



**Te Whanganui-o-Tara  
Whaitua Committee  
Wastewater Issues Overview**

Steve Hutchison – Chief Advisor Wastewater



Our water, our future.

## Wellington and Public Health



**Night-man night-soil collection Dunedin, 1912**

Otago Settlers Museum Ref 1989/268/13

- **1840** – Wellington European settlement commenced – first ship of 150 settlers - ‘**Aurora**’
- **1841** – population 3,227 most waste to cesspits
- **1865** – Wellington becomes NZ Capital. Sewage washed into grounds from surrounding streets
- **1870** – no well water was safe to drink
- **1872** – NZ Public Health Act – sewerage systems required - cesspits banned
- **1875** – John Plimmer and other businessman strongly opposed to sewers and high cost of scheme
- **1876** – Population 10,956. Mortality of 26.01 per 1000 per year



### Wellington Typhoid outbreak 1892

Wellington City Archives (Ref 00233:84:1892/740 Typhoid Map)

- **1878** – First sewer scheme developed by W.Clark (£145,000) – 25% combined – 1 inch rainfall
- **1880** – population 20,000 – night soil collection
- **1888** – Shone pneumatic ejector system proposed (H.P Higginson).
- **1890** – 77 deaths linked to sewage soaked backyards. Drainage Commission appointed by Wellington Council - consisting of Engineers E. Cuthbert and W Ferguson. Scheme recommended.
- **1893** – Sewerage scheme construction started
- **1899** – Sewer network largely completed at a cost of £175,000
- **1901** – population 50,000 -

