects from the Environmental Sustainability Strategy that Council has a role in are:

### Valuing Water:

How is water being utilised? What regimes have been put to the test? What is working? What is not? These are the questions which will form the basis of a scoping investigation that examines how New Zealand's territorial authorities are managing our water assets. Part of the project will be implementing initiatives based on research findings. Along with Environment Waikato, Council will be leading this project, which will also involve the Sustainable Business Network, the University of Waikato and the Department of Conservation.

### Birds in the Bush, Fish in the Stream:

Using a single 'reach' of stream as a case study, this project aims to educate the general public about aquatic habitat restoration and raise its profile within the community. Particular attention will be given to better understanding the complex relationship between stream quality, urban development and stormwater impacts, and stream banks and gully vegetation; with a view to exploring alternative and more environmentally sensitive management solutions. Council is a partner in this project, which will be lead by the Centre for Biodiversity and Ecology Research. Other partners are Environment Waikato, the Department of Conservation and Enviroschools.

### MEASURING PROGRESS TOWARDS HAMILTON'S COMMUNITY OUTCOMES

Progress towards Hamilton's Community Outcomes is monitored through a selection of indicators. Indicators provide ways in which we can measure, directly or indirectly, changes to social, environmental, economic and cultural well-being over time. They provide a picture of what is going on around us that we can use to guide our future planning. Indicators can assist in identifying areas where progress is being made towards the Community Outcomes and alert us to areas that require action.

Council is one of numerous organisations whose actions and direction assist in progressing the outcomes and overall community well-being. The following Community Outcomes Progress Indicators (drawn from the full outcome set – refer Section 3.4) will assist in demonstrating the effect that the Water Management Activity Group has on progressing Hamilton's Community Outcomes. The monitoring undertaken for these indicators will be reported each year in Council's Annual Report.

### Key:

- M = Moderate Contribution
- S = Significant Contribution
- O = Council is the only Provider

### Community Outcomes Progress Indicators:

- S Ecological health of the Waikato River.
- M Ecological health of Lake Rotoroa.
- O Drinking water standards.
- M Average daily water usage per person.
- S Recreational health of the Waikato River.

### ■ MEASURING SERVICE DELIVERY PERFORMANCE

This section includes the intended levels of service for the Water Management Activity Group and the performance measures and targets that Council will use to monitor service delivery performance. The levels of service, performance measures and targets represent Council's service commitments to the community and outline what the community can expect to receive from this Activity Group over the 10 year period of the LTCCP.

The levels of service focus on the key service delivery attributes of this Activity Group. They draw on a number of factors including the aspirations and goals of Hamilton's Community Outcomes and the City Strategies, legislative requirements and national objectives, national and industry standards and community expectations.

This Activity Group primarily contributes to the 'Sustainable and Well-Planned' Community Outcome. The levels of service that specifically contribute towards progressing the goals of these outcomes are identified by the following key.

**Sustainable and Well-Planned Community Outcome**  
 "An attractive city the is planned for the well-being of people and nature, now and in the future"

- ❶ Protects and enhances its green spaces and natural environments for people to value and enjoy.
- ❷ Sustainably manages resources such as water and energy.

Performance information is provided in detail for the first three years of the LTCCP and in outline for the remaining seven, through a projected target for year 10 (2018/19). Unless otherwise stated, all performance measures will be completed on or before 30 June for each financial year.

A number of performance measures and targets are from Council's Residents Survey and Customer Surveys. The Introduction to the Activity Groups (Section 8.1) provides information on these surveys, including explanations of the performance scores and categories.

“designed and managed for long-term sustainability”

