

3.0 Our assets

3.1 Asset description

The broad asset groups and the physical quantities are shown in Figure 3. Figure 4 shows the layout of the city's wastewater system and the location of the treatment facilities, and Figure 5 show the current replacement cost of the main wastewater asset groups.

Activity	Asset components	Quantity
Pipe network	Pipes	979 km
	Manholes	35,400
	Sewer tunnels	19 km
	Permanent flow meters	12
Pumping stations	Pumping stations	62
Treatment facilities	Western Treatment Plant	1
	Moa Point Treatment Plant	1
	Porirua Treatment Plant	28% share with Porirua City Council
	Carey's Gully Sludge Dewatering Plant	1

Figure 3 - Wastewater assets summary

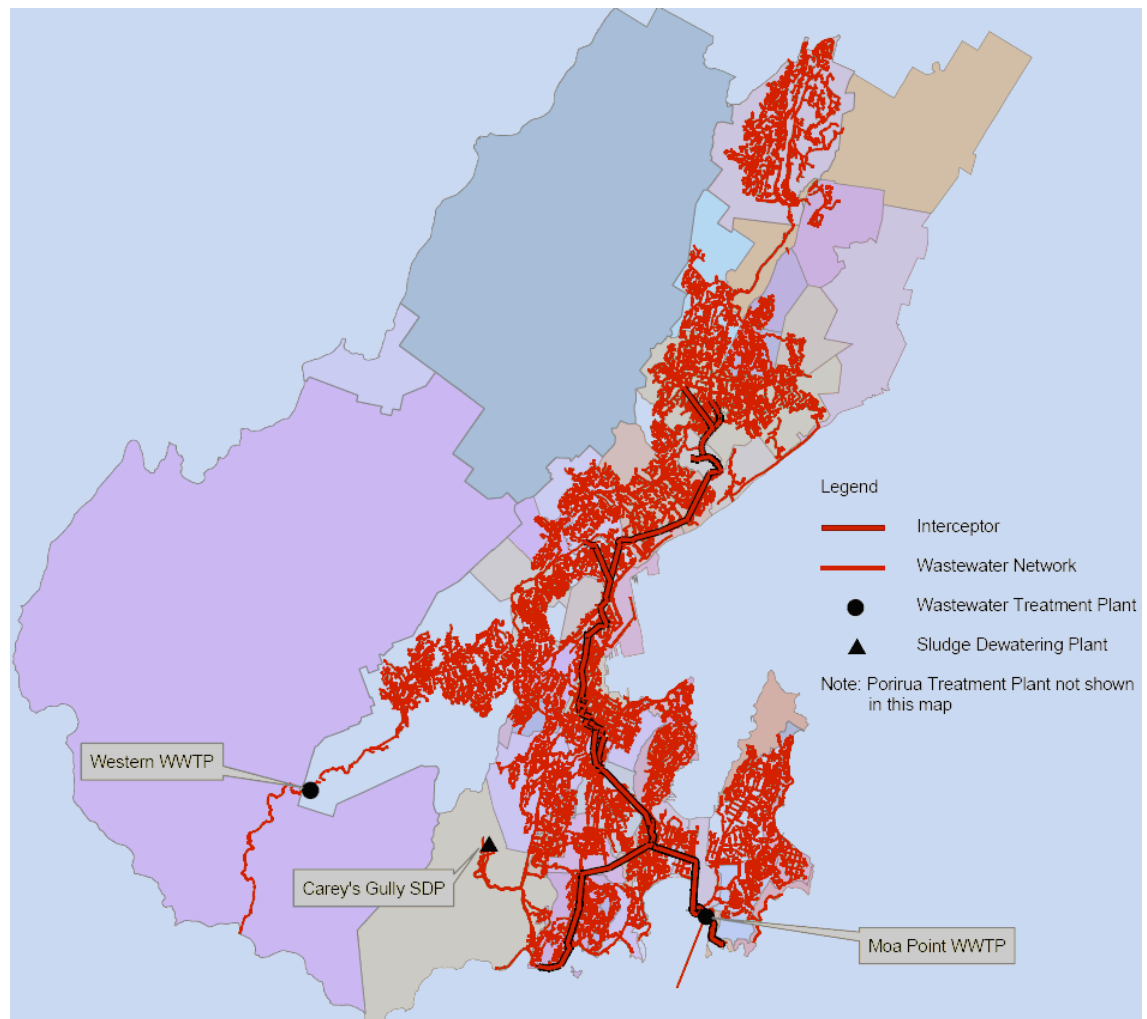


Figure 4 - Wellington's wastewater network

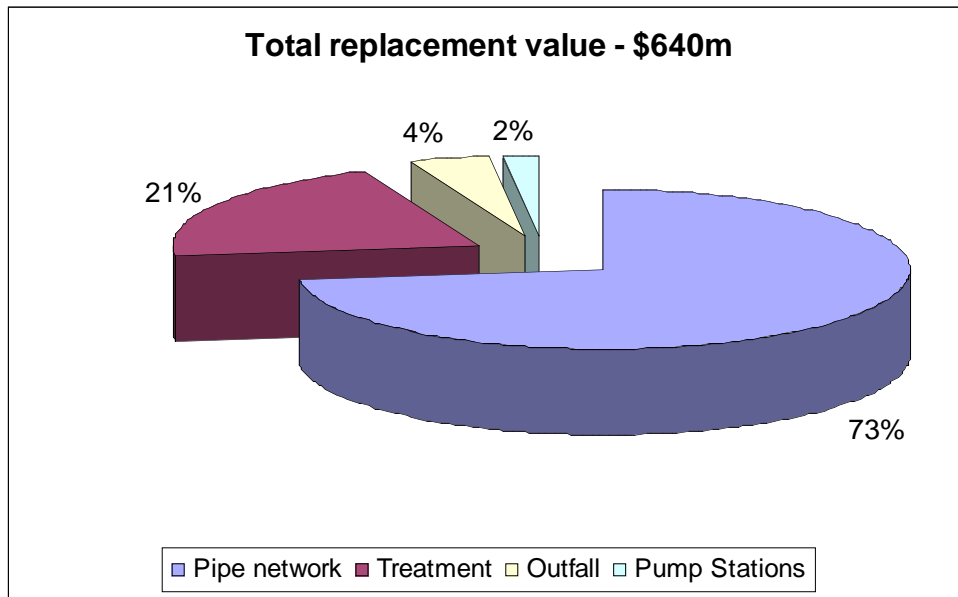


Figure 5 - Wastewater asset replacement cost

