# Backflow Prevention – and the Plumber

Fiona Gavriel
Chief Executive Officer
Master Plumbers, Gasfitter and Drainlayers NZ Inc

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# The Greeks and Romans – where it all started

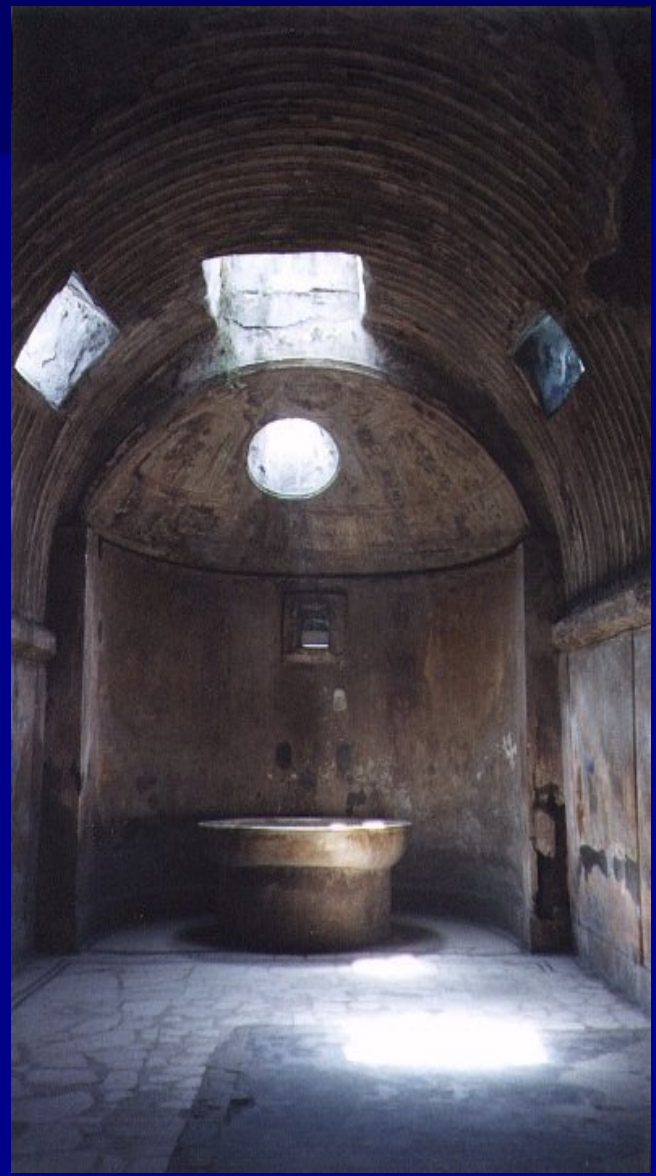
- Drainage systems were known to exist in Crete around 1700BC
- During the Roman empire the plumber was a worker in lead: “plumbus” is the latin word for “lead”
- Involved soldering, installation and repairing of pipe; he worked on roofs and gutters, down to sewers and drains - essentially everything involving supply and waste
- First sewer in Rome built between 800 B.C. and 735 B.C. This sewer is one of the largest of the ancient sewers still in use. It was designed to carry off the surface water, and otherwise provide drainage for the entire city

# Plumbing in Pompeii

- Aqueducts supplied water to the town using pipe fitting into a one-foot square block of stone servicing as an elbow, with connecting holes cut into the adjoining walls
- Water flowed continuously into a private home through a nozzle, the homeowner paying water rates according to the nozzle size.  Some homes had 30 taps

# Plumbing in Pompeii

- At the reservoir where the service pipe was attached, engineers installed a kind of ball float, resembling the modern type, to assure a reasonable steady flow of water
- Each length of service pipe carried the subscriber's name to prevent any unpaying freeloaders from tapping into his neighbour's pipe
- The plumbers of Pompeii had a flourishing trade that included fashioning gutters of lead for the private homes. Underneath the roof a tank collected the rainwater which ran down from the roof tiles



# The English connection

- The Romans introduced the concept of bath houses under the influence of Emperor Claudius
- Cleanliness was not a priority – and the bath houses became synonymous with brothels
- The protection of the environment and public was a low priority

