



**Wellington City Council**

**Backflow prevention containment policy**

**April 2012**

## Revision details

### 8. Identification of hazards

Original version (October 2011)	Revised version (April 2012)
<p>The specific activity and processes carried out on a property will determine the hazard (risk) rating and this in turn determines the type of backflow prevention containment device that needs to be installed at the boundary.</p> <p>At the time of application for building, development, redevelopment, a new connection or just changes to existing water services the hazard rating for each property must be determined under one of the three categories below.</p> <p>If the future land use or hazards are unknown for a new commercial, industrial or mixed development, the hazard rating will default to high, requiring the installation of a device appropriate for that hazard rating.</p> <p>Because business processes can differ within each business type the hazard for each process will need to be assessed, and where there is mixed use on a property the hazard rating will default to the highest hazard.</p> <p>Changes in the activity on the property may result in a change in the property's hazard rating and require a change in the type of backflow prevention containment device.</p> <p>The three hazard ratings identified by building code G12/AS1 are:</p> <ul style="list-style-type: none"> <li>• <b>High hazard</b> - any condition, device or practice which, in connection with the water supply system, has the potential to cause death.</li> <li>• <b>Medium hazard</b> - any condition, device or practice which, in connection with the water supply system, could endanger health.</li> <li>• <b>Low hazard</b> - any condition, device or practice which, in connection with the water supply system, is a nuisance but does not endanger health or cause injury.</li> </ul>	<p><b>Residential properties:</b> if a residential property requires a larger than standard pipe size (more than 20mm ID) then the specific activity or process carried out on a property will determine the hazard (risk) rating and therefore the type of backflow prevention containment device that needs to be installed at the boundary.</p> <p>At the time of application for building, development, redevelopment consent, or when making application for a new connection or changes to existing water services the hazard rating for each residential property must be determined under one of the three categories below.</p> <p><b>Non Residential properties:</b> new commercial, industrial or mixed development, the hazard rating will default to high, requiring the installation of a device appropriate for that hazard rating (Reduced Pressure Zone Backflow Device – RPZ).</p> <p>Changes in the activity on the property may result in a change in the property's hazard rating and require a change in the type of backflow prevention containment device.</p> <p>The three hazard ratings identified by building code G12/AS1 are:</p> <ul style="list-style-type: none"> <li>• <b>High hazard</b> - any condition, device or practice which, in connection with the water supply system, has the potential to cause death.</li> <li>• <b>Medium hazard</b> - any condition, device or practice which, in connection with the water supply system, could endanger health.</li> <li>• <b>Low hazard</b> - any condition, device or practice which, in connection with the water supply system, is a nuisance but does not endanger health or cause injury.</li> </ul>
<p>All fire services are rated as medium hazard.</p>	<p><b>Dedicated Fire services:</b> all fire services are rated as medium hazard (Testable Double Check valve backflow device –DCV).</p>

Note: Revision Date: April 2012; changes are only affected to the shaded sections.

# Backflow Prevention Containment Policy

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## 1. Introduction

Wellington City Council (WCC) is committed to providing safe, high quality drinking water to all Wellington City residents and businesses.

Protecting drinking water quality is a top priority and in order to ensure the continual delivery of safe, clean drinking water to its customers WCC has strict criteria determining the conditions under which connections to the City's water supply system are allowed.

Included in WCC's connection criteria is the analysis of the various hazards to the safety of the water supply and ensuring that there are barriers to control or eliminate those hazards.

The purpose of this Backflow Prevention Containment Policy is to help protect the quality of Wellington's water supply by reducing the risk of water supply contamination by backflow from connections to the water supply system.

The policy details the requirements for backflow protection (containment protection) at the property boundary. The intent of this containment protection is to protect the public water supply against water backflows from the property; it is **not intended** to protect activities within the property.

**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 of protection are administered by the Building Consents and Licensing Service (BCLS) of WCC.

## 2. 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. Backflow may be caused by back pressure, back siphonage or a combination of both. It can result in contaminants being drawn into the public drinking water system through cross connection.

Backflow can occur when water pressure is not maintained, and water pressure can be affected when:

- There is a break in the water main which supplies the property
- Water is being pumped from the main supply during a fire
- Water is being used at a higher pressure on the property than the pressure supplied from the public water supply system
- Heavy water use downstream reduces water pressure upstream.

Backflow can arise if there is an interconnection between the customer's water service and a contaminated source, creating the possibility of drawing back into the public system pollutants or contaminants such as chemicals that may provide a risk to public health.

Backflow presents an ongoing threat to the quality and safety of the City water supply. It can be prevented by installing backflow prevention containment devices on service connections at the property boundary. A properly working and maintained backflow device

will trap water flowing in the wrong direction thereby containing the unwanted backflow within the property.

This policy outlines the requirements, and customer obligations, for the installation of backflow prevention containment devices on all properties connected to the public water supply.

### 3. Policy Objective

The objectives of this policy are to:

- protect the health and safety of consumers by WCC exercising its duty of care in the protection of the potable water supply and in safeguarding public health
- protect the integrity and safety of the water supply by ensuring that non potable water from each customer does not infiltrate or contaminate the public water supply
- separate and protect the potable water supply from real or potential hazards by the installation of backflow prevention containment devices or by other means of preventing cross-connection of the potable water supplies with sources of other contaminants
- minimise cross connection and thus reduce the possibility of backflow
- contain any real or potential hazard within the boundaries of the customer's property
- set out WCC's requirements to install, test and maintain backflow prevention containment devices on customer connections, fire sprinkler services, fire hydrant standpipes, and tanker filling points

These objectives are intended to be accomplished by requiring the use of appropriate backflow protection methods to control backflow arising from cross-connections of private water systems to the public water system.

This policy is consistent with the requirements of:

- Health Act 1956
- Health (Drinking Water) Amendment Act 2007
- New Zealand Building Code G12 Water Supplies

### 4. Application of the Policy

This policy applies to all potable water supplies in Wellington City and to all new and existing customers connected to WCC's water supply.

The policy requires each and every connection to the City's drinking water supply (including fire services) to have fitted a backflow prevention containment device at the **boundary (or as near as practicable to the boundary)** that is appropriate to the level of risk posed by the activities carried out at the property.

The policy is applied either at the resource consent, building consent, or new water connection application stage or during replacement at connection time. The following application types will be assessed for backflow risk:

- New developments, or redevelopment of existing properties or facilities
- Additions/alterations
- Changes to any water service
- Changes in use on the property
- Any application that involves a fire service
- Any application where the minimum service size applied for is greater than 25mm

The policy details the requirements for backflow protection (containment protection) at the property boundary. The intent of this containment protection is to protect the public water supply against water backflows from the property; it is **not intended** to protect activities within the property.

