



Capacity Infrastructure Services Ltd

Backflow Prevention Policy

Document Quality Control

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Document Status

Document Owner	Approved For Release
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1. Introduction

The Health (Drinking Water) Amendment Act 2007 section: 69ZZZ "Protecting Water Supplies from risk of backflow" requires that a water supplier (Council) to determine when it is desirable or necessary for backflow protection to be used to protect the potable water supply. The Health (Drinking Water) Amendment Act also requires water supply authorities to:

- Keep a register of backflow devices including the hazard classifications,
- Ensure that the devices are tested annually (minimum) and records are kept, and
- Have in place a Public Health Risk Management Plan (PHRMP).

This document outlines the Council's commitment and policy to protect the potable water supply from backflow.

Protection within individual premises (zone and individual protection) is not covered by this policy. Zone and individual protection is covered by the provisions of the Building Act 2004 and the protection requirements for this type protection are administered as part of the building consents process.

The policy has been developed for adoption in HCC with a view to possible adoption of the four cities (HCC, PCC, UHCC and WCC) across the region.

1.1 Backflow

Backflow is the unintended and undesirable reverse flow of water or other liquids within the plumbing system of a property to the public mains supply and may be caused by back pressure, back syphonage, or a combination of both. This can result in contaminants being drawn into the public drinking water supply through cross connections.

Backflow presents an ongoing threat to the quality and safety of the City water supply. The risk can be reduced by installing backflow prevention containment devices at the point of supply on a property water connection.

2. Legal Obligations & Compliance

2.1 Relevant Legislation, Standards and Codes

The backflow prevention program is consistent with the requirements of the Health Act 1956, Health (Drinking Water) Amendment Act 2007, and also operates in accordance with the following legislation, codes and standards:

- Health Act 1956
- Local Government Act 2002
- Local Government Official Information and Meetings Act 1987
- The Building Act 2004
- New Zealand Building Code 1992
- Compliance Document for NZ Building Code Clause G12 Water Supplies - Third Edition (December 2007)
- Building (Specified Systems, Change in use, and Earthquake Prone Buildings) Regulations 2005
- Health and Safety in Employment Act 1992
- Consumer Guarantees Act
- Council Bylaws
- Water Supply Specification 7th edition June 2004 (WCC only)
- Capacity Infrastructure Services Ltd: Register of Approved Products for use in Water Supply Infrastructure
- Drinking-Water Standards for New Zealand 2005 (Revised 2008)
- COP Backflow Prevention 2013
- Ministry of Health Public Health Risk Management Plan Guide (Distribution System) Backflow Prevention June 2001
- AS/NZS 2845.1, 2 & 3: 2010 Water supply - Backflow prevention devices - Materials, design and performance requirements
- AS/NZS 3500:2000 Plumbing and Drainage
- NZS4541:2007 Automatic Fire Sprinkler Systems
- NZS4517:2002 Fire Sprinkler Systems for Houses
- Regional Standard for Water Services
- WCC Water Supply Connection Standards (WCC only)

2.2 Bylaws

Bylaws are available on respective websites and include but not limited to the following:

HCC - <http://www.huttcity.govt.nz/Documents/a-z/Water%20supply%20bylaw.pdf>

PCC - <http://www.pcc.govt.nz/DownloadFile/Council/Bylaws/PCC-Bylaws---Part-17>

UHCC - https://www.upperhuttcity.com/store/doc/Water_Supply_Bylaw_2008.pdf

WCC - http://wellington.govt.nz/~/_/media/your-council/plans-policies-and-bylaws/bylaws/files/water-bylaw.pdf

HCC

1. Any backflow prevention device that is required to be installed at the direction of HCC shall be located directly after the point of supply at the property boundary.
2. The property owner is responsible for the costs associated with installing, maintaining and annual testing of any water meter or backflow prevention device that HCC may direct the owner.

Extract from bylaws:

3. Any person being supplied with, or who has made application to be supplied with water by the Council is deemed to accept the terms and conditions contained in this bylaw, and any subsequent amendments.
4. For each customer there shall be only one point of supply, unless otherwise approved by the Council. The service valve (Toby/Manifold) shall be located outside the boundary and at least 500 millimetres clear of (but not more than 600 millimetres from) the boundary, to allow the possible installation of a water meter in the future.
5. All water for shipping and fire service connections shall have an approved backflow prevention device installed on the customer's side of the point of supply at the customer's expense.
6. The Council shall own and maintain the service pipe and fittings up to the point of supply. The customer shall own and maintain the supply pipe beyond the point of supply. Without limiting that obligation on the customer, the customer shall undertake any specific maintenance or repairs on the customer's side of the point of supply, as directed by Council.
7. It is the customer's responsibility to take all necessary measures on the customer's side of the point of supply to prevent water which has been drawn from the Council's water supply returning to that supply. Council retains the right to fit a backflow prevention device on the customer's side of the point of supply at the customer's expense.
8. The customer is required to maintain the backflow prevention device in proper working order.
9. The Council will charge a prescribed fee for the annual inspection of backflow prevention devices where the customer has not undertaken the annual inspection.