3.1.1 Pipe network

Wastewater is collected from residences and businesses and conveyed to the main intercepting sewer through the local reticulation network, which in turn conveys it to the treatment facilities.

- The majority of pipes are earthenware and are 150mm diameter or smaller. Only 15 per cent of network by replacement cost is of 300mm diameter or greater.
- 64 per cent of tunnels are ovoid, including all of the tunnels constructed of brick.
- The network is old by New Zealand standards. Although 20 per cent of the network was installed less than 20 years ago, 40 per cent of the network is older than 60 years, and 20 per cent is older than 80 years, as presented in Figure 6.

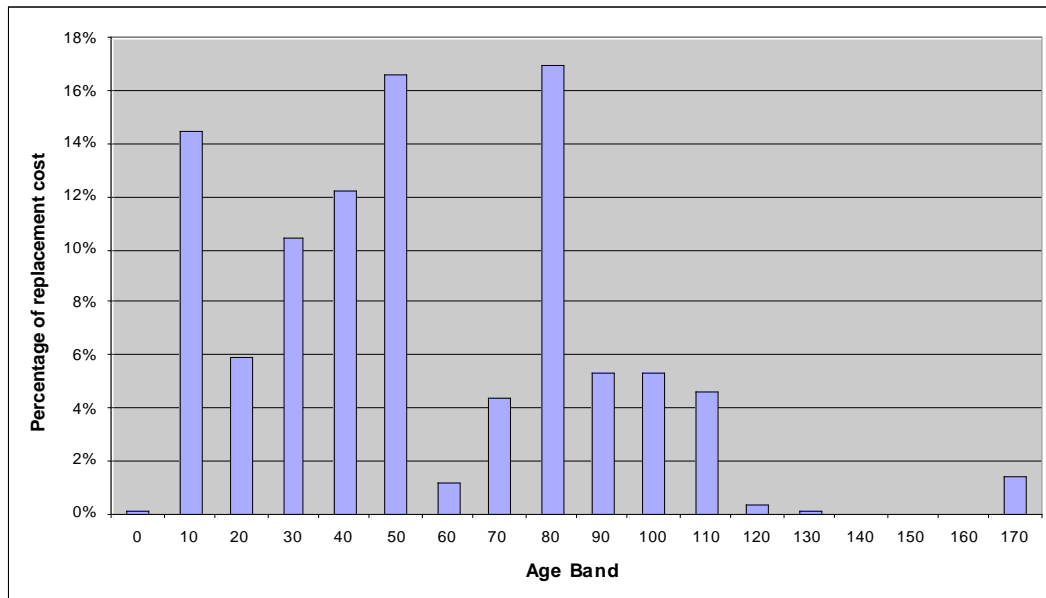


Figure 6 – Pipe network age profile

3.1.2 Pumping stations

Pumping stations assist conveyance of wastewater from low-lying areas.

