

ISSUE 2
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Wellington City ICMP NEWS

An Integrated Catchment Management Plan (ICMP) is a plan for the sustainable management of fresh and coastal water and ecosystems.

In this issue

Welcome to the second edition of ICMP News which focuses on the Lambton Harbour catchment wastewater network and ongoing investigations.

Lambton Harbour catchment

Wastewater networks

Wellington Water implements a proactive programme to investigate the condition of "critical" wastewater pipes.

Keeping it in the pipes

Wellington Water is committed to monitoring, identifying and remedying wastewater contamination into stormwater networks.

Further areas of investigation

ICMP Process

2011

Wellington City's stormwater discharge consents were granted.



March 2014

First step - produce a Stage 1 Report. Completed - March 2014.



March 2018

Next step - prepare detailed Stage 2 ICMPs. To be completed by March 2018.

Stage 2 requires detailed investigations to identify management options for minimising catchment issues. Some of the Stage 2 tasks are being carried out as part of Wellington Water's "business as usual" operations as defined by Wellington Water's Three Waters Strategic Plan and Regional Asset Management Plan.

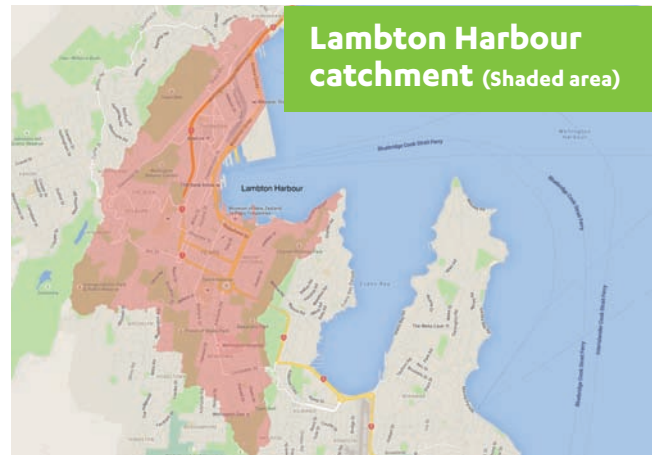
Work done since March 2014

Stage 2 work to date:

- developed Stage 2 Project Plan
- identified investigation requirements
- determined indicative action plans
- engaged industry experienced professionals to complete pipe network modelling.

Where are we at now?

We are currently focussing on detailed assessments of the wastewater and stormwater networks in the Lambton Harbour catchment.



Lambton Harbour catchment

The Lambton Harbour catchment consists of a mix of dense, high-rise commercial offices, retail malls, hotels, clusters of restaurants and bars, and residential apartment blocks.



This image illustrates the dense and high rise nature of the catchment.

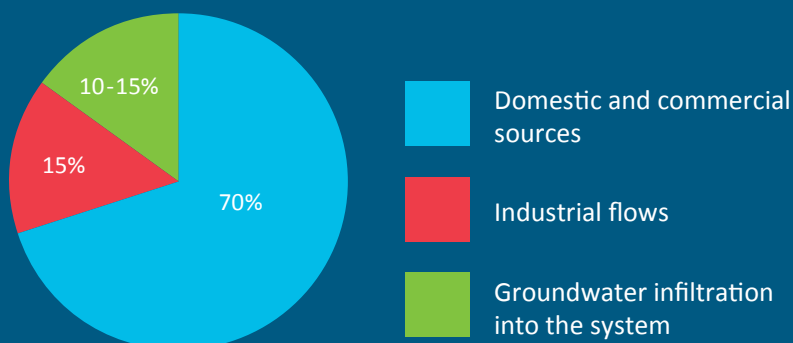
The Lambton Harbour catchment stretches from the northern coast along Aotea Quay to the beach front of Oriental Bay, and collects stormwater from the Lambton basin, stretching as far south as Aro Valley, Mt Cook and Newtown. Its commercial activities include the Port of Wellington, Inter-island ferry terminals, and a large marina. Recreational amenities include the waterfront, Oriental Bay beaches and boat launching and mooring facilities. In addition to the dense development in the Lambton basin, the catchment has large open areas, including the Botanic Gardens and Tinakori Hill. The neighbouring areas surrounding the CBD have low to medium density residential areas.