3. Backflow Prevention Programme

The issue of Backflow Prevention is a high priority for Council. For Hutt City Council backflow prevention is an especially important as it operates a non-chlorinated water supply in large parts of its network.

Council via its Water Supply Network Operator - Capacity Infrastructure Services Limited (Capacity), manage and maintain citywide backflow prevention programmes to monitor, protect and improve the protection of the potable water supply network.

The backflow prevention program covers the follow aspects:

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| <ul style="list-style-type: none">• Manage, implement and maintain a backflow prevention program that meets current legislative and requirements;• Implement the program to ensure premises are reminded of their obligations under the Health (Drinking Water) Amendment Act 2007, The Building Act 2004 and the New Zealand Building Code 1992;• Produce, manage and maintain an electronic Backflow Prevention Database;• Confirm that current test certificates have been issued to those commercial/industrial users with backflow prevention devices on site, as listed in the 'Backflow Prevention Database'. Draft letters for informing users to test backflow preventers annually, letters are sent in the month following expiry of current test certificate, second and final reminder letters are sent as required; | <ul style="list-style-type: none">• Recommend to Council, sites where enforcement may be necessary;• Update the Council 'Backflow Prevention Database' ensuring all new and existing installations are listed when identified;• Survey additional properties for cross connections and compliance with the Health (Drinking Water) Amendment Act 2007;• Provide advice to Independently Qualified Persons (IQP's) and public regarding backflow prevention. |
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3.1 Backflow Prevention Database

As per its obligations under The Health (Drinking Water) Amendment Act, Council manages and maintains a database recording all known backflow devices installed, the annual test results and inspections including hazard classifications into high/med/low risk categories and :

- Ensure all devices are tested annually by qualified personnel (tested in accordance with AS/NZS 2845.1:1998). The network supplier needs to ensure that the device is recorded and tested annually and a copy of the test certificate is kept on file. For the Building Warrant of Fitness (BWOFF) only the certificate G12 is kept, sometimes these are the same form although some testers (IQPs) have separate forms for each; and
- An additional goal is to educate consumers of the potential hazards associated with backflow.

The Council backflow database contains the following information for each property:

- Relevant property detail including name, location, contact details and ownership details;
- Property hazard level classification - i.e. high/med/low risk and industry type;

- Backflow device details including all information provided on the test certificate, including: location, type, serial number, size, contaminant source, manufacturer and containment type;
- Records of testing undertaken; and
- Inspection and correspondence details.

3.2 Backflow Cross Connection Surveying

As per its obligations under The Health (Drinking Water) Amendment Act, Council or its agents proactively conducts cross connection (additional) surveys on potential high-risk properties annually. Additional surveys are conducted upon the request of the property owner or as the need arises.

Council conducts a plan based survey of the potential risk and hazards when a new Building Consent (BC) is submitted to Council that includes changes to the internal plumbing or when a new water connection or alteration application is submitted. Any backflow prevention requirements that are identified are then included as a condition of the BC approval.

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Council regularly inspects properties during the meter reading rounds for commercial and industrial properties to ensure that all properties that have existing backflow devices comply with Council requirements. Properties that are identified as a risk to the water supply but are not known to have backflow preventers installed are added to the database and a cross connection survey is arranged and undertaken.

Changes in activity in a commercial property may result in a change of the property's hazard rating and require a change in the type of backflow prevention device.

All surveys are conducted by a suitably qualified Backflow Surveyor who has attended a Backflow Cross Connection Surveyor course and holds a current certificate.

3.3 Hazard Identification and Risk Classification

Council is required to have a risk management program including a backflow prevention program, in accordance with the principles contained in the PHRMP guide, the Health (Drinking Water) Amendment Act 2007 and the New Zealand Building Code Clause G12 water Supplies, to identify potential risks and to ensure that the correct backflow prevention devices are installed at all properties/premises.

3.3.1 Risk Classification

All backflow hazards, classifications and acceptable solutions are identified and classified in accordance with AS/NZS 3500.1:2003, AS/NZS 2845: 2010, NZ Backflow Prevention Code of Practice 2013 and as set out under in the Building Code G12/AS1.

All properties in the database are classified as either one of the following risk classifications and are required to have an acceptable solution as set out under the Building Code G12/AS1:

High Hazard – Has the possibility to be fatal

“Any condition, device or practice which, in connection with the potable water supply system, has the potential to cause death”.

Acceptable solution: Approved boundary device, RPZD or Air Gap.

Medium Hazard – Has the possibility to cause illness but is not fatal

“Any condition, device or practice which, in connection with the potable water supply system, has the potential to injure or endanger health”.

Acceptable solution: Approved boundary device, RPZD, testable Double Check or Air Gap.

Low Hazard – Has the potential to provide a nuisance but not cause illness

“Any condition, device or practice which, in connection with the potable water supply system, would constitute a nuisance, by colour, odour or taste, but not injure or endanger health”.