KEY SERVICE ATTRIBUTES	LEVELS OF SERVICE	PERFORMANCE MEASURES	TARGETS					ADDITIONAL INFORMATION
			BASELINE	YEAR 1 2009/10	YEAR 2 2010/11	YEAR 3 2011/12	PROJECTED YEAR 10 2018/19	
Quality	A high quality water supply is provided.	Achieve a high rating from the Ministry of Health for the city's water supply.	2007/08 results: Hamilton Zone: Aa Temple View Zone: Ac	Hamilton Zone: Aa Temple View Zone: Ac	Hamilton Zone: Aa Temple View Zone: Aa	Hamilton Zone: Aa Temple View Zone: Aa	Hamilton Zone: Aa Temple View Zone: Aa	Water grades range from Aa to Ee. 'A' = the quality of the water treatment and 'a' = the pipe network. Temple View continues to receive high quality water but is currently graded Ac. Action plans, including some capital works and a procedural review, are in place to ensure Aa grading is restored at the next audit in 2009.
		Residents' satisfaction with:	2007/08 result:					Measured through Council's Residents Survey. A score of 73-76 indicates Very Good Performance and 79 or above indicates Exceptional Performance, for a 'no customer choice' service.
		• The taste and odour of the water supply.	Very good performance (score of 73.9)	73 – 76	73 – 76	73 – 76	73 – 76	
	• Clarity of the water supply.	Exceptional performance (score of 82.1)	79 or above	79 or above	79 or above	79 or above		
	Water pressure is appropriate for its intended use.	Percentage of water flow and pressure tests that comply with set standards.	2007/08 result: 100% compliance	95% compliance	95% compliance	95% compliance	95% compliance	The flow and pressure standards are technical standards that are contained in the Hamilton City Development Manual.
Residents' satisfaction with water pressure.		2007/08 result: Exceptional performance (score of 85.0)	79 or above	79 or above	79 or above	79 or above	Measured through Council's Residents Survey. A score of 79 or above indicates Exceptional Performance for a 'no customer choice' service.	

KEY SERVICE ATTRIBUTES	LEVELS OF SERVICE	PERFORMANCE MEASURES	TARGETS					ADDITIONAL INFORMATION
			BASELINE	YEAR 1 2009/10	YEAR 2 2010/11	YEAR 3 2011/12	PROJECTED YEAR 10 2018/19	
Reliability/Responsiveness	Reliable water supply, wastewater and stormwater networks are provided.	Water supply interruption targets:	2007/08 results:					
		<ul style="list-style-type: none"> <li>Average time for unplanned shutdowns per customer, per year.</li> </ul>	Average of 5 minutes per customer connection	An average of 7 minutes per customer connection.	An average of 7 minutes per customer connection.	An average of 7 minutes per customer connection.	An average of 7 minutes per customer connection.	
		<ul style="list-style-type: none"> <li>Percentage of planned shutdowns within 4 hours.</li> </ul>	28 planned shutdowns exceeded 4 hours.	Planned shutdowns – 90% within 4 hours.	Planned shutdowns – 90% within 4 hours.	Planned shutdowns – 90% within 4 hours.	Planned shutdowns – 90% within 4 hours.	
	Annual number of wastewater blockages per 100km of the network.	2007/08 result: 57 blockages per 100km.	No more than 60 blockages per 100km	No more than 60 blockages per 100km	No more than 60 blockages per 100km	No more than 60 blockages per 100km	The target is based on current performance and increasing trends of blockages across the city network.	
	Reliable water supply, wastewater and stormwater networks are provided.	Residents' satisfaction with:	2007/08 results:					
		<ul style="list-style-type: none"> <li>Continuity of the water supply.</li> </ul>	Exceptional performance (score of 86.2)	79 or above	79 or above	79 or above	79 or above	Measured through Council's Residents Survey. A score of 79 or above indicates Exceptional Performance and 73-76 indicates Very Good Performance, for a 'no customer choice' service.
<ul style="list-style-type: none"> <li>The wastewater network.</li> </ul>		Exceptional performance (score of 82.0)	79 or above	79 or above	79 or above	79 or above		
<ul style="list-style-type: none"> <li>The stormwater network.</li> </ul>	Very good performance (score of 76.8)	73 – 76	73 – 76	73 – 76	73 – 76			