- The common approach to waste was to throw it into the streets – the Thames was known to smell so much Parliament would be adjourned in hot weather
- Injuries were common from items being thrown out of windows
- Early Roman law included an Act, which fined a person who threw or poured anything out of an open window and hit someone. The law awarded damages to the injured party. Strangely, the statute applied only during daytime hours.
- Eventually a law was passed banning this habit

- In 1848, England passed the national Public Health Act, which would become a model plumbing code for the world to follow
- It mandated some kind of sanitary arrangement in every house, whether a flushing toilet, or a privy, or an ash pit
- The government also released 5 million British pounds for sanitary research and engineering, and began to build a sound sewer system
- The manufacture of toilets also increased

- This helped but did not eliminate the outbreak of typhoid from time to time
- In 1871 the Prince of Wales lost several friends – and almost his own life – to typhoid which was traced to contamination in the plumbing lines
- The Prince was attributed as saying:

  "If I could not be a prince, I would rather be a plumber."

*Thanks to Plumbing and Mechanical, USA for this information*

# Why does this history matter?

- Plumbing is a proud and long standing profession
- It contributes to and protects the health of New Zealand – clear focus of the Plumbers, Gasfitters & Drainlayers Act 2006
- We need to recognize the work of plumbers – including their role in backflow prevention

# Where are we now?

As at June 2009 13,356 licences issued by the PGD Board:

| | |
|---|---|
| Craftsman Plumber | 3,189 |
| Registered Plumber | 955 |
| Limited Certificate Apprentice Plumber | 1,206 |
| Limited Certificate Plumber | 795 |
| TOTAL | 6,145 |

Compared to:

2,528 Gasfitting 4,651 Drainlaying

Balance - exemptions and Gas Inspectors

# Plumbers, Gasfitters & Drainlayers Act 2006

- Regulations currently under development – will come into force on 1 April 2010
- Act defines sanitary plumbing loosely as “the work of fixing or unfixing any sanitary fixture or sanitary appliance, or any associated fittings or accessories”
- Also includes “the work of fixing or unfixing any pipe that .... is within the legal boundary of the premises on which that sanitary fixture or sanitary appliance is or will be installed (whether or not that sanitary fixture or sanitary appliance is there when the work is done”

- Therefore backflow prevention devices within the boundary are the realm of the Plumber

- That is:  work carried out inside the boundary in relation to a backflow prevention device must be undertaken by a Plumber – an IQP who is not a Plumber can inspect, but not remedy

# Backflow protection

The abbreviated objectives of G12 of the NZ Building Code are:

**G12.1** ... to safeguard people from illness caused by contaminated water

**G12.2** *Buildings* provided with water outlets, *sanitary fixtures* or *sanitary appliances* must have safe and *adequate* water supplies

**G12.3.1** water intended for human consumption, food preparation, utensil washing or oral hygiene must be potable

**G12.3.2** A potable *water supply system* shall be–

(a) protected from contamination; and

(b) installed in a manner which avoids the likelihood of contamination within the system and the *water main*; and