The installation of a containment backflow prevention device at the boundary does not eliminate the need for zone and individual protection devices. Water downstream of a containment device is considered non-potable water if there are internal backflow hazards still remaining within the property. The installation of individual and/or zone backflow prevention devices will be necessary to protect against the potential risk of any internal property or premise hazards in order to protect the drinking water serving the premises downstream of the boundary containment device.

A backflow prevention containment device is required at the boundary regardless of zone or individual protection. As WCC cannot guarantee the integrity of zone or individual protection on the customer's property, it cannot guarantee the protection of the public supply from backflow unless the supply to the property is contained at the boundary.

Boundary containment is to have equal or higher rated protection to that of any zone or individual requirement.

**Protection within individual premises (zone and individual protection) is entirely the responsibility of property owners and is not covered in this policy.** Zone and individual protection is covered by the provisions of the Building Act 2004 and the protection requirements for this type of protection are administered by the Building Consents and Licensing Service (BCLS) of WCC. Refer to the WCC Water Supply Backflow Prevention Guidelines for zone and individual backflow protection requirements.

## **5. Location and ownership**

The backflow prevention containment device is installed on the customer side of the point of supply at the property boundary and belongs to the owner of the property.

All costs associated with the purchase, installation and ongoing maintenance, including the annual test cost, of the device are the responsibility of the owner.

If the property is leased the owner must make their own arrangement with the lessee as to costs, testing and maintenance of the device.

## 6. Policy requirements

All customers with a connection to WCC's water supply must install a backflow prevention containment device at the property boundary appropriate to the property's hazard rating.

There must be no connections between the service valve at the point of supply and the device.

If the property has more than one water connection a backflow prevention containment device is required to be installed on each connection.

Properties that have both potable and non-potable water supplies must have an appropriate level of backflow prevention containment installed. Potable and non-potable water supplies must not be interconnected and the device installed must be the same on both supplies. This also applies to any recycled water connections to the property.

The backflow prevention containment installed on the non-potable or recycled supplies must be equivalent to the backflow prevention containment installed for the potable supply.

Connections to the city's potable water supply must be designed and installed so that non-potable water or substances that may render the water non-potable cannot enter the public system.

The available public water supply system pressure and flow, and the customer's pressure and flow requirements should be checked before installing a backflow prevention containment device. A site assessment should also be done to confirm the hazard rating of the property and its services.

Backflow prevention containment devices must be fitted by a WCC approved contractor or plumber accredited to install such devices.

All device installations shall be in accordance with the WCC Water Supply Connection Standards and to the relevant Backflow prevention codes.

Only backflow prevention containment devices manufactured and quality assured to AS/NZS 2845.1.2010 are to be installed on metered standpipes and properties.

Before any new connection to WCC's water supply is commissioned the applicant shall demonstrate that the requirements of this policy have been met.

All containment testable devices are to be registered with WCC, BCLS.

Testable backflow prevention containment devices must be installed on high or medium hazard properties. These require testing at commissioning, after any maintenance and at least every 12 months by an authorised Independent Qualified Person (IQP) who is permitted to test these devices. Testing and commissioning reports are to be lodged with WCC BCLS and listed on the building compliance schedule for annual warrant of fitness purposes.

To avoid contaminating the drinking water supply, auxiliary water supplies and rainwater tanks must not be connected to the City water supply system without WCC's approval.

Property owners are to meet the full cost of complying with this policy.

## **7. Responsibilities**

### **7.1 Wellington City Council**

WCC has a responsibility to provide its customers, at the point of supply, with water that is potable and safe under all foreseeable circumstances. In exercising that responsibility WCC must take reasonable precautions to protect then public water supply system from hazards originating on its customers properties. WCC exercises these responsibilities in accordance with the requirements of the Health Act 1956 and the Health (Drinking Water) Amendment Act 2007.

This policy, and the associated WCC Water Supply Connection Standards, is used by WCC to assist in the fulfilment of its responsibilities.

WCC, BCLS will maintain a register (data base) of all registered backflow prevention containment devices and records of inspections and test data. The data base will record the following information:

- 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;
- Inspection and correspondence details.

WCC, BCLS ensures properties are assessed in accordance with the three hazard (risk) ratings identified by AS/NZS 3500.1:2003 of high, medium and low hazard.

WCC, BCLS will review all current risk classifications for each property each year as the new test certificate becomes due or more frequently as required. WCC will liaise with IQP's (testers) to ensure that premises are assessed and classified correctly and will also liaise with other Territorial Authorities, industry bodies, training organisations, manufacturers and suppliers to ensure that the current levels of risk classification used in Wellington meets the current industry and legislative requirements.

WCC will establish a backflow prevention programme to ensure properties are assessed for hazards, cross connections, the presence of appropriate backflow prevention containment devices, and that records of inspections and test data are maintained in accordance with the requirements of the Health (Drinking Water) Amendment Act 2007.

WCC will liaise with and provide advice to IQP's and the public regarding backflow prevention.

WCC will monitor the currency of test certification of all testable backflow prevention containment devices and take follow up action to ensure certification remains current.

WCC conducts cross connection surveys for high rise residential, commercial and industrial properties and reports on the site hazard and course of action required to remedy any hazard. The cross connection surveys are on a pro-active basis and actively target properties that are not known to have backflow prevention in place and may pose a hazard to the potable water supply.

Properties that have been 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.

WCC also conducts cross connection surveys of properties at the request of the property owner/tenant.

All surveys are conducted by qualified Backflow Surveyors who have attended a backflow cross connection surveyors course and hold current certification.

All new connection, disconnection and alteration applications for water supply connections will be assessed by WCC against this policy to determine the property hazard rating and backflow prevention containment device requirements. The installation of the required device at the property boundary will be a condition of approval of the application. WCC shall be responsible for enforcing this policy and will undertake compliance audits as necessary.

WCC reserves the right to rectify or upgrade a faulty device to reduce risks to the public water supply system. Reasonable costs for this work will be recovered from the customer.

## **7.2 The Customer**

The customer has the prime responsibility for preventing contaminants and pollutants from entering the public water supply system.

The customer shall observe all legislative requirements regarding the correct use or change of use of all equipment connected to the drinking water supply (including any new requirements following publishing of this document).