KEY SERVICE ATTRIBUTES	LEVELS OF SERVICE	PERFORMANCE MEASURES	TARGETS					ADDITIONAL INFORMATION
			BASELINE	YEAR 1 2009/10	YEAR 2 2010/11	YEAR 3 2011/12	PROJECTED YEAR 10 2018/19	
Sustainability	Water resources are used efficiently and sustainably. <b>2</b>	Level of compliance for the Water Treatment Plant's resource consents.	2007/08 result: High level of compliance achieved.	Achieve a high level of compliance.	Achieve a high level of compliance.	Achieve a high level of compliance.	Achieve a high level of compliance.	The level of compliance is measured by Environment Waikato and is audited and reported annually. A high level of compliance means that there has only been a low priority non-compliance and/or there have been several minor technical non-compliances. Water take volumes are outlined in the Water Treatment Plant's Resource Consent.
		Hamilton's maximum daily water take is within consented limits.	2007/08 result: 92,230m <sup>3</sup> on 19th January 2008 (maximum daily volume taken).	Maximum water take less than 105,000m <sup>3</sup> per day	Maximum water take less than 105,000m <sup>3</sup> per day	Maximum water take less than 105,000m <sup>3</sup> per day	Maximum water take less than 115,000m <sup>3</sup> per day	
	Effects on the natural environment are minimised. <b>1 2</b>	Level of compliance for the stormwater resource consents.	2007/08 result: High level of compliance achieved.	Achieve a high level of compliance.	Achieve a high level of compliance.	Achieve a high level of compliance.	Achieve a high level of compliance.	
Health and Safety	Wastewater is managed without risk to public health.	Level of compliance for the Wastewater Treatment Plant's resource consents.	2007/08 result: High level of compliance achieved.	Achieve a high level of compliance.	Achieve a high level of compliance.	Achieve a high level of compliance.	Achieve a high level of compliance.	As above.

“Drinking water and wastewater treatment costs are significant”

### ■ SIGNIFICANT NEGATIVE EFFECTS

The extraction and treatment of drinking water and the disposal of stormwater and treated wastewater are vital for community well-being and provide a significant public good. However, there are existing or potential negative effects that need to be managed or mitigated. Some of these negative effects are beyond the control of Council, but in many cases measures can be taken to alleviate the effects. This is taken into account during the design and construction of projects and treatment systems, through resource consent requirements and conditions, by maintaining and renewing assets, through community education and awareness programmes and by consulting with the community.

The following table identifies the *significant* existing or potential negative effects for Water Management Activities. The significance of an effect is determined through its likely impact on and consequences for:

- a) The current and future social, economic, environmental, or cultural well-being of the city.
- b) The extent to which communities are likely to be affected.
- c) The capacity of Council to perform its role, including financial and other costs.

SIGNIFICANT NEGATIVE EFFECTS		HOW COUNCIL MITIGATES OR MANAGES THE EFFECTS
Potential Environmental Effects	The taking of excess volumes of water from the river can impact on the allocable amount left for users down stream of Hamilton.	Council only extracts the amount of water permitted by the resource consent and attached conditions imposed by Environment Waikato.
	Discharge of excessive quantities of stormwater from point sources during heavy rain or contaminants entering rivers and streams and affecting fish and other aquatic life.	Hamilton has separate wastewater and stormwater networks, which minimises the risk of wastewater entering streams and rivers. An annual programme is in place to identify illegal connections to the stormwater and wastewater networks. Catchpits provide a form of pre-treatment by screening and preventing objects from entering the stormwater system. Non-domestic waste producers are required to comply with provisions in Council's Trade Waste Bylaw 2006 and are monitored on a regular basis. Council must comply with resource consent conditions for all stormwater outlets to waterways. Council runs the "Fish on Drains" education campaign to educate the community about how to prevent contaminants entering the stormwater system.
	Accidental discharge of untreated wastewater into the Waikato River.	Council has an ongoing programme to install additional storage chambers to key pump stations within the network. All pump stations are monitored 24 hours per day. Preventative maintenance programmes, stormwater infiltration and inflow detection programmes and business continuity plans are in place for both the wastewater network and treatment plant.
Potential Effects on Public Health	As a result of failure in the wastewater network, untreated wastewater could contaminate various properties throughout the city.	Council has an ongoing programme to install additional storage chambers to key pump stations within the network. All pump stations are monitored 24 hours per day. Preventative maintenance programmes, stormwater infiltration and inflow detection programmes and business continuity plans are in place for both the wastewater network and treatment plant.
	Open channels in urban areas can become a habitat for pests or a danger to life and property in some areas when streams rise rapidly and overflow during storm events.	Open channels throughout the city are cleaned and maintained on a regular basis to prevent flooding and the establishment of pests.