- 53 of the 62 pumping stations are small (<5kW) to medium (between 5 and 20kW).
- Approximately 80 per cent of the pumping station equipment, including pump-sets, electrical and instrumentation, and pipes, valves and fittings is less than 15 years old, 75 per cent of the base life, as presented in Figure 7.

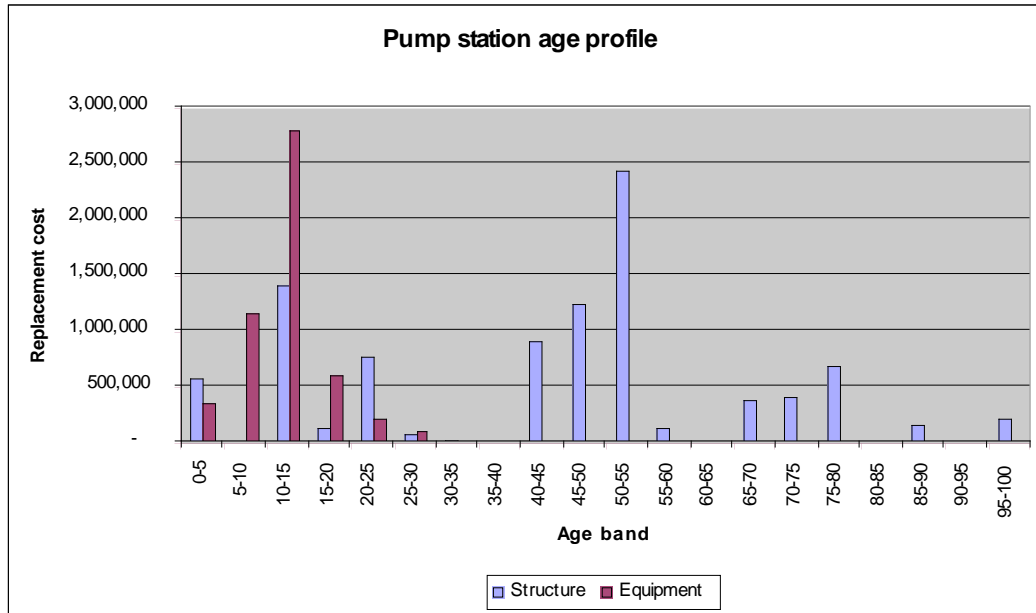


Figure 7 – Pumping station age profile

3.1.3 Treatment plants

Treatment plants use mechanical, biological and other processes to remove harmful constituents from wastewater before discharging it to the sea. The facilities are summarised below.

- Moa Point Treatment Plant
 - Receives wastewater from all of Wellington except as noted below (135,000 people).
 - Inlet pumping station.
 - Primary, secondary and tertiary treatment.
 - 1.8km ocean outfall pipe.
 - 9km twin sludge pipelines to Carey's Gully Sludge Dewatering Plant.
- Western Treatment Plant
 - Receives wastewater from Karori (11,000 people).
 - Secondary and tertiary treatment.
- Carey's Gully Sludge Dewatering Plant
 - Receives sludge from Moa Point Wastewater Treatment Plant.
- Porirua City Council Wastewater Treatment Plant
 - Receives wastewater from Churton Park, Paparangi, Glenside, Grenada, Tawa and parts of Johnsonville and Newlands (22,000 people).
 - Jointly owned by Porirua City Council and Wellington City Council, and managed by Porirua City Council. Wellington City Council provides annual financial contribution based on flow proportion.

3.2 Asset capacity and performance

3.2.1 Pipe network

- Various pipes in the city have been identified as having insufficient capacity for current peak wet-weather flows. Actual flows occasionally exceed design flows due to entry of stormwater and groundwater to the wastewater system. They are being addressed through ongoing investigations and physical works projects aided by computer modelling of the main interceptor to investigate the locations, frequency and environmental impact of overflows from the network.
- The improvements in stormwater quality achieved as a result of sewage pollution elimination works carried out over the past 12 years are demonstrated in, which shows a 92% improvement in the pollution indicator counts.
- Infiltration into private laterals is perceived to be a major issue affecting the Council's abilities to minimise wet-weather flows using current controls, although no studies have been undertaken to quantify it.