The customer, at his own expense, shall install, operate, test and maintain in proper working order an appropriate approved backflow prevention containment device, at the boundary on each service connection to the property, in accordance with this policy and the WCC Water Supply Connection Standards.

The customer shall lodge a building consent or a new water supply connection application for the installation, alteration and removal of all backflow prevention devices when required and apply for a Compliance Schedule in conjunction with the building consent.

The customer shall ensure all information about the installed device, including as-built drawings, is submitted to WCC within one month of commissioning.

The customer shall arrange for the annual testing of testable devices by a registered IQP with copies of the test certificate forwarded to WCC within one month of the test date. The customer shall keep a copy of the test certificates for the previous two years as a minimum.

Any device that is partially or wholly located within the property boundary shall be added to the property Building Warrant of Fitness compliance schedule and a copy of the annual IQP Test Certificate provided to the WCC BWOFF team as per the NZ Building Code Clause G12 Water Supplies - Third Edition (December 2007).

The customer must immediately notify WCC if the customer has reason to believe that backflow has occurred from the customer's private water supply system to the public system.

If the processes change at the customer's property to either reduce or increase the hazard rating the customer must have an accredited party certify the change in hazard and inform WCC. WCC may conduct a site audit to verify the new hazard rating.

Where the hazard rating changes the customer must upgrade the backflow prevention containment device to ensure the correct device for the hazard is in place at the boundary.

Where WCC determines that a backflow prevention containment device is required on the property the customer must install, test and commission the device within three months.

Where, in the opinion of WCC, a potential or physical cross-connection is found in the water service at any property, the customer shall upon written notice from WCC ensure that such cross-connection is immediately disconnected or altered to comply with WCC's requirements or otherwise be removed.

If the customer fails to install, repair, maintain, replace or test the backflow prevention containment device, or eliminate any cross-connection, (as required by a notice issued by WCC) WCC may disconnect a non-residential property, or restrict the supply to a residential property or mixed use property, until the customer complies with the notice.

Further detail of responsibilities is contained in Appendix B.

## **8. Identification of hazards**

**Residential properties:** if a residential property requires a larger than standard pipe size (more than 20mm ID) then the specific activity or process carried out on a property will determine the hazard (risk) rating and therefore the type of backflow prevention containment device that needs to be installed at the boundary.

At the time of application for building, development, redevelopment consent, or when making application for a new connection or changes to existing water services the hazard rating for each residential property must be determined under one of the three categories below.

**Non Residential properties:** new commercial, industrial or mixed development, the hazard rating will default to high, requiring the installation of a device appropriate for that hazard rating (Reduced Pressure Zone Backflow Device – RPZ).

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

The three hazard ratings identified by building code G12/AS1 are:

- **High hazard** - any condition, device or practice which, in connection with the water supply system, has the potential to cause death.
- **Medium hazard** - any condition, device or practice which, in connection with the water supply system, could endanger health.
- **Low hazard** - any condition, device or practice which, in connection with the water supply system, is a nuisance but does not endanger health or cause injury.

**Dedicated Fire services:** all fire services are rated as medium hazard (Testable Double Check valve backflow device –DCV).

Each hazard rating has a minimum requirement for the type of backflow prevention containment device to be installed.

## 9. Backflow prevention methods

The type of backflow prevention containment device to be installed is dependent on the degree of hazard. Whilst it is commonly accepted that the degree of hazard increases as a function of both the probability that backflow will occur and the toxicity of the substance that might backflow, the risk associated with the substances toxicity is always a greater concern. Therefore, in selecting the appropriate type of backflow prevention containment device, it is the potential hazard, not the probability of its occurrence that governs the required device.

The three backflow prevention devices most frequently used to address these hazards are the air gap, double (or dual) check valve assembly, and reduced pressure principle assembly.

### **Air gap**

An air gap is an unobstructed vertical distance through free atmosphere between the lowest point of a water supply outlet and the flood level rim of the fixture or assembly into which the outlet discharges. The separation must be at least twice the diameter of the water supply outlet, but not less than 25mm.

This is the only absolute means to eliminate backflow; however, this method does not guarantee continuous protection because it is the easiest method of protection to bypass. As this method is easily subjected to modification and/or cross connection **it is not approved** as a boundary containment device.

### **Double check valve backflow prevention assembly**

This assembly consists of two internally loaded check valves, either spring loaded or internally weighted, installed as a unit between two tightly closing resilient-seated shutoff valves as an assembly. Each check valve assembly has test cocks.

### **Reduced pressure principle backflow prevention assembly**

This assembly consists of two independently acting check valves together with a hydraulically operating, mechanically independent pressure-differential relief valve located between two tightly closing resilient-seated shutoff valves as an assembly. Each assembly has test cocks and a differential relief valve.

These assemblies are mechanical devices that must be tested and serviced regularly to maintain positive protection.

## **10. Acceptable backflow prevention devices**

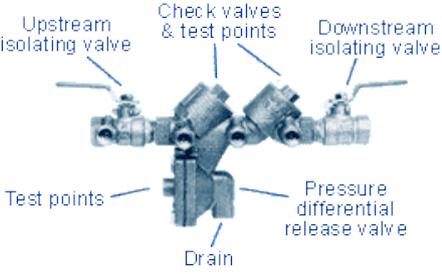
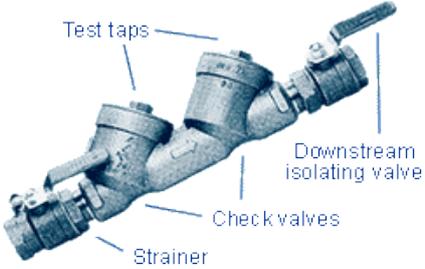
Properties rated as a **high or medium hazard** are required to install testable backflow prevention containment devices at the property boundary.

In general properties rated as a **low hazard** are not required to install testable backflow prevention containment devices at the property boundary.

Note that WCC's practice is to install service manifolds on all new 20 mm and 25 mm connections and replacement service valves (tobies). These manifolds incorporate integrated non-testable dual check valves which are adequate to address low hazard situations.