The stormwater drainage system of the Lambton Harbour catchment discharges into Wellington Harbour. Eleven major outfalls are located between the Overseas Passenger Terminal and the Blue Bridge Ferry Terminal.

Much of the Lambton Harbour catchment wastewater pipeline system is old. Pipe age and structural condition are often factors that affect the infiltration to, or exfiltration from, pipe networks. These factors largely contribute towards a decline in stormwater quality.

Whilst progressive renewals of the public wastewater network pipes are being undertaken, very little maintenance takes place in the private network. The majority of the older pipes in the network are earthenware or concrete.

Present day wastewater sources (approximation)

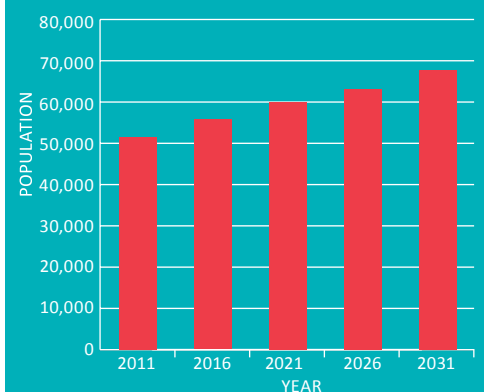


Population growth

Over coming years the population of the Lambton Harbour catchment is anticipated to increase significantly. This population growth will place pressure on existing stormwater and wastewater networks.

Population projection for Lambton Harbour catchment

(Reference: Forecast ID, 2011).



Wastewater networks

1890s

The earliest parts of Wellington's wastewater network were established.

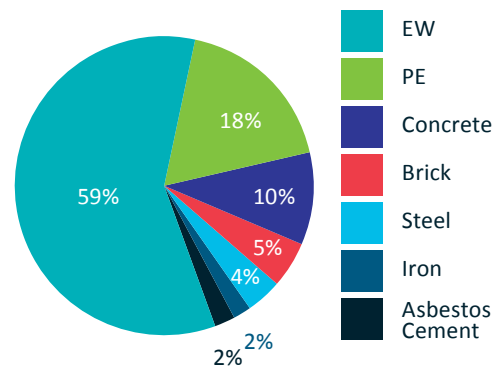
Between 1915 & 1960

Most of Wellington's drainage network was constructed. The majority of the wastewater network in Lambton Harbour catchment is mortar jointed earthenware, brick or concrete pipes.

Today

Today most of the wastewater pipes are earthenware (EW), and other common pipe materials comprising of polyethylene (PE) and concrete.

Today the proportion of wastewater pipe materials within the catchment is:



Wellington Water has a proactive programme to investigate and maintain the condition of wastewater pipes and its operation. This investigation work programme consists of the following:



Environmental monitoring and sanitary surveys



Flow monitoring to assess the wastewater flow volumes in relation to pipe capacity



Overflow monitoring of:

- constructed overflow weirs which are activated in wet weather, when flows exceed pipe capacity
- reticulation overflows, which happen if pipes get blocked, in wet or dry weather
- pump stations, when wastewater inflows exceed pump or storage capacity



CCTV (closed-circuit television) inspection programme to identify pipes that are damaged or blocked, for example, by fat build ups or tree roots



Subcatchment wastewater modelling assess the capacity of individual pipes and the overall performance of the piped wastewater network

These programs are used to assess the condition of the assets and to identify pipe renewal and maintenance methods.

Keeping it in the pipes - preventing pollution



Wellington Water Limited

Committed to monitoring, identifying and remedying wastewater contamination.

We have a pollution investigation team to identify the causes of pollution incidents and implement procedures to help prevent recurrence.

Stormwater often can be contaminated by wastewater in different ways: pipe leakage due to age/state of condition, pipe blockages, private network faults, and wet weather overflows which occur when the pipe capacity is exceeded by stormwater entering into the system.