# Our wastewater network

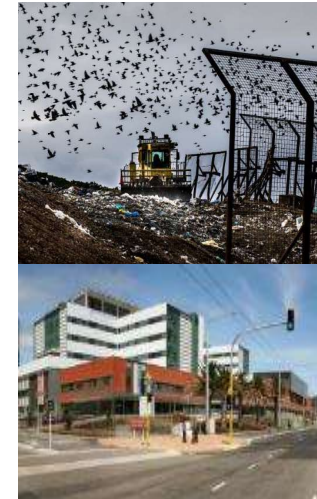


Our homes

Private laterals



Council mains



Business and trade waste



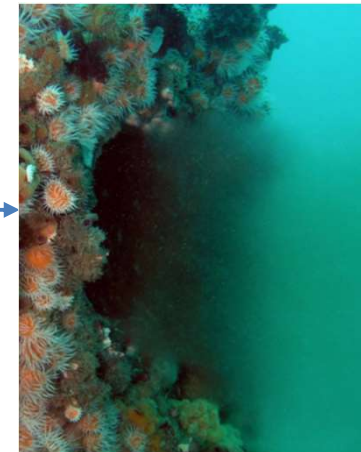
Pumping stations

Reticulation network  
2400 km



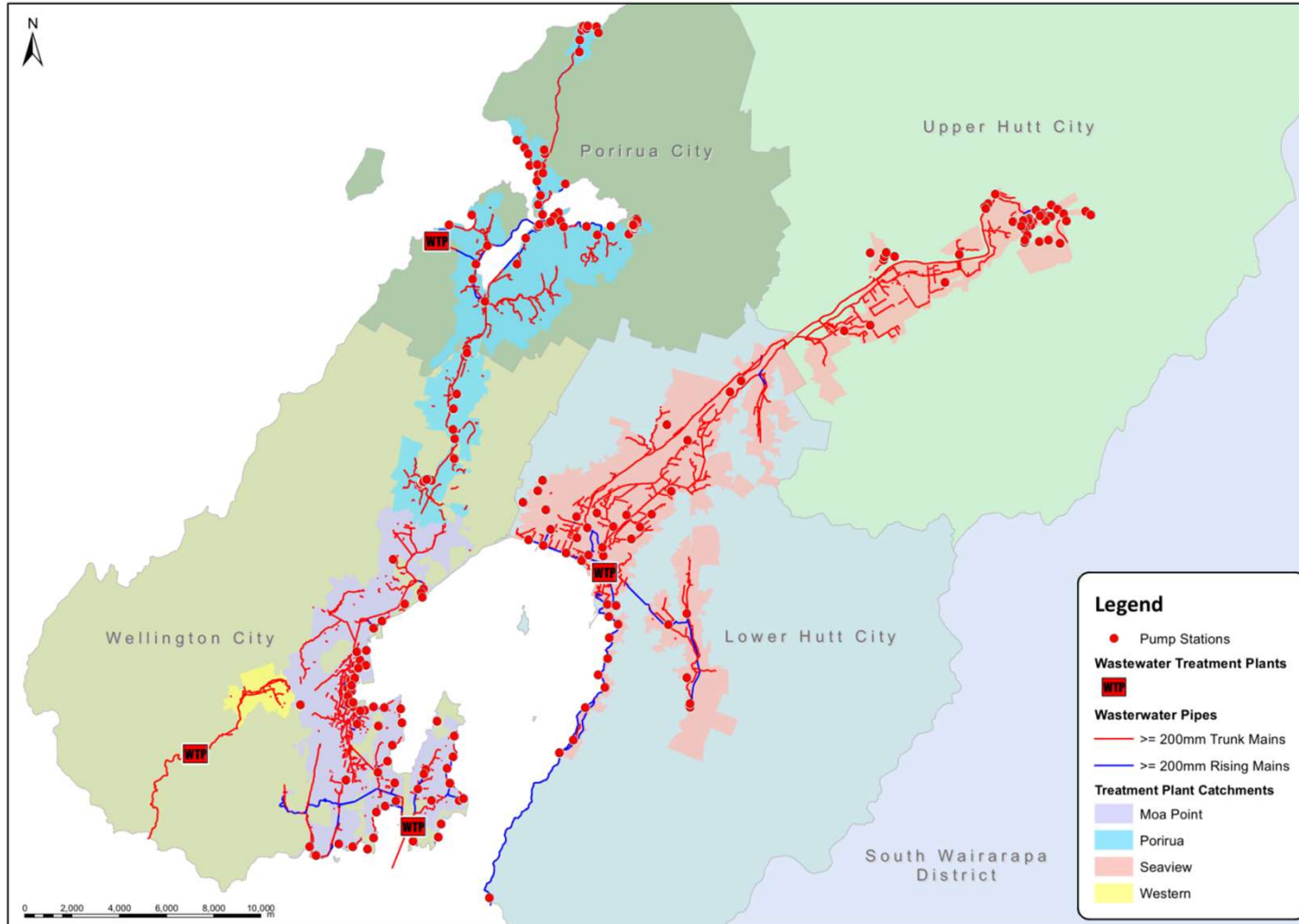
Treatment plants

Coastal discharge



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# Network layout



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# Wastewater components

- Currently 420,000 population
- Average 150 million litres wastewater daily
  - 50-60 tonnes faecal matter
  - 500,000 litres urine
  - Trade Waste
  - Groundwater infiltration
  - Mostly “greywater”
- Other solids / fats / rubbish