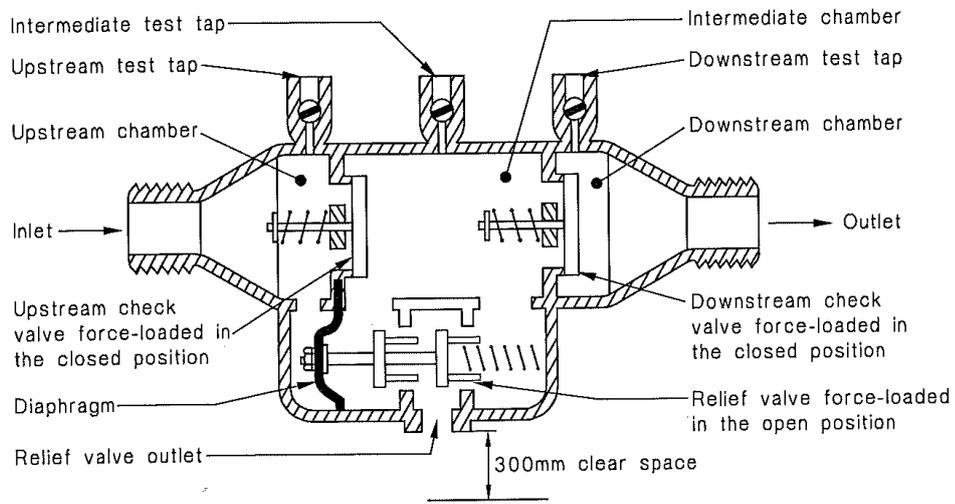
Low hazard connections larger than 25mm are required to have a stand alone non-testable dual check valve backflow prevention containment device, as a minimum, at the property boundary.

Note that the customer may choose a higher level of protection than is required by this policy.

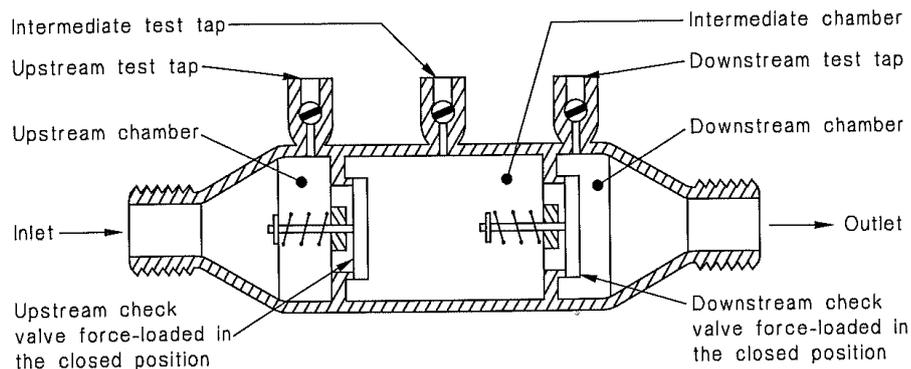
Type of hazard	Examples	Type of device	Acceptable devices
<p><b>High</b> - Processes on the property have the potential to cause serious illness or death</p>	<p>Hospitals, mortuaries, laboratories, wastewater treatment plants and pumping stations, chemical plants, beauty and hairdresser salon wash basins and commercial dishwashers, car and factory washing facilities, dental equipment</p>	<p><b>Reduced pressure zone backflow device (RPZ)</b></p> <p>Two independent action non-return valves arranged to be force loaded to the closed position, with a relief valve positioned between the non-return valves arranged to be force-loaded to open to the atmosphere.</p>	
<p><b>Medium</b> - Processes on the property have the potential to cause sickness and endanger health</p>	<p>Commercial laundries, garden irrigation systems, drink dispensers with carbonators and rainwater tanks connect to household plumbing, swimming pools, spas and fountains</p>	<p><b>Testable double check valve backflow device (DCV)</b></p> <p>Two independent action non-return valves arranged to be force loaded to the closed position.</p>	
<p><b>Low</b> - Processes on the property have the potential to constitute a nuisance by colour, odour or taste</p>	<p>Residential properties</p> <p>Drink dispensers (except carbonators)</p>	<p><b>Non-testable dual check valve backflow device (DuCV)</b></p> <p>Dual check valves in a manifold for services up to 25 mm.</p> <p>Connections larger than 25 mm to have stand alone non-testable dual check valve backflow prevention containment devices</p>	

Note: 1. Backflow prevention devices must comply with AS/NZS 2845 and Clause G12 of the New Zealand Building Code.  
2. The above examples are not an exhaustive list of typical hazards.

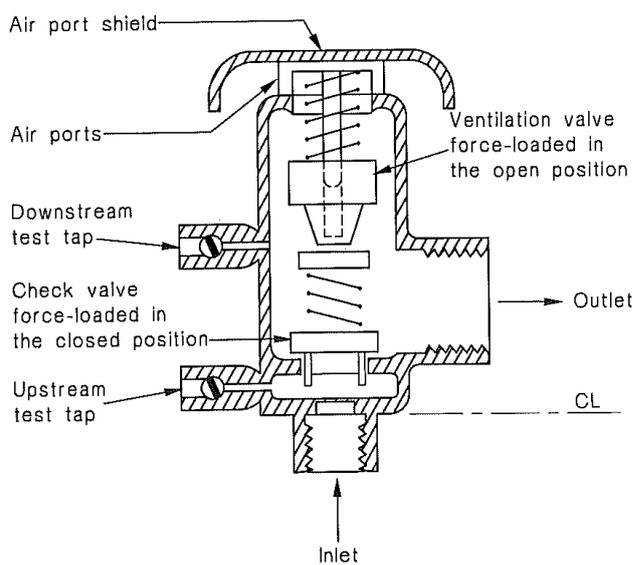
The schematic diagrams below provide additional detail of the backflow prevention devices.



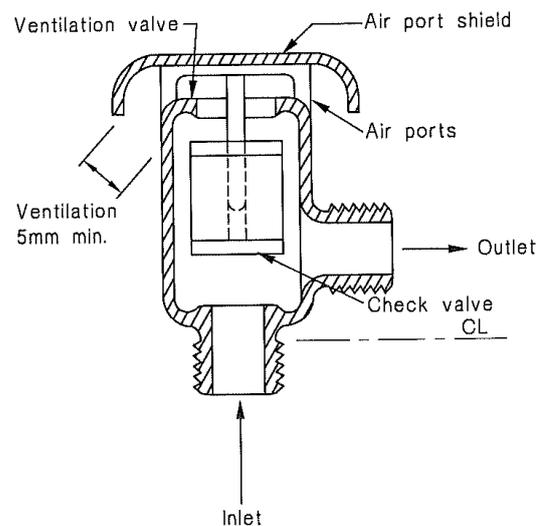
(a) Schematic diagram of a reduced pressure zone device