Graph



3.2.2 Pumping stations

- All 62 pumping stations have sufficient capacity for peak dry weather flows.
- Occasional overflows from some pump stations are recorded in wet weather events due to inflow and infiltration, although analysis indicates that these overflow frequencies are lower than many other similar systems in New Zealand.

3.2.3 Treatment plants

- The Moa Point and Western Treatment Plants have sufficient capacity to treat peak dry weather flows from the population forecast throughout this 10 year planning period and beyond.
- Full treatment capability is currently exceeded approximately three times a year (with an average overflow volume of 4915m³). The frequency of these overflows is projected to increase to approximately nine times per year by 2043. Proposals to address this issue include provisions to treat overflows, upgrades to the inlet pumping station and further work to reduce inflow and infiltration in the upstream catchments.
- The Western Treatment Plant has sufficient capacity to treat all dry weather and wet weather flows up to four times average dry weather flows. Heavy and prolonged rainfall can cause wet weather flows to exceed this leading to overflows to the South Coast and Karori Stream on average three times a year. Resource consent applications to authorise the continued operation of the plant are currently being appealed to the Environment Court.
- The Council's capacity has been exceeded in the Porirua treatment plant and discussion is underway to draw up a new agreement and to share maintenance as well as capital upgrading costs. Investigations continue in conjunction with Porirua City Council to determine future expansion requirements of the plant and the works identified as necessary will be included in the next version of this plan.
- Each of these three treatment plants has a finite trade waste capacity. The Council has a team dedicated to the management of trade wastes and impacts.

- Increasing environmental expectations may lead to pressure for wastewater infrastructure and treatment plant upgrade through the resource consent renewal process.
- There are some risks in un-serviced communities with inappropriately designed, installed or maintained septic tanks. Whilst it is unlikely that the Council will reticulate these areas in the foreseeable future, the Council is considering mechanisms that would ensure septic tanks and on-site wastewater disposal systems are installed and maintained in a manner that prevents their failure and ensures effective operation.

3.3 Asset condition

3.3.1 Pipe network

- A "top-down" assessment of the pipe condition has defined the condition grade profile as shown in Figure 8 (where grading 1 indicates very good condition and grading 5 indicates that pipes have failed or are about to fail). The network is generally in moderate condition, and assessed to be in better condition than in 2000.

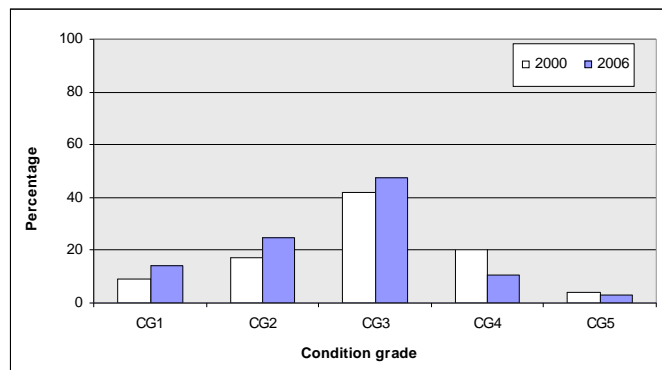


Figure 8 - Citywide condition grade profile for wastewater pipes

- Sections of the main interceptor were visually inspected in 2002, 2003 and 2004 and found to be in better than expected condition with residual life estimated to be in the order of 80 years.

3.3.2 Pumping stations

- The mechanical and electrical plants at the pumping stations are assessed to be in good working order after recent upgrades.

3.3.3 Treatment plants

- The Moa Point and Western Wastewater Treatment Plants are operated under contract by United Water International (UWI). They are assessed to be in good condition and are covered in separate asset management plans being prepared by UWI.
- The Porirua treatment plant is operated by Porirua City and Wellington City Council makes an annual contribution for loan payments, operating and maintenance costs associated with wastewater treatment, the trunk sewer, pumping station and the cost of treating trade waste.
- The 1.8km ocean outfall from the Moa Point Wastewater Treatment Plant is assessed to be in good condition.

3.4 Significant negative effects

The potential significant negative effects of the wastewater activity are:

Environmental values can be degraded by:

- overflows of untreated wastewater from the wastewater network due to blockages, pump station or other plant malfunction, excessive inflow/infiltration of stormwater into the wastewater network and/ or insufficient design capacity
- discharge of partially treated wastewater effluent through the long outfall on the South Coast due to treatment facility overflow or process failure, causing contamination of marine waters (the discharge of fully treated effluent into the ocean has no significant impact on the receiving water quality)
- disposal of treatment by-products, such as bio-solids, discussed in more detail in the composting plant asset management plan
- environmental damage caused by inappropriate or poorly maintained septic tanks in non-reticulated (rural) areas.