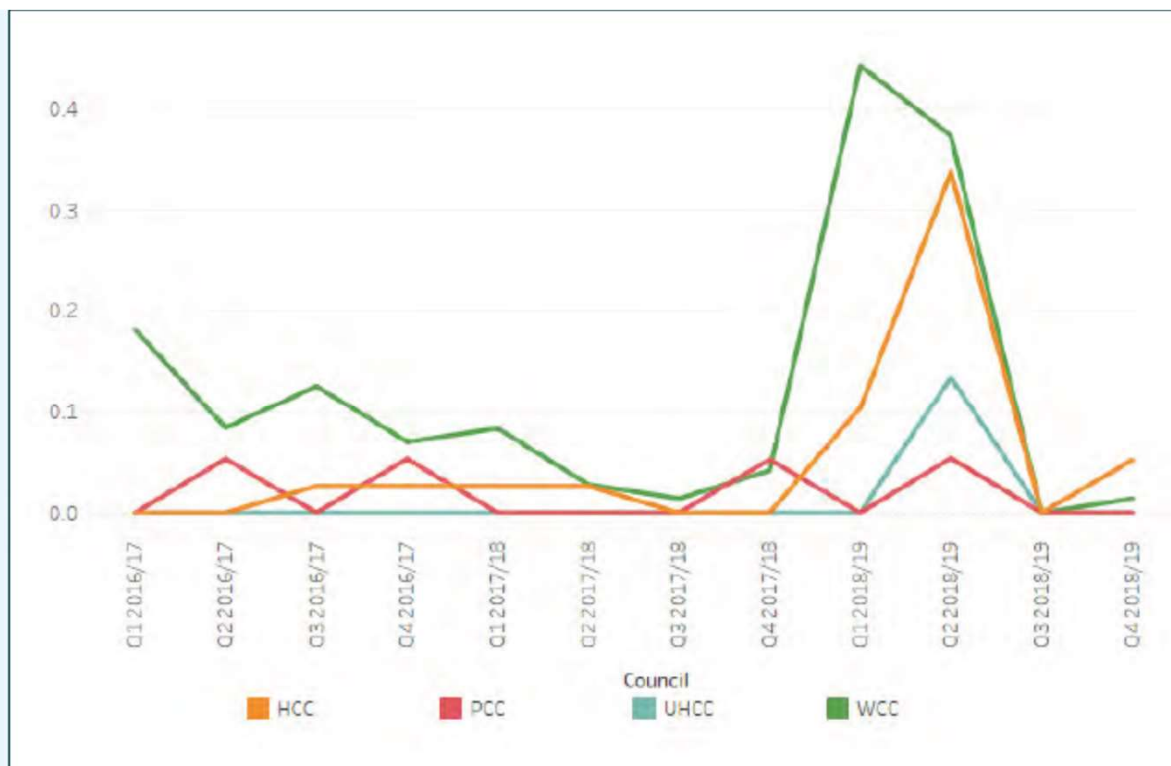


# Challenge 1 - Dry weather blockages

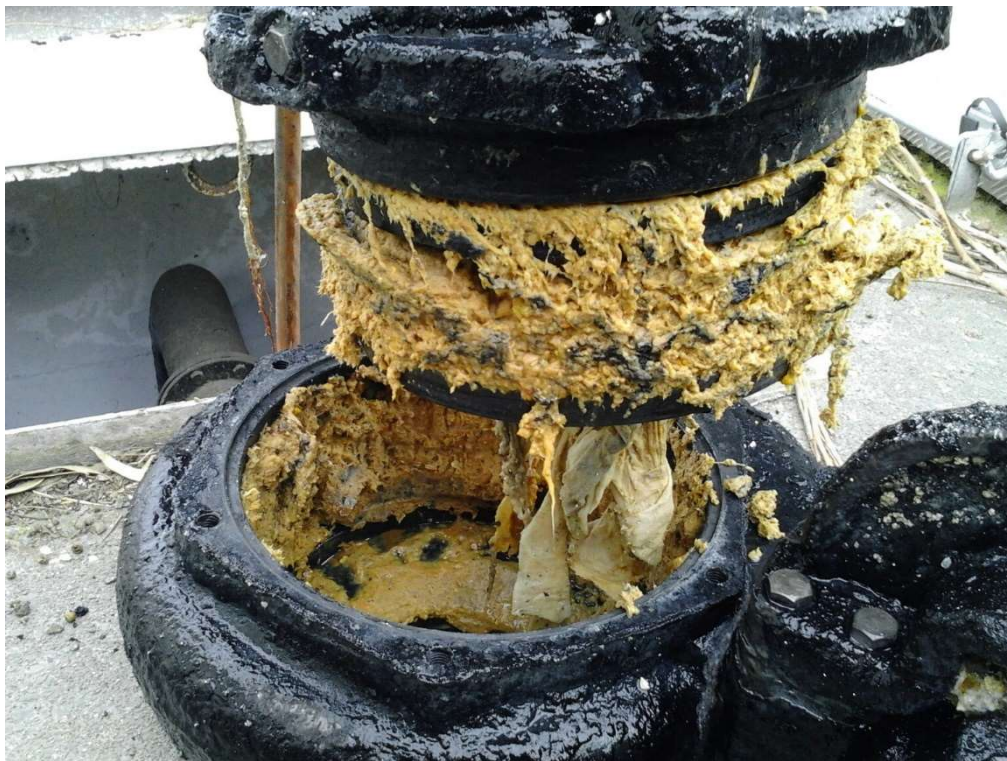


## Wastewater overflows (dry weather)

Eliminating dry-weather overflows continues to be a challenge. No dry weather overflows occurred in quarter three, however we will not achieve the target for year-end due to blockages in quarter one and two.



# Wet wipe blockages





# Public education campaigns



<https://www.youtube.com/watch?v=omCOYw3C9lw>

## WHAT COULD BE LURKING IN YOUR PIPES?

Sometimes things end up in the wastewater system that shouldn't be there, and these unwelcome items can cause havoc on pipes, which can cost you a lot of money to fix.

'Rag Monsters' are made up of wet wipes, nappies, cloth, tampons, sanitary pads, hair and other non-biodegradable material.

These items have no place in the wastewater system and should never be flushed down the toilet.

### ONLY FLUSH THE '3 PS' DOWN THE TOILET:

- PEE
- POO
- (TOILET) PAPER.



## PROTECT YOUR HOME, AND SAVE MONEY ON PLUMBER'S BILLS!

'Fatbergs' are lumps of congealed fats, oils, and food waste washed down your sink. They grow larger as they pass through your home's pipes.

These monstrosities love nothing more than hanging out until they are big enough to burst through pipes, causing wastewater overflows that can contaminate your home, the environment, or ruin important infrastructure.

These items have no place in the wastewater system and should never be poured down the sink.