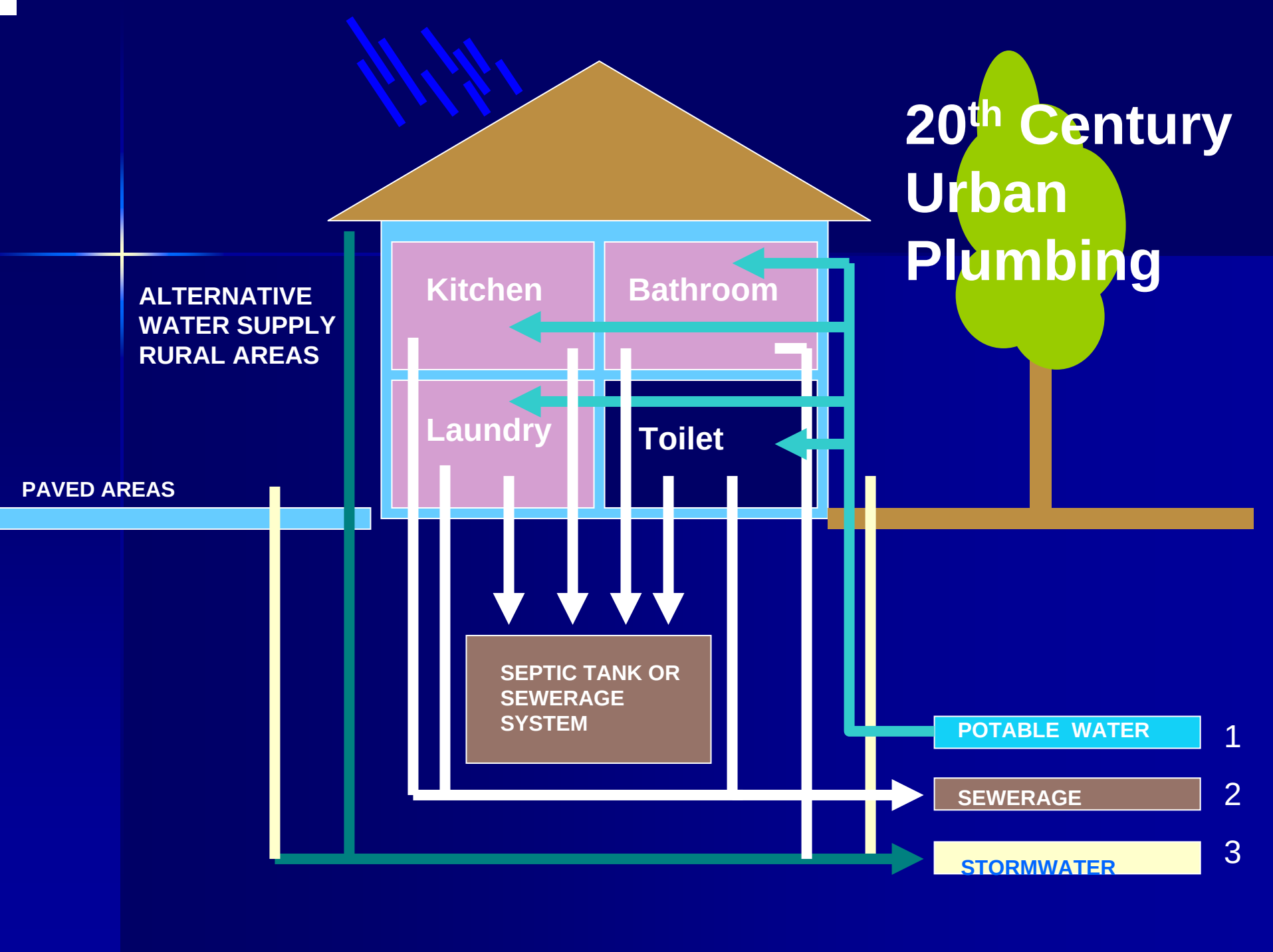
(c) installed using components that will not contaminate the water