SIGNIFICANT NEGATIVE EFFECTS		HOW COUNCIL MITIGATES OR MANAGES THE EFFECTS
Potential Effects on Public Health	Illness caused by contact with microbiological or chemical contaminants from stormwater in the streams and rivers used for recreational purposes.	Roads and catchpits are cleaned and maintained to remove potential contaminants. Swales and detention ponds naturally treat stormwater runoff. High risk industry is audited to prevent contamination of stormwater.
	Disruption of treated water supply may cause health problems in the community.	Preventative maintenance is carried out on the water treatment and water supply network to ensure a treated water supply is maintained. Public Health Risk Management Plans are currently being prepared in accordance with the Health (Drinking Water) Amendment Act 2007. A Business Continuity Plan is in place.
Cultural Implications for Maaori	The mixing of water from different stormwater catchments is not considered appropriate by Maaori.	Maaori cultural values relating to the extraction and discharge of water into the Waikato River are an important consideration for the Water Management Activities. Council consults with local Iwi as part of all resource consent processes.
	Discharge of treated wastewater into the Waikato River may be considered offensive by Maaori.	Council maintains an Iwi Liaison Group under the structure of the Wastewater Discharge Consent. This group has a membership and mandate outlined with the consent document
	Water supply practices may contradict Maaori cultural beliefs or practices.	
Potential Economic Costs	Water costs and trade waste costs could potentially be perceived as too high and adversely affect industries expanding and/or relocating to Hamilton.	Businesses are charged for water and trade waste on a user-pays basis. City water demand is managed through the implementation of the processes outlined with the Water Conservation and Demand Management Plan.
	The treatment and distribution of water for residential, commercial and industrial usage is expensive, and this cost increases as greater volumes of water are demanded.	
	The more water we use, the more infrastructure will be required in the long term for effective water treatment and distribution.	
Potential Odour and Noise Nuisance	Operation of the Wastewater Treatment Plant may cause odour and noise nuisance to surrounding residential properties. Operation of one water treatment plant may also cause noise nuisance.	The Wastewater Treatment Plant operates within the conditions set in its Discharge to Air consent with regards to odour and odour management. The Wastewater Treatment Plant is fully fenced and has a vegetation buffer zone to create distance from the surrounding residential properties. Noise levels from the Wastewater Treatment Plant comply with the relevant District Plan rules and regulations

**CURRENT AND FUTURE ASSET CAPACITY**

EXISTING KEY ASSETS (AS AT DECEMBER 2008)	
KEY ASSETS	DEPRECIATED REPLACEMENT COST (\$'000)
<b>Water Supply</b>	
Reticulation Network	184,023
Water Treatment Plant	32,532
Buildings	1,080
Water Reservoirs	14,229
Land – Water Treatment	2,100
Land – Reservoirs	3,625
<b>Wastewater</b>	
Reticulation Network	169,890
Pump Stations	8,021
Wastewater Treatment Plant	49,669
Buildings	1,574
<b>Stormwater</b>	
Reticulation Network	261,258
Land – Drainage Reserves	2,177
<b>Total Depreciated Replacement Cost</b>	<b>730,178</b>

**MAINTENANCE AND REPLACEMENT OF ASSETS**

Responsible and sustainable management of infrastructure is a core responsibility of Council under the Local Government Act 2002. Maintenance and replacement of end-of-life assets ensures the security of supply to customers and continued provision of current levels of service.

Council's objective when maintaining existing assets is to achieve the lowest whole of life cost, while still delivering the required levels of service. Annual programmes for the maintenance and replacement of assets are prepared by staff using a combination of asset age, condition information, customer feedback and maintenance records.

The average age of some asset types is increasing and there is a need to increase programmes and budgets for sampling the condition of all types of water assets. An increase in maintenance and replacement work will be required over the next 10 years to avoid a decline in levels of service and overall asset condition. A steady rise in overall maintenance costs is expected as the network expands and ages.

Council's Delivery Unit carries out the maintenance of the networks under a service level agreement with the Water Unit. Renewal work is undertaken using the Delivery Unit and external contractors, depending upon the extent of work. Capital or new works are undertaken by external contractors.