Work in progress - based on information gathered under different work programmes:



Determining the location of pollution sources within Lambton Harbour



Considering how the condition of the wastewater network has affected the stormwater quality results observed



Interpreting the results of stormwater quality samples taken over recent years in catchments leading to the Lambton harbour



Identifying potential methods to manage and reduce pollution within Wellington Harbour

Further investigation areas

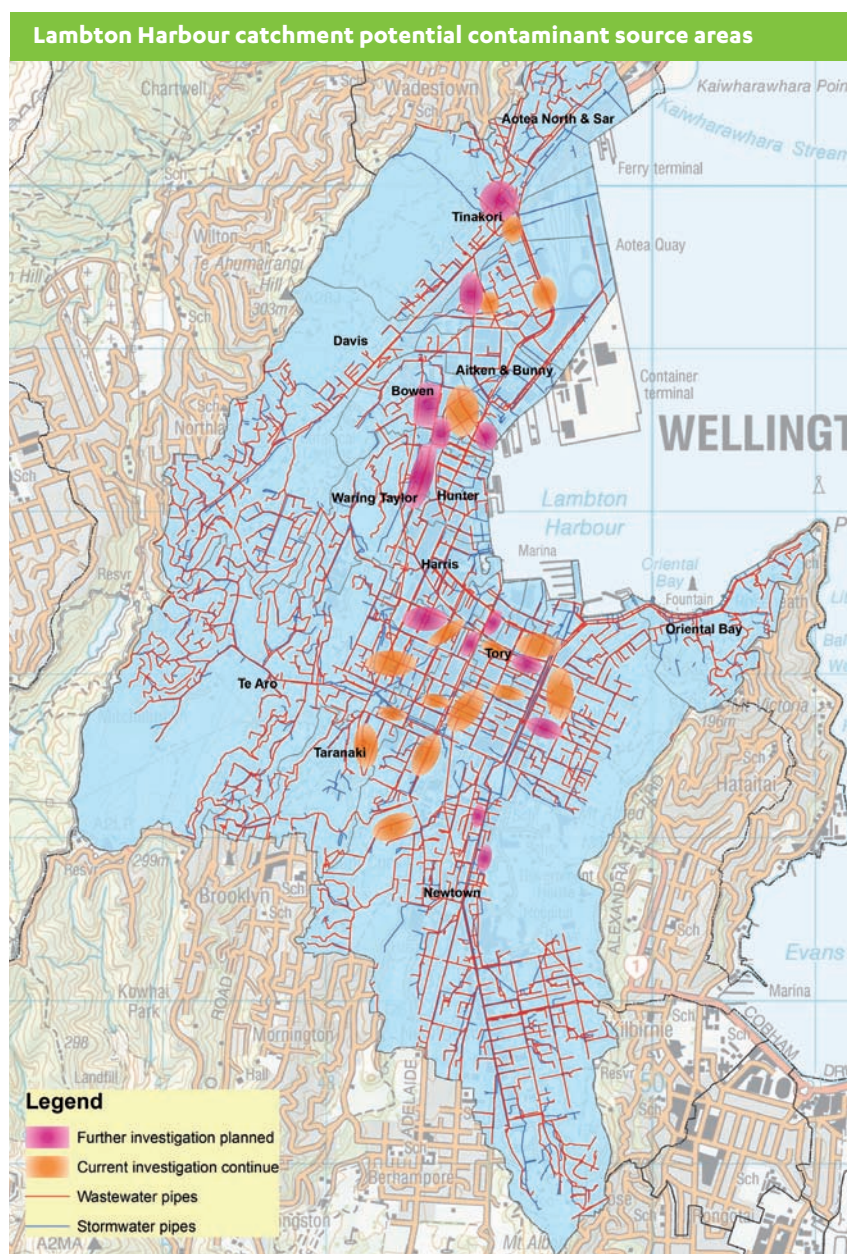
A detailed investigation has been undertaken in order to find pollution sources and reduce pollution within Lambton Harbour catchment. Information used during this investigation includes:

- Stormwater quality samples collected since 1 July 2012
- Existing structural condition of wastewater pipes
- Levels of risk associated with any potential structural failure within the wastewater network
- Existing land use.

The investigation has identified potential contaminant source areas for the Lambton Harbour catchment. Source areas were categorised into priority areas and caution areas. In order to verify the extent of pollution in these areas more thorough investigation and analysis is required. The following additional actions will be carried-out to identify issues and solutions.

- More in-depth CCTV and water quality monitoring
- Education and awareness programmes on potential accidental and illegal discharges
- Flow and overflow monitoring by installing flow meters and depth sensors.

Potential contaminant source areas for the Lambton Harbour catchment are shown in the map below.



Pipes CCTVed since 2007

About 41% of public wastewater pipes have been inspected since 2007 in the Lambton harbour catchment to determine pipe conditions.