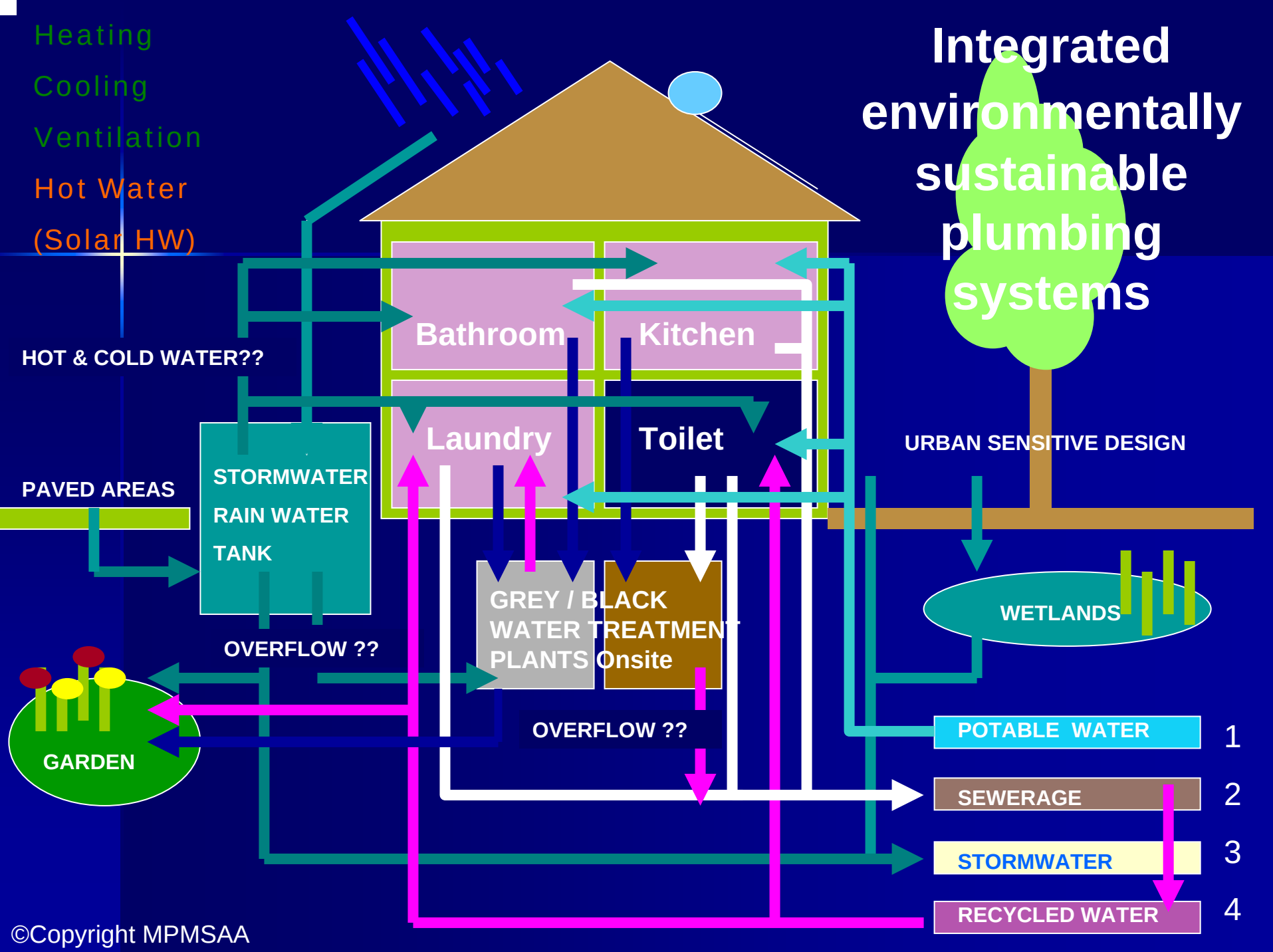
**G12.3.3** A non-potable *water supply system* used for personal hygiene shall be installed in a manner that avoids the likelihood of illness or injury being caused by the system

**G12.3.4** Water pipes and outlets provided with non-potable water shall be clearly identified

- Also protection of water quality under the Health Act 1956 and Health (Drinking Water) Amendment Act 2007
- Provides Councils with the ability to enforce backflow prevention

# CHALLENGES GOING FORWARD


20th Century Urban Plumbing
ALTERNATIVE WATER SUPPLY RURAL AREAS
Kitchen
Bathroom
Laundry
Toilet
PAVED AREAS
SEPTIC TANK OR SEWERAGE SYSTEM
POTABLE WATER
1
SEWERAGE
2
STORMWATER
3



The use of water is becoming more complex

- Introduction of technologies for the collection and use of water:
  - Rainwater
    - Capture of run-off from the roof for use in the laundry and toilet – storage either in a single tank or dual purpose combination with a detention tank for excess storm water
  - Greywater
    - Taken from washing machines and bathroom for outdoor irrigation
  - Kapiti Coast District Council has made it mandatory for all new houses to install a greywater system and /or a rainwater storage tank

- Cross contamination risks from:
  - Agricultural properties – dairy farms etc
  - Home based businesses where there is use of chemicals, eg hairdressing
  - Illegal activities – P labs
  - Fire sprinkler systems
  - Uneducated consumers – poorly maintained backflow prevention systems

- Backflow prevention devices – whether through an air gap or double check valve etc combined with the expertise of qualified Plumbers - are essential to ensure no cross contamination of the water supply

# How do we work together to safeguard the water supply of NZ?

- Educate the consumer – residential, industrial and commercial
- Local Authorities taking a unified approach to testing and building warrants
- Legislation which clearly outlines the regulatory environment for backflow prevention
- Use a qualified Plumber – not just an IQP
- Master Plumbers commitment:
  - Education through upskilling
  - GreenPlumber®
  - Apprentice training
  - Provision of information for Members
  - Lobbying and advocacy
  - Working with the Water NZ Backflow SIG