The Water Unit is responsible for the operation, maintenance and capital works for the Water and Wastewater Treatment Plant and reservoir assets. The Water Unit undertakes all operations and maintenance activities in-house and manages the capital works programme by a variety of means, from utilising the expertise of other Council units, to contracting out significant work packages that cannot be completed with in-house staff. The assets are in generally good condition and are maintained in accordance with industry best practise.

It will be necessary to undertake significant investigations into system capacity and asset condition within the first few years of the LTCCP. This will improve the understanding of existing assets providing input to future operation and maintenance, replacement and capital work programmes in terms of an expanding city.

**Water Supply**

The majority of Hamilton's water supply pipe network was installed in the period from 1960–present with the majority of anticipated service lives between 50 and 100 years. The Water Treatment Plant was constructed in 1971 and is in good condition. Emphasis is on the proactive replacement of pipes with modern plastic equivalents before they fail.

### Wastewater

The Wastewater Activity includes the operation and maintenance of approximately 780km of pipeline (excluding service connections), 127 pump stations and the Wastewater Treatment Plant. The plant was constructed in 1971 and upgraded in 2001 and is in good condition. A further upgrade of the plant is underway and programmed for completion in 2010.

The majority of Hamilton's wastewater pipe network (including pump stations) was installed in the period from 1960-1980, with the majority of anticipated service lives between 75 and 100 years. Emphasis is on the proactive replacement of pipes before they fail with modern plastic equivalents.

The current renewal plan for the wastewater pipe network is based on condition monitoring of the current network. Routine maintenance of the pipe network requires considerable reporting on the condition of the asset

### Stormwater

The Stormwater Activity includes the operation and maintenance of approximately 620km of pipeline (excluding service connections), 90km of open channels, and 11,800 catchpits. Catchpits are maintained by Council's Transportation Unit and their operations and maintenance regimes are described in the Roading Activity Management Plan.

The majority of Hamilton's public stormwater network was installed in the period from 1960-2000. Most pipelines have anticipated service lives between 75 and 100 years. The majority of properties developed prior to the installation of the public stormwater network in Hamilton will have onsite stormwater disposal. Onsite and decentralised disposal has gained popularity again since the 1990's as Council's Development Manual requires developed property runoff to be less than or equal to greenfields stormwater runoff.

### ADDITIONAL ASSET CAPACITY REQUIREMENTS

The Water Treatment Station has recently undergone a significant upgrade in relation to both capacity and quality. The station now has the capacity required to meet the city's water needs until 2015. The installation of granular activated carbon filters and ultra violet disinfection system has ensured that the plant will continue to produce high quality water that meets the Drinking Water Standards for New Zealand (2005) specification for a city of Hamilton's size.

Work on development and securing of water post 2015 is programmed to commence in 2009/10.

A significant upgrade to the Wastewater Treatment Plant is currently underway. The upgrade is required to meet both capacity and quality until 2026. The upgrade consists of the installation of an aeration basin, clarifier, solids digester and upgraded ultra violet system along with a number of more minor works. The works are programmed to be completed over a period of five years. Work commenced in 2007/08.

### ■ COST OF SERVICE FOR THE YEARS ENDED 30 JUNE 2010 – 2019

The following table identifies the forecast expenditure and the revenue sources associated with providing the Water Management Activities for the 10 year period of the LTCCP.

The table also includes:

- 1 Capital expenditure by type i.e. growth, renewal and increased level of service.
- 2 Funding source (i.e. loans, subsidies, reserves or rates) for significant assets associated with the Water Management Activities.