### PUT FATS AND OILS IN THE BIN!



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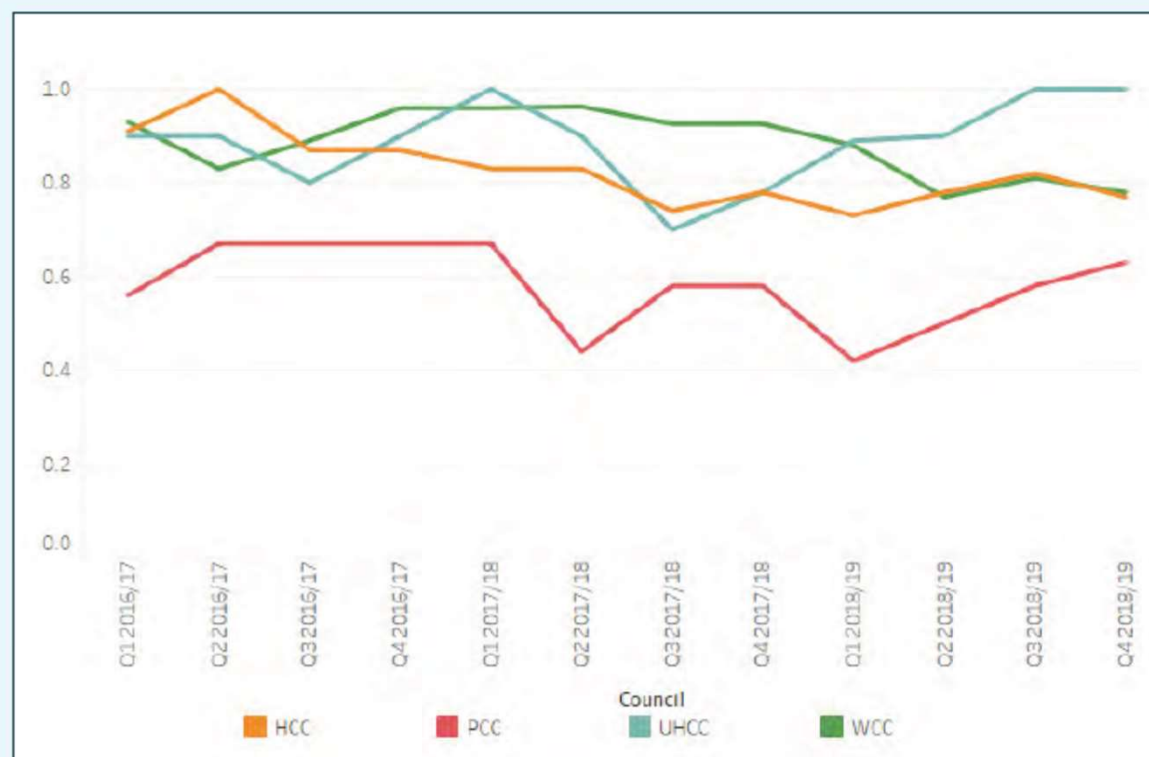
# Challenge 2 – Leaks and overflows