Social – the quality of life and public health can be diminished by:

- overflows of untreated wastewater from the wastewater network
- odour from the treatment facilities
- health risks from inappropriate or poorly maintained septic tanks in non-reticulated (rural) areas.

Cultural sensitivities are compromised by:

- overflows of untreated wastewater from the wastewater network
- discharge of partially treated wastewater effluent to the South Coast due to treatment facility overflow, causing contamination of marine waters
- overflows of untreated wastewater from inappropriate or poorly maintained septic tanks in non-reticulated (rural) areas.

Economic costs to the community are incurred to clean up wastewater contamination.

The Council mitigates these potential negative effects through a mix of:

- asset management planning
- monitoring and testing
- asset maintenance, renewal and development work
- compliance with comprehensive environmental and health and safety procedures
- demand management initiatives
- public education

3.5 Levels of service

3.5.1 Broad approach

The Council plans to continue delivering broadly the same level of service within the wastewater activity, with gradual reductions to wastewater overflow frequencies and consequent improvements to environmental protection. Operational improvements introduced are expected to increase operational efficiency, cost-effectiveness and environmental performance through:

- developing robust frameworks to increase confidence in correct project option selection and works prioritisation
- reviewing, consolidating and implementing outcomes from studies examining inflow and infiltration.

3.5.2 Performance measures

The contribution of the wastewater activity to the achievement of the city's Community Outcomes is measured by the activity key performance measures presented in the Long Term Council and Community Plan (LTCCP). They cover the aspects of service that are of most interest to the community and are reported in the Annual Report.

The Council has developed a number of operational measures to enable us to assess the overall quality of the wastewater activity (such as environmental, technical and cost effectiveness standards). These measures are reported on in the detailed asset management plan.

The current and future activity measures adopted, and the level of performance achieved, are shown in Figure 9.

Performance measure	Target	How we are doing
Activity measures		
<ul style="list-style-type: none"> Response time to service requests – percentage of service requests responded to within one hour of notification (response includes investigation and prioritisation of work). 	07/08 97%	
	08/09 97%	
	09/10 97%	
	17/18 97%	
<ul style="list-style-type: none"> Customer satisfaction – percentage of customers who are satisfied with work carried out (specific to wastewater collection and disposal operations and maintenance activities). 	07/08 75%	
	08/09 75%	
	09/10 75%	
	17/18 80%	
<ul style="list-style-type: none"> The percentage of monitored consented harbour/coastal sites where the median annual level of faecal coliform bacteria counts are less than 2000 per 100ml. 	07/08 80%	
	08/09 80%	
	09/10 80%	
	17/18 80%	
<ul style="list-style-type: none"> Wastewater treatment resource consent compliance – the number of infringement notices received. 	07/08 Nil	<p>Achieved</p>
	08/09 Nil	
	09/10 Nil	
	17/18 Nil	
<ul style="list-style-type: none"> The percentage of businesses producing trade waste that are inspected throughout the year 	07/08 100%	<p>100%</p>
	08/09 100%	
	09/10 100%	
	17/18 100%	

Figure 9- Activity and operational performance measures

3.6 Community engagement

The Local Government Act (2002) requires the Council to consult with affected and interested parties in making decisions. The Council ensures that all interested stakeholders have an opportunity to influence level of service decisions by:

- ongoing consultation with the community regarding community outcomes as part of the LTCCP development
- consultation with the community in 2000 as part of the Strategic Review (for the consultation process, alternative levels of service were developed together with associated cost implications, but feedback received from the community was not comprehensive)
- consultation as part of the preparation of the Assessment of Water and Sanitary Services (2005), including the consultation with Ngati Toa and the Tenths Trust, the Makara and Ohariu valleys, the South Karori and Horokiwi communities, and 157 resident and special interest organisations
- making asset management plans available on the request
- consulting with affected persons on specific projects (as required by the Resource Management Act 2001)
- distributing newsletters with rates notices.

While much of the Council's consultation will continue to be done at a high level, there is a need to seek the community's view on the trade offs necessary where there are conflicting goals. We need to establish a balance between capacity and cost; this is realised in the frequency and location of overflows from the network resulting in potential public health and environmental risks, and financial and other implications of improving this.