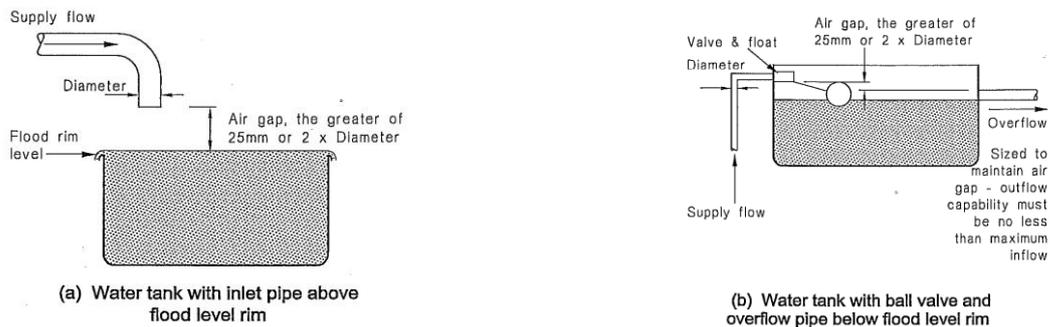
(b) Schematic diagram of a double check valve



(c) Schematic diagram of a pressure type vacuum breaker



(d) Schematic diagram of an atmospheric vacuum breaker



**Schematic diagrams of an air gap separation**

**Fire Services** - All fire hydrant and fire sprinkler services must have a testable double check detector assembly installed adjacent to the property boundary prior to any other component of the hydrant and fire sprinkler systems. The assembly shall be composed of a line-sized approved double check valve assembly, with a specific bypass water meter and a meter-sized approved double check valve assembly.

Properties with combined potable and fire supply connections shall be considered as medium hazard and shall have backflow prevention containment devices on both supply branches. The fire fighting supply branch shall have an approved double check detector check backflow preventer installed at the property boundary, and the potable water supply branch shall have a testable double check valve backflow preventer installed at the property boundary. The exception to this is where branches feed fire sprinkler systems and fire hydrant systems that use toxic or hazardous water they will be rated as high hazard and these will require reduced pressure zone backflow devices to be installed.

Fire hose reels will be considered as medium hazard, providing they are not used for non-fire fighting purposes in conjunction with or within reach of any potential high hazard, and therefore will require medium hazard backflow prevention.

Owners of properties with window or wall drencher sprinkler systems must install a low hazard non-testable device.

**Residential fire sprinkler systems** – These are covered by NZS4517:2002 Fire Sprinkler Systems for Houses. The backflow prevention requirements depend on the type of sprinkler system used; these are either **independent** or **combination** systems.

An **independent system** is a separately isolatable (dead leg) branch off the house water supply piping and requires a backflow preventer complying with the NZ Building Code G12/AS1. Provided no part of the residential sprinkler system uses anti-freeze, a testable double check valve complying with AS/NZS 2845.1 is an acceptable backflow prevention device for an independent system. Provision of an independent residential sprinkler system requires the backflow prevention containment device at the boundary to be upgraded to a testable double check valve device.

A **combination system** utilises the house water reticulation piping to supply the sprinkler heads, thus minimising dead legs, and also utilises the service valve on the house supply to isolate the sprinkler system. For house connections up to 25mm diameter manifolds incorporating integrated non-testable dual check valves are acceptable backflow prevention containment devices for combination systems. Connections larger than 25mm are required to have a stand alone non-testable dual check valve backflow prevention containment device, as a minimum, at the property boundary.

### **Residential home businesses**

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

**Rain water tanks** – drinking water consumption is not recommended from rainwater tanks where a potable supply is provided, nor is the interconnection of rainwater tanks with potable or non-potable supplies. Where interconnection does occur rainwater tanks are to have:

- A dual check valve as zone and containment protection if the tank is above ground or
- A testable double check valve as zone and containment protection if the tank is fully or partially buried

### **Swimming pools, spas and fountains**

Regardless of the size of the water supply connection all residential properties that have swimming pools, spas and fountains installed shall be rated as medium hazard and shall have a testable double check valve installed as the backflow prevention containment device at the property boundary.

**Hydrant standpipes** - All metered or unmetered standpipes must be approved for use to draw water from WCC water mains, and must have a testable double check valve incorporated in the design of the standpipe arrangement.

**Tanker filling points** – All tanker filling points must have a registered air gap or reduced pressure zone device at the filling point. These installations must be checked annually.

## **11. Backflow prevention device installations**

Testable devices shall not be installed in the first instance without assurance that they will be registered in a backflow prevention management system and subject to at least annual checking by competent persons to verify performance.

Backflow prevention devices are required to be compliant with AS/NZS 2845 and Clause G12 of the New Zealand Building Code.

No connection may bypass the backflow prevention containment device. Reduced pressure zone device relief valve outlet must be installed at least 300 mm above a non-erodible surface when located outside a building. Containment devices should not be located in pits or below ground level. All backflow prevention containment devices are to be installed in accordance with the requirements of the WCC Water Supply Connection Standards.

## 12. Definitions

The following is a list of common terms and definitions used in relation to backflow prevention:

Term	Definition
Back pressure	The difference between the pressure within any water service and a higher pressure within any vessel or pipework to which it is connected. For example, a customer is using water at a higher pressure than the pressure supplied by WCC.
Backflow	Flow in a direction contrary to the normal or intended direction. The unintended flow of water from a potentially polluted source into a potable water supply.
Backflow prevention containment device	A device to prevent backflow. There are a number of different devices including a reduced pressure zone device, a registered air gap and a testable double check valve.
Backflow prevention containment policy	WCC's backflow prevention requirements, for all properties both new and existing, where there is a risk of contaminating the water supply.
Back siphonage	Back siphonage occurs when the water supply pressure falls below atmospheric pressure.
Containment device	A backflow prevention device installed adjacent to the point of supply at the property boundary, to prevent backflow from within the property.
Contaminant	Any solid, liquid or gas with potential to enter or pollute the potable water supply.
Cross connection	Any connection or arrangements between the drinking water supply system connected to the water main or any fixture, which may under certain conditions enable non-drinking water or other substances to enter the drinking water supply system.
High hazard rating	Any condition, device or practice which in connection with the potable water supply system has the potential to cause death
Medium hazard rating	Any condition, device or practice which in connection with the potable water supply system has the potential to endanger health
Low hazard rating	Any condition, device or practice which in connection with the potable water supply system would constitute a nuisance but not endanger health or cause injury
Individual backflow protection	A backflow prevention device installed at the water connection to a fixture or appliance.
Non-potable water	Water is deemed non-drinking if there is potential for contamination from an unprotected source.
Potable water	Water which is suitable for human consumption.
Standpipe	A rigidly supported vertical length of pipe emerging from the ground with a tap or valve, serving as an outdoor water supply point.
Zone backflow protection	A backflow prevention device installed at the connection to specified sections of a plumbing system within a building or facility.