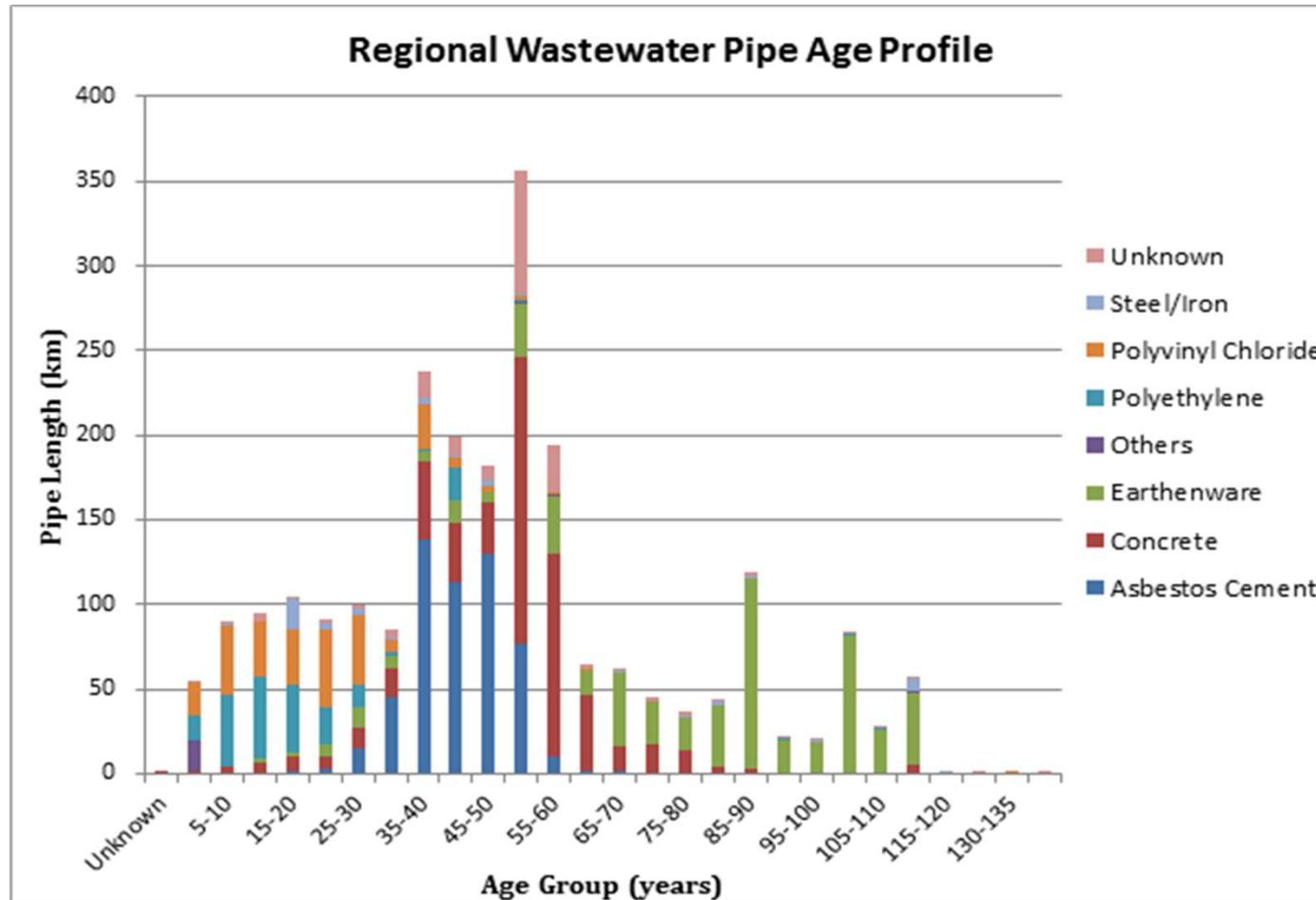
## Freshwater quality

**Target:** 90 per cent of all freshwater sites have a rolling 12 month median < or + 1000 colony forming units (cfu)/100ml.

We currently monitor freshwater sites and beaches. Some of these sites exceed pollution target levels. This is a long-term ongoing initiative to identify and remove sources of pollution. Test results from freshwater monitoring sites have shown a decline in water quality over the last 12 months.