FORECAST COST OF SERVICE FOR THE TEN YEARS ENDING 30 JUNE 2010 – 2019										
	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19
	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000
<b>GROUP OF ACTIVITY – OPERATING STATEMENT</b>										
<b>OPERATING REVENUE</b>										
Activity revenue – User charges and fees	3,396	3,447	3,545	3,641	3,735	3,834	3,934	4,048	4,163	4,277
Targeted rates – Water by meter	6,335	6,655	7,075	7,265	7,455	7,651	7,855	8,078	8,309	8,532
Development and financial contributions	5,356	7,681	12,786	13,796	14,619	15,377	15,349	16,715	17,739	19,353
General rates	18,573	21,297	21,009	23,177	26,639	31,566	30,977	32,594	33,529	33,980
Other general sources	1,302	1,806	1,935	1,890	1,947	1,875	1,913	1,957	2,009	2,217
<b>Total operating revenue</b>	<b>34,962</b>	<b>40,886</b>	<b>46,350</b>	<b>49,769</b>	<b>54,395</b>	<b>60,303</b>	<b>60,028</b>	<b>63,392</b>	<b>65,749</b>	<b>68,359</b>
<b>OPERATING EXPENDITURE</b>										
Water Supply	14,972	15,553	17,001	18,019	19,085	22,619	23,099	24,478	25,352	26,291
Wastewater	17,004	18,214	19,936	21,401	23,349	24,184	25,407	26,050	25,542	26,610
Stormwater	7,616	7,844	8,530	9,080	9,688	10,286	10,819	11,275	11,816	12,301
<b>Total operating expenditure</b>	<b>39,592</b>	<b>41,611</b>	<b>45,467</b>	<b>48,500</b>	<b>52,122</b>	<b>57,089</b>	<b>59,325</b>	<b>61,803</b>	<b>62,710</b>	<b>65,202</b>
<b>Operating surplus/(deficit)</b>	<b>(4,630)</b>	<b>(725)</b>	<b>883</b>	<b>1,269</b>	<b>2,273</b>	<b>3,214</b>	<b>703</b>	<b>1,589</b>	<b>3,039</b>	<b>3,157</b>

	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19
	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000
<b>GROUP OF ACTIVITY – CAPITAL AND RESERVES FUNDING STATEMENT</b>										
<b>CAPITAL EXPENDITURE</b>										
Growth	7,593	11,132	18,252	16,912	16,599	14,810	24,421	5,476	21,544	4,774
Increased level of service	13,995	11,338	10,943	9,858	7,887	13,538	13,408	13,415	12,771	13,986
Renewal	1,825	3,409	6,366	5,642	6,558	2,476	3,236	3,034	3,955	3,023
<b>Total capital expenditure</b>	<b>23,413</b>	<b>25,879</b>	<b>35,561</b>	<b>32,412</b>	<b>31,044</b>	<b>30,824</b>	<b>41,065</b>	<b>21,925</b>	<b>38,270</b>	<b>21,783</b>
Loan repayments	4,380	9,683	10,155	11,243	10,490	10,902	10,249	11,312	12,923	14,481
Transfers to reserves	6,043	8,405	13,509	14,865	15,886	16,906	16,974	18,522	19,979	21,870
Operating deficit	4,630	725	0	0	0	0	0	0	0	0
<b>Total funding required</b>	<b>38,466</b>	<b>44,692</b>	<b>59,225</b>	<b>58,520</b>	<b>57,420</b>	<b>58,632</b>	<b>68,288</b>	<b>51,759</b>	<b>71,172</b>	<b>58,134</b>
<b>Funded by:</b>										
Operating surplus	0	0	883	1,269	2,273	3,214	703	1,589	3,039	3,157
Funding from non-cash expenses	12,188	16,353	16,931	18,537	19,938	20,713	23,422	25,395	26,648	28,545
Loans raised	17,591	18,679	26,875	23,154	19,105	17,595	27,901	7,528	23,754	7,413
Transfers from reserves	5,798	8,369	13,259	14,550	15,266	16,046	16,179	17,429	18,161	19,939
<b>Total funding applied</b>	<b>35,577</b>	<b>43,401</b>	<b>57,948</b>	<b>57,510</b>	<b>56,582</b>	<b>57,568</b>	<b>68,205</b>	<b>51,941</b>	<b>71,602</b>	<b>59,054</b>
<b>Funding surplus/(deficit)</b>	<b>(2,889)</b>	<b>(1,291)</b>	<b>(1,277)</b>	<b>(1,010)</b>	<b>(838)</b>	<b>(1,064)</b>	<b>(83)</b>	<b>182</b>	<b>430</b>	<b>920</b>
Included in the group of activity expenditure above are these costs of maintaining assets	6,672	6,770	7,010	7,294	7,485	8,637	8,048	8,280	8,576	8,928

Group of activity expenditure is not fully funded. See section 2.2 of the Revenue and Financing Policy in Volume Two of this LTCCP for an explanation of the funding shortfall. 'General rates' funding above includes rates from all sources excluding Access Hamilton and water rates which are shown separately where applicable.