## Appendix A

### 1. Legislation

#### 1.1 Health (Drinking Water) Amendment Act 2007.

The Health (Drinking Water) Amendment Act 2007 which came into effect on 1 July 2008, is now the primary piece of legislation that relates to the protection of drinking water supplied by local authorities.

The Health (Drinking Water) Amendment Act 2007 revokes the previous Water Supplies Protection Regulations 1961, which were established under the Health Act 1956, and which previously contained the main legislative provisions relating to backflow prevention.

The amendment was to the Health Act 1956, Health (Drinking Water) Amendment Act 2007, specifically section: 69ZZZ "Protecting Water Supplies from risk of back-flow". It was enacted in 2007; however the new requirements regarding Backflow Prevention did not come into effect until 1st July 2008. A copy of the Act is available from the Ministry of Health web site.

In addition to revoking the Water Supplies Protection Regulations 1961, The Health (Drinking Water) Amendment Act 2007 also amends the following Acts:

#### 1.2 Health Act 1956

Repeals sections 60 to 63, which relate to pollution of watercourses, Inserts a new Part 2A, which defines extensive obligations of water suppliers to *'protect the health and safety of people and communities by promoting adequate supplies of safe and wholesome drinking water from all drinking-water supplies.'* This includes a number of provisions that relate to backflow prevention and public health risk management.

#### 1.3 Local Government Act 2002

- ▶ Amends s193 by inserting an additional clause linking the restriction of water supply to the provisions of the Health Act 1956.
- ▶ Repeals s194 of the LGA2002, which contained provisions relating to temporary stoppage of water services.

#### 1.4 Local Government Official Information and Meetings Act 1987

Amends s44A(2) by inserting provisions relating to land information and notification relating to water supply availability The Health (Drinking Water) Amendment Act 2007 section 69ZZZ introduces some significant new provisions relating to backflow prevention as follows:

##### ***69ZZZ Protecting water supplies from risk of back-flow***

1. *This section applies if a networked supplier considers that there is a need to protect the networked system from risks of pollution caused by water and other substances on properties connected to the networked system.*
2. *A networked supplier may -*

*(a) if the supplier considers it desirable or necessary, -*

*(i) install a back-flow prevention system in the network on the side of the point of supply for which the supplier is responsible for maintaining; or*

*(ii) allow the owner of property to which water is supplied to install a back-flow prevention system that incorporates a verifiable monitoring system (being a monitoring system approved by both the supplier and a drinking-water assessor):*

*(b) require the owner of the property in respect of which the back-flow prevention system operates or the person who is required (whether under the Local Government Act 2002 or any contract) to pay for drinking water supplied to that property,—*

*(i) if paragraph (a)(i) applies, to reimburse the supplier for the cost of that system (including the cost of installation, testing, and on-going maintenance); and*

*(ii) if paragraph (a)(i) or (ii) applies, to repair or modify any back-flow prevention system that, in the opinion of the supplier, is not functioning adequately.*

*A person who installs a back-flow protection device must take all reasonable steps to ensure it can operate in a way that does not compromise the operation of any automatic sprinkler system connected to the water supply.*

*A networked supplier -*

*(a) must test each back-flow protection device operating in its network at least once a year; and*

*(b) must advise the territorial authority in its area of the results; and*

*(c) may require the occupier of the property in respect of which the device operates to pay the reasonable costs involved in conducting the test.*

## **2. Applicable Acts and Regulations**

### **2.1 Health Act 1956**

The Health Act 1956 requires that adequate water supplies are provided to communities including any building built, sold or let must have an adequate and convenient supply of potable water.

Section 23 of the Act also provides for networked supplier “to make bylaws under and for the purposes of this Act or any other Act authorising the making of bylaws for the protection of public health.”

*Section 23 General powers and duties of local authorities in respect of public health Subject to the provisions of this Act, it shall be the duty of every local authority to improve, promote, and protect public health within its district, and for that purpose every local authority is hereby empowered and directed —*

*(a) To appoint all such Environmental Health Officers and other officers and servants as in its opinion are necessary for the proper discharge of its duties under this Act:*

*(b) To cause inspection of its district to be regularly made for the purpose of ascertaining if any nuisances, or any conditions likely to be injurious to health or offensive, exist in the district:*

*(c) If satisfied that any nuisance, or any condition likely to be injurious to health or offensive, exists in the district, to cause all proper steps to be taken to secure the abatement of the nuisance or the removal of the condition:*

*(d) Subject to the direction of the Director-General, to enforce within its district the provisions of all regulations under this Act for the time being in force in that district:*

*(e) To make bylaws under and for the purposes of this Act or any other Act authorising the making of bylaws for the protection of public health:*

*(f) To furnish from time to time to the Medical Officer of Health such reports as to diseases and sanitary conditions within its district as the Director-General or the Medical Officer of Health may require.*

The Health Act 1956 now contains significant new provisions that were introduced via the Health (Drinking Water) Amendment Act 2007 that relate to the protection of drinking water network including the installation of backflow prevention devices.

## **2.2 Local Government Act 2002 (LGA2002)**

The LGA2002 is a wide ranging piece of legislation that sets out the purpose and obligations of local authorities. Although not specifically covered by the LGA2002, there are several areas of the Act that have relevance to the prevention of potential contamination by backflow. These include:

### ***Section 10(b) Purpose of local government***

*The purpose of local government is -*

*(b) To promote the social, economic, environmental, and cultural well-being of communities, in the present and for the future.*

Part 7 details specific obligations of local authorities. Although not specifically covering backflow potential contamination, section 130 covers obligations to maintain water services. In addition, section 126 covers general obligations relating to the supply of water at a scheme level.

## **2.3 The Building Act 2004**

This requires that buildings are safe and sanitary and the occupants are safeguarded from possible illness. The Act requires, under sections 100 and 101, that an annually renewable Building Warrant of Fitness (for non-residential buildings) to ensure the specified systems stated in the compliance schedule are operating correctly. The compliance schedule includes any backflow preventers installed at the source of potential contamination.