# The wastewater pipe network

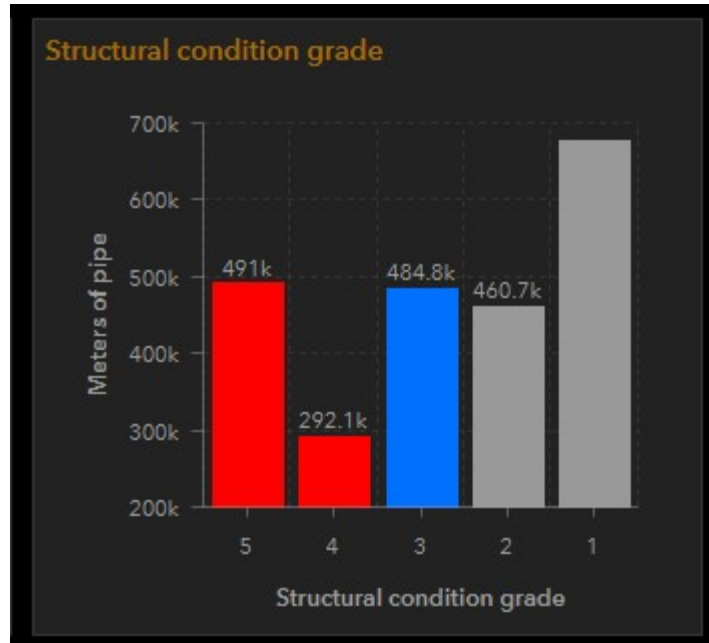


# Inflow & Infiltration

- 10% fault rate

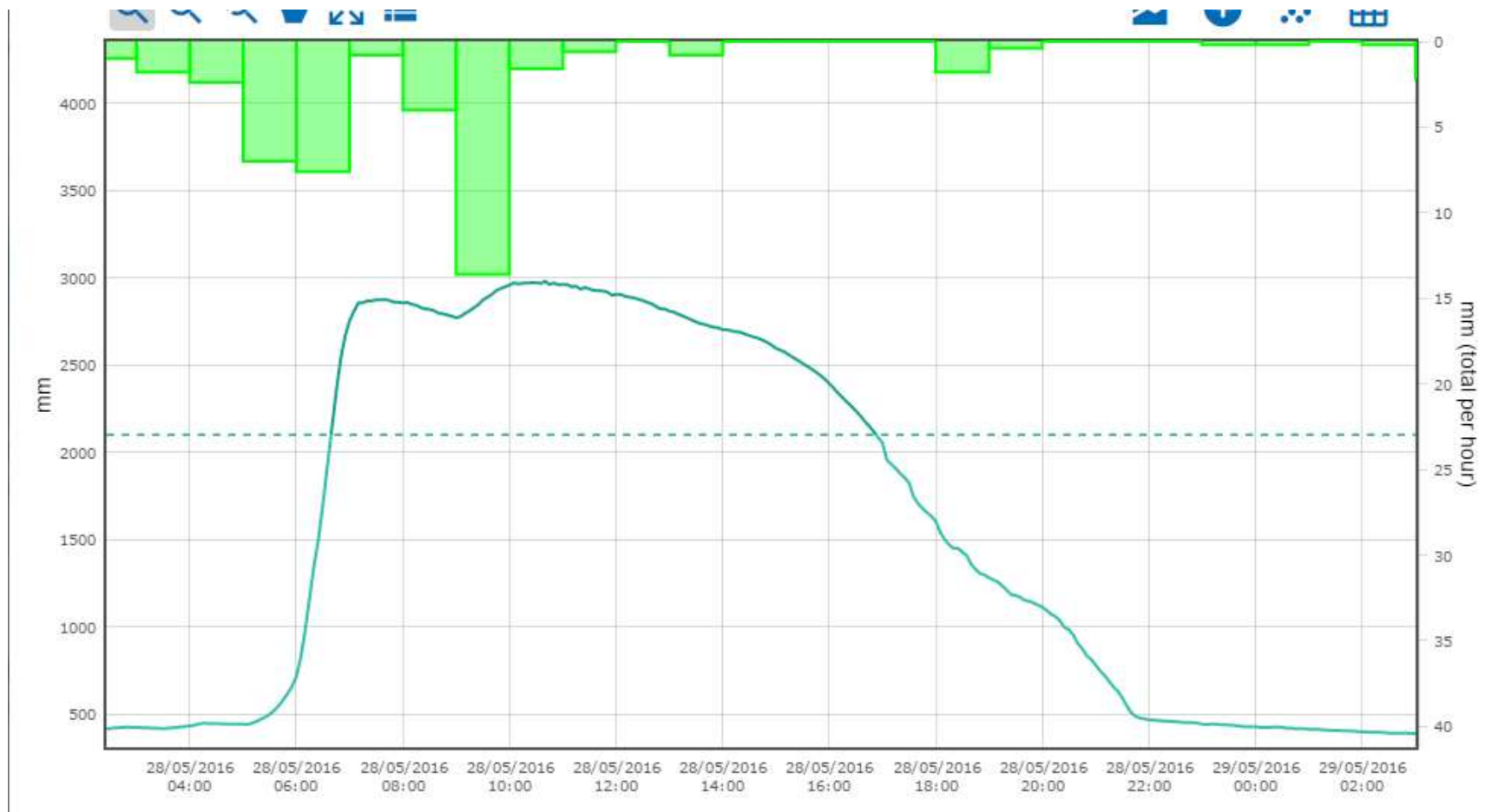


# Network faults – CCTV inspection



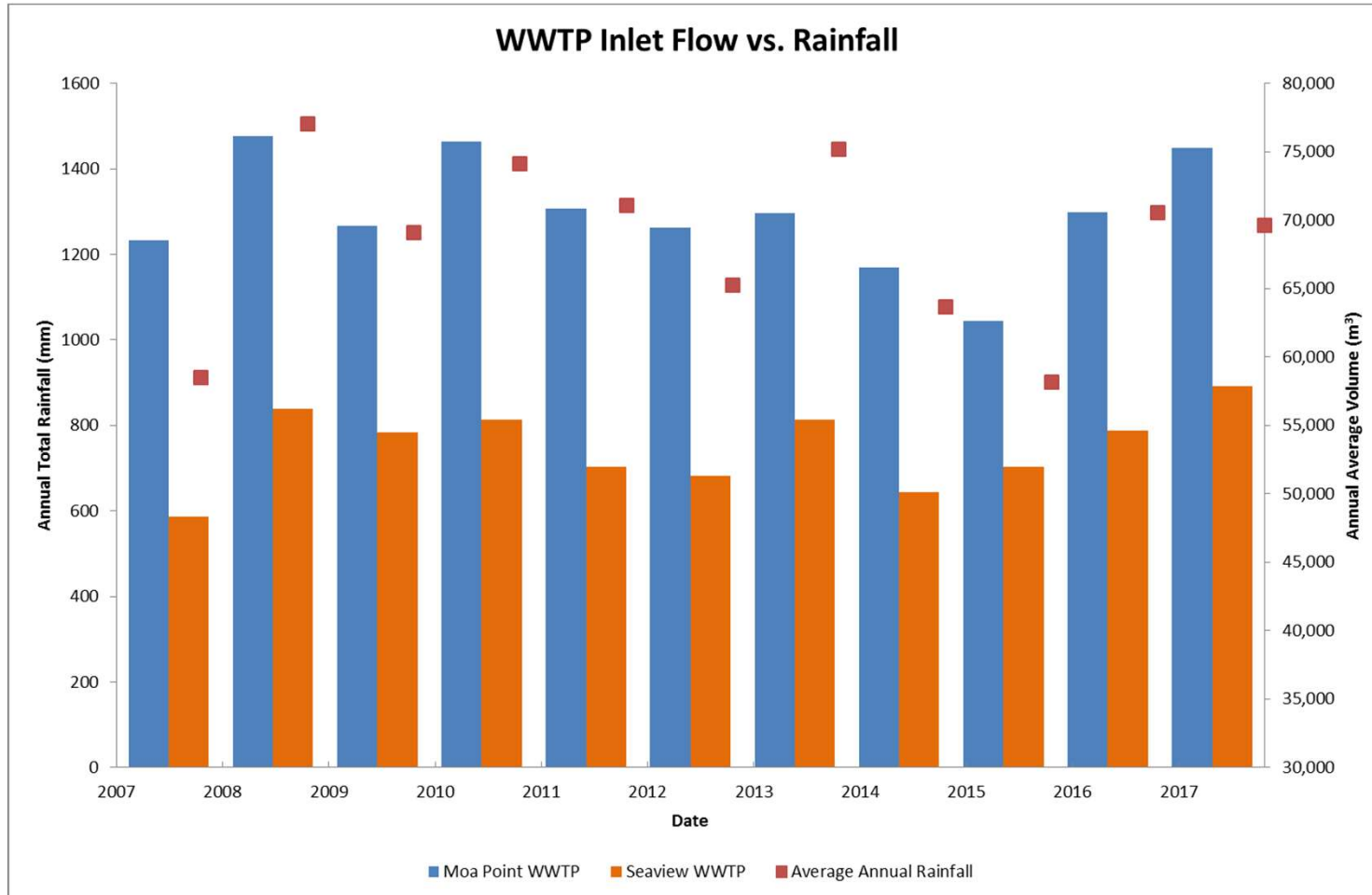
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# Example of storm event



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# Rainfall impact on wastewater flows



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# Overflow overview



Wastewater network regional overview

Not secure | wellingtonwater.maps.arcgis.com/apps/opsdashboard/index.html#/958af7fb065647dc98ad0c7a1fafd64c

### Wastewater Network Overview

**Legend**

Standard overflow notification - WOSNMP

Number of features

- > 96
- 70
- 50
- 20
- 1

**RDII Assessment**

- Average
- Low
- High

Catchment: **Ascot Park** RDII: Average

Location: **Simple St** Alpha score:

**555841 m**  
Pipes high priority

**342279**  
Customers

Map | Flow Monitoring - Mott McDonald | GWRC Environmental Data

**Wastewater Overflows (Dry & Wet)**

Year	Overflows
2010	14
2011	45
2012	20
2013	5
2014	12
2015	7
2016	24
2017	9
2018	25
2019	61
2020	15
2021	92
2022	130
2023	154
2024	137

**Structural condition grade**

Structural condition grade	Meters of pipe
5	450.7k
3	253.9k
1	418.7k
1	364.1k
1	537.4k

**Water Quality - Consented Culverts & Freshwater**

Legend:

- Island Bay Cnr Parade/Reef Street
- Lyall Bay East Culvert
- Lyall Bay West Culvert
- Karori Stream at Campbell Street Bridge