Acceptable solution: Approved boundary device, RPZD, testable Double Check, Air Gap or non-testable Dual Check.

3.3.2 Default Risk Classifications

Residential

Residential properties are generally classified as a low hazard unless the property has a potential backflow contaminant directly plumbed to the water supply such as (but not limited to): swimming pool, spa pool, fire sprinkler system, home business. For residential properties with greater than a 25mm connection the hazard and risk shall be determined by Council.

Home Businesses

Regardless of the size of the connection all residential properties that have a home business operating from the premises shall be treated and classified as per the metering and backflow prevention requirements of a commercial/industrial property.

Domestic Sprinkler Systems

Properties that have a dedicated independent fire sprinkler system installed shall be required to have a Council approved testable double check backflow preventer installed and manufacturers requirements at the boundary as per Figure 3.1 – Independent System, page 12, NZS 4517:2002.

Properties that have a combination system where the sprinkler ring main also supplies the domestic potable water supply as per Figure 3.2 – Combination System, page 13, NZS 4517:2002, shall not require a testable backflow device and shall be treated as per any normal residential connection in terms of backflow prevention.

Commercial and Industrial

Regardless of the type of operation at a commercial/industrial property all properties of a commercial nature shall be treated as high risk to be determined by Cross Connection Surveyor.

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Medium hazard or higher (high risk to be determined by Cross Connection Survey).

Fire Sprinkler Connections

Fire sprinkler connections to commercial and industrial properties are classified as a medium hazard and shall have an approved testable double check backflow preventer installed at the boundary with isolation valves for testing purposes.

Fire Hydrant Standpipes and Tanker Filling Points

Fire hydrant standpipes and tanker filling points are to be treated as high risk.

Rain Water Tanks, Swimming Pools, Spas and Fountains

Rainwater tanks, swimming pools, spas and fountains are to be treated as medium risk.

3.4 Review of Risk Classifications

The Council shall review the current risk classification for properties each year as their new test certificate becomes due or more frequently as required. All properties assessed as being a High Hazard are inspected and re-assessed every three years to ensure compliance with Council and legislative requirements regarding backflow prevention.

3.5 Acceptable Backflow Prevention Devices

Properties that are rated as high or medium hazard are required to install testable backflow prevention devices at the property boundary on the property side of the service valve (toby or manifold). All backflow devices shall be manufactured and quality assured to AS/NZS 2845.1:2010. All RPZ backflow devices shall be mounted to the height of at least 300mm above a non-erodible surface or flood level.

In general properties rated as a low hazard require a non-testable dual check backflow preventer. The current approved manifold service valve for 20 and 25mm connections incorporate an integral dual check suitable for low hazard applications.

A register of Approved Products for use in Water Supply Infrastructure that includes approved backflow devices is available on the Capacity Infrastructure Services Limited website:

<http://www.capacity.net.nz>

3.6 Testing of Backflow Devices

In accordance with the NZ Code of Practice for Backflow Prevention for Drinking Water Suppliers 2013, Health (Drinking Water) Amendment Act 2007 and the Building Regulations 1992 and Bylaws, backflow preventers other than low hazard devices must be tested annually and a copy of the test certificate forwarded to Council.

IQP's who test or install a backflow prevention device in the network are required to forward any copies of backflow test certificates to Council or Capacity. This is in addition to the building requirements for a Certificate G12 to be provided to Council as part of the annual Building Warrant of Fitness (BWOFF) compliance schedule.

Note: any device that is partially or wholly within the property boundary must be included on the Compliance Schedule (BWOFF) for that property under the Building Act/Code. Devices that are for boundary protection (to protect the network supply) that are outside, partially or wholly within the property boundary that act as a boundary containment device need to be recorded by the network supplier as well. Sometimes there are overlaps between the two.

3.6.1 Inspection and Testing of Backflow Devices

All backflow devices that are capable of being tested as per the requirements of AS/NZS 2845.3:2010 Field Testing and Maintenance shall be tested on an annual basis by a registered Independently Qualified Person (IQP) with copies of the test certificate forwarded to Council within one month of the test date. Any device that is partially or wholly located within the property boundary shall also be added to the properties Building Warrant of Fitness compliance schedule and a copy of the annual G12 Certificate provide to the Council BWOFF team as per the NZ Building Code Clause G12 Water Supplies - Third Edition (December 2007).

Registered air gaps shall be inspected for compliance and certified on an annual basis.

3.6.2 Backflow Testers

Only a registered IQP (via Wellington City Council) that has attended and passed the 40 hour backflow tester course and hold a current qualification shall be permitted to test and certify backflow devices within the region. Registered IQP's who can demonstrate a good track record, have experience testing backflow devices and that have not attended the 40 hour course shall only be permitted to test device at the discretion of Council.

Council may undertake random selected audits of IQP's whilst they conduct testing of backflow devices to ensure that the correct test procedures are being used.

IQP's are also required to have their test gauges independently calibrated annually with copies of the calibration certificates forwarded to Council.