### ***100. Requirement for compliance schedule***

*(1) A building not used wholly as a single household unit -*

*(a) requires a compliance schedule if -*

*(i) it has a specified system; or*

*(ii) it has a cable car attached to it or servicing it; and*

*(b) requires the schedule for all specified systems it has and any cable car it has attached to it or servicing it.*

### ***101. Owner must comply with requirement for compliance schedule.***

*An owner of a building for which a compliance schedule is required under section 100 must obtain the compliance schedule.*

*A person commits an offence if the person fails to comply with subsection (1).*

*A person who commits an offence under this section is liable to a fine not exceeding \$20,000 and, in the case of a continuing offence, to a further fine not exceeding \$2,000 for every day or part of a day during which the offence has continued.*

### **108. Annual building warrant of fitness**

*An owner of a building for which a compliance schedule has been issued must supply to the territorial authority a building warrant of fitness in accordance with subsection (3).*

*The purpose of a building warrant of fitness is to ensure that the specified systems stated in the compliance schedule are performing, and will continue to perform, to the performance standards for those systems that are set out in the relevant building consent.*

*The building warrant of fitness must—*

- (a) be supplied on each anniversary of the issue of the compliance schedule; and*
- (b) state that the inspection, maintenance, and reporting procedures of the compliance schedule have been fully complied with during the previous 12 months; and*
- (c) have attached to it all certificates, in the prescribed form, issued by an IQP that, when those certificates are considered together, certify that the inspection, maintenance, and reporting procedures stated in the compliance schedule have been fully complied with during the previous 12 months; and*
- (d) have attached to it any recommendation made by an IQP that the compliance schedule should be amended to ensure that the specified systems stated in the compliance schedule are performing, and will continue to perform, to the performance standards for those systems; and*
- (e) be in the prescribed form; and*
- (f) contain the prescribed information.*

### **110. Owner must obtain reports on compliance schedule**

*An owner of a building for which a compliance schedule has been issued must—*

- (a) obtain annual written reports relating to the inspection, maintenance, and reporting procedures of the compliance schedule signed by each IQP [or other person] who carried out 1 or more of those procedures; and*
- (b) keep those reports, together with the compliance schedule, for a period of 2 years; and*
- (c) produce those reports for inspection, when required, by -*
  - (i) the territorial authority; and*
  - (ii) any person or organisation who or that has the right to inspect the building under any Act; and*
- (d) show the location of those reports and the compliance schedule on the building warrant of fitness displayed in accordance with section 108(4).*

The Building Act 2004 calls upon the Building Code, G12 Water Supplies regarding backflow prevention. This is the minimum acceptable standard to comply. It should be noted that existing buildings, and their specified systems, are not required to be upgraded to comply with the Building Code unless an alteration or change of use takes place (refer sections 112A, 115 and 116A of the Building Act 2004). This effectively means that where a building, and its associated water systems, were built and approved under legislation prior to the introduction of the Building Code, Council may not be able to use the Building Act to

enforce the installation of a backflow preventer within a building. However, with the passing of the Health (Drinking Water) Amendment Act 2007, Council now has the ability to enforce the installation, and ongoing testing and maintenance, of backflow prevention devices on the network side of the point of supply.

#### **2.4 New Zealand Building Code 1992**

The New Zealand Building Code was established as the First Schedule to the Building Regulations 1992. It should be noted that at the time of publication, the Building Code was being reviewed to align it with the Building Act 2004. All new building work must comply with the NZ Building Code. It is a performance based code, which means it states how a building and its components must perform as opposed to describing how the building must be designed and constructed.

The relevant clause in the NZ Building Code for Water Supplies is G12.

The first objective of G12, as stated in G12 1.1, is to "*safeguard people from illness caused by contaminated water*". Clause G12 3.2 further specifies that a building's potable water supply systems shall be protected from potential contamination, and shall be installed in a manner which avoids the likelihood of potential contamination within the building's system, and water main. A building owner is therefore required by law to '*avoid the likelihood of potential contamination within the system and the water main*'. To help building owners ensure that their building's potable water system complies with this legal requirement, the Department of Building and Housing has prepared a Compliance Document in accordance with section 22 of the Building Act 2004. Compliance Documents are non-mandatory guidance documents, but do provide a recognised method with the specified performance criteria of the NZ Building Code.

#### **2.5 Compliance Document for NZ Building Code Clause G12 Water Supplies - Third Edition (December 2007)**

This document (Acceptable Solution G12/AS1) provides guidance on the following aspects:

- ▶ Section 3.1 of the Compliance Document for Clause G12/AS1 prohibits water that has been drawn from the water main from being returned to the public system via backflow or cross connection.
- ▶ Section 3.2 prohibits cross connections between mains potable water supplies and private water supplies, as well as between potable water supplies and any facilities or pipes containing non-potable substances.
- ▶ Section 3.3 sets out hazard ratings for various types of facilities or appliances.
- ▶ Section 3.4 specifies the conditions under which backflow protection shall be provided. i.e. where ever it is possible for water or contaminates to backflow into the potable water network, as applicable the appropriate hazard rating in table 2 of the document.

#### **2.6 Building (Specified Systems, Change in use, and Earthquake Prone Buildings) Regulations 2005**

Specified systems item in Schedule 1:

7. Automatic back-flow preventers connected to a potable water supply.

## **2.7 Health and Safety in Employment Act 1992**

The Health and Safety in Employment Act states the following requirements from the employer as outlined in Section 6.

### ***Section 6 Employers to ensure safety of employees***

*Every employer shall take all practicable steps to ensure the safety of employees while at work; and in particular shall take all practicable steps to -*

- (a) Provide and maintain for employees a safe working environment; and*
- (b) Provide and maintain for employees while they are at work facilities for their safety and health; and*
- (c) Ensure that plant used by any employee at work is so arranged, designed, made, and maintained that it is safe for the employee to use; and*
- (d) Ensure that while at work employees are not exposed to hazards arising out of the arrangement, disposal, manipulation, organisation, processing, storage, transport, working, or use of things-*
  - (i) In their place of work; or*
  - (ii) Near their place of work and under the employer's control; and*
- (e) Develop procedures for dealing with emergencies that may arise while employees are at work.*

## **3. National Standards and Industry Best Practice Guidelines**

### **3.1 Drinking-Water Standards for New Zealand 2005 (Revised 2008)**

The Drinking-water Standards for New Zealand 2005 (Revised 2008) (DWSNZ) supersede and revoke the Drinking-water Standards for New Zealand 2005. The standards detail how to assess the quality and safety of drinking-water using the revised water quality standards and compliance criteria (collectively called the DWSNZ) that came into force on 31 December 2008. The drinking-water standards apply to drinking-water, that is, water intended to be used for human consumption, food preparation, utensil washing, oral hygiene or personal hygiene. The criteria are applicable to all drinking-water except bottled water, which must comply with the Food Act 1981.