Serial Chart | Water Quality Power BI

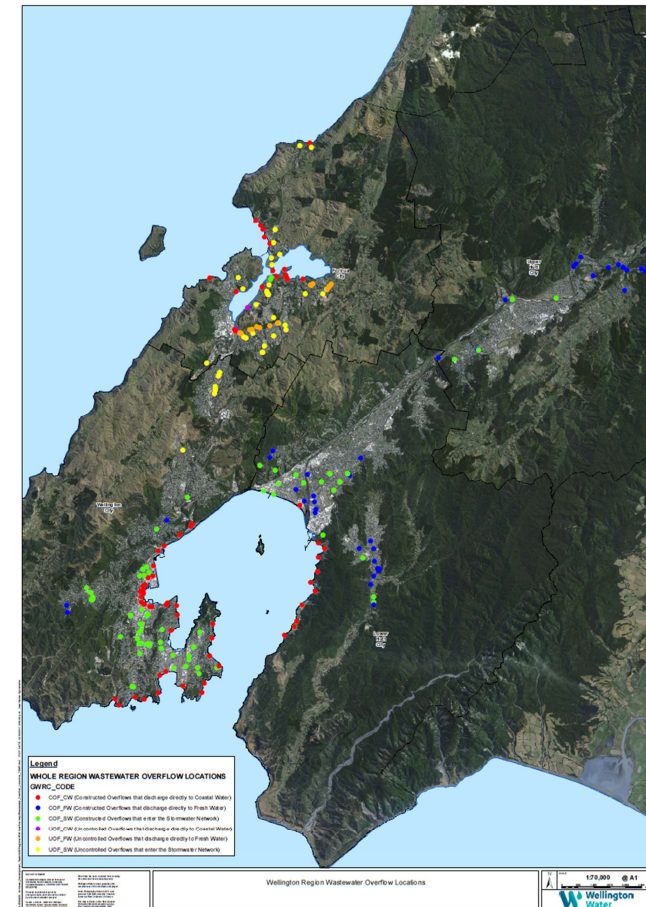
Windows Taskbar: 8:51 AM 23/09/2019

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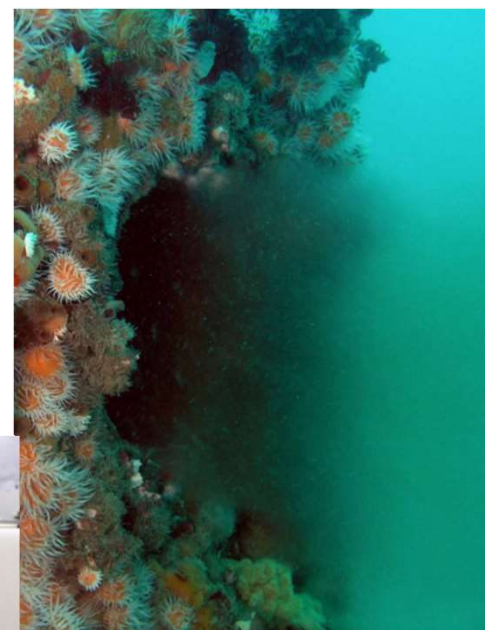


# Reducing network impacts

1. Increasing capacity
2. Improving condition
3. Reducing infiltration



# Challenge 3 - Wastewater treatment



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# Sludge generation

## SEWAGE SLUDGE

Wastewater treatment produces sludge as a by-product

### OUR FUTURE CHALLENGE

#### SLUDGE TO LANDFILL

**Sludge**

- Our four cities produce more than 24,000 tonnes of sludge every year. We mix it with general waste before disposal.
- The 'mix ratio' makes disposal to landfill safe and stable.
- Burying sludge in landfills is not best practice - burying sludge is not sustainable.

#### LIFE CYCLE TO BIOSOLIDS

- Biosolids are a result of treated sewage sludge.
- Biosolids can contain nutrients and carbon that can be beneficially used on land, or used to produce energy.
- Our councils can collaborate on options to use biosolids beneficially.

#### LANDFILLS

- Consents for all Wellington landfills need to be renewed within the next ten years.
- Landfills close to urban areas are getting increasingly harder to consent.
- Landfill gas from Wellington's Southern and Silverstream landfills is used to generate electricity.

#### SLUDGE TREATMENT

- There is opportunity for sludge treatment improvements.
- Treatment can be a large investment.
- Wastewater treatment contracts end 2020.
- Wellington Water plan to go to the international market for operation of the four regional Wastewater Treatment Plants.

#### OUR COUNCILS

- Landfill management is different across the four councils.
- "Diverting biosolids material to beneficial use should be investigated" - Waste Management and Minimisation Plan (2017-2023).
- Ten-year time horizon for planning.

#### LESS WASTE + MORE SLUDGE

- Waste reduction efforts are succeeding.
- The mixing of sludge and general waste is not sustainable for the future.
- Reducing the reliance on sludge to landfill will reduce greenhouse gas emissions / carbon footprint.

**By 2026** Waste Management and Minimisation Plan aims to reduce sewage sludge sent to landfills from

64KG TO 4KG

PER PERSON PER ANNUM

Wellington City Council's target for **80% reduction** in city-wide carbon emissions **by 2050**

Our region's population is expected to grow by about **80,000** by 2043

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# Questions