The DWSNZ alone are not sufficient to protect against the public health risks from contaminated drinking-water. They provide a check on the final quality of the water delivered to consumers. The potential contamination of a water supply is guarded against by the treatment and delivery processes being managed as specified in the Public Health Risk Management Plan for the supply.

### **3.2 WaterNZ Backflow Prevention for Drinking Water Suppliers Code of Practice 2006**

This publication is a recommendation, as determined by WaterNZ, of how local authorities should carry out 'good practice' in protecting the drinking water network from potential contamination, in particular via potential backflow.

The Backflow Prevention Code of Practice deals only with Boundary Protection, with internal protection at the source of potential contamination, principally controlled by the Building Act 2004 and the Building Code 1992. It is intended that this code will be formally

adopted by all Water Suppliers as the method of compliance to Ministry of Health Public Health Risk Management Plan offering some uniformity throughout New Zealand. Its contents include Water Supplier and Customer Responsibilities, Product and Design Standards, Testers and Surveyors Qualifications. Adoption of the code requires Water Suppliers to:

- Ensure that the actions of customers do not have the potential for an adverse effect on other customers through potential contamination of water supply mains.
- Be proactive in determining what customers pose significant potential hazards to the integrity of the water supply.
- Have clear policies on backflow prevention.
- Have a 'risk management programme' to identify potential hazards and ensure that appropriate backflow devices are installed at all properties/premises. The risk management programme should include a database of containment devices, and include a system for regular testing of devices.
- Ensure that all personnel are appropriately trained.

### **3.3 Ministry of Health Public Health Risk Management Plan - Guide (Distribution System) Backflow Prevention June 2001**

The Ministry of Health produces various guides to assist water suppliers in complying with existing Drinking Water Standards and legislation. The Ministry of Health Guide to Public Health Risk Management Plans (Distribution System) - Backflow Prevention provides guidance on the types of potential hazards associated with backflow events, identifying possible causes and preventive measures. Wellington City Council have an approved Public Health Risk Management Plan (PHRMP) which has taken into account the Ministry of Health Guide to Public Health Risk Management Plans (Distribution System).

### **3.4 AS/NZS 2845.1:2010 Water supply - Backflow prevention devices - Materials, design and performance requirements**

This Standard specifies requirements for the design, performance and testing of backflow devices, used for the protection of potable water.

### **3.5 AS/NZS 3500.1:2003 Plumbing and drainage – Water Services**

#### **Section 1.1**

"This Standard specifies the requirements for the design, installation and commissioning of cold water services from a point of connection to the points of discharge, and non-drinking water from a point of connection to the points of discharge. It applies to new installations as well as alterations, additions and repairs to existing installations.

#### **Section 1.2.2**

"This Standard may be used for compliance with the New Zealand Building Code clause G12, Water Supplies."

## **AS/NZS 3500.5:2000 Plumbing and Draining Part 5: Domestic Installations Section 1.1**

"This Standard sets the requirements for the installation of hot and cold water supply, sanitary plumbing and drainage and stormwater drainage, for domestic plumbing work."

### Section 1.2.2

"This Standard may be used for compliance with the New Zealand Building Code clause G12, Water Supplies".

### Section 1.4.3

Of specific note is that application of "This Standard may be used as an alternative solution for compliance with the New Zealand Building Code Clause G12, Water Supplies and Clause G13, Foul Water."

### Section 2.16

Section 2.16 deals with the Protection of Potable Water Supplies while Section 2.17 deals with Provision of Backflow Prevention Devices and Section 2.18 specifically addresses protection of hazards relating to the installations of Irrigation and Lawn Watering.

## **3.6 NZS 4541:2007 Automatic Fire Sprinkler Systems**

### *404.3 Protection of potable water supplies*

*404.3.1 Backflow prevention shall be installed to protect public and on-site potable water supplies. In ground hydrants that are part of the building shall be backflow protected. The method of protection shall be as required by Compliance Documents of the New Zealand Building Code Clause G12.*

#### **NOTE-**

*(1) Backflow protection for the building is required in accordance with Approved Document for the New Zealand Building Code Clause G12.*

*(2) 'Buildings' are as defined in section 3 of the Building Act.*

*404.3.2 Devices to provide backflow prevention installed in the supply to a sprinkler system shall be listed and any strainers fitted shall be listed and comply with 404.10.*

*404.3.3 Backflow prevention devices shall be readily accessible for testing and maintenance. Backflow prevention devices located upstream of installation valve sets shall be located in a secure area. This secure area shall be either within the sprinkler valve house or sprinkler pump room, or where a TA requires a backflow prevention unit to be installed at the property boundary its location and security shall be subject to SSC approval. In the latter case the contractor shall provide a SSC with copies of documentation from the TA specifying their required location.*

*Backflow prevention devices require valves upstream and downstream for testing and maintenance purposes. If fit for purpose, the street valve and main stop valve may meet this need. Alternatively, additional stop valves with listed supervisory devices shall be installed.*

*Reduced pressure zone devices shall always be located above ground, and unless specifically recommended by the manufacturer, be located horizontally with the relief valve facing vertically downward and not less than 300 mm above the surrounding surface.*

*Double Check Valve assemblies may, if absolutely necessary, be installed below ground with specific approval of the TA and provided that:*

*(a) The Double Check Valve assembly is located in a permanent (concrete) pit that is a suitable size to allow for inspection, testing, maintenance and replacement;*

*(b) The pit is suitably drained and covered to prevent water pooling or silting; and*

*(c) The location is clearly indicated on the block plan.*

*Backflow prevention devices located outside the sprinkler valve or pumphouse shall be protected from freezing.*

*404.3.4 A drip tight valve and pipework are required to be installed downstream of any backflow prevention device to allow it to be tested. The main sprinkler stop valve, or valves, may provide this function. Valves are required upstream of backflow prevention devices for maintenance purposes. The main town's main isolation valve may provide this function.*

*604.1.2 On a class C1 or C2 system, two such connections may be made to the reticulation network and combined to produce a complying single supply provided that;*

*(c) The Network Utility Operator consents; and*

*(d) If check valves or backflow prevention devices are installed in each connection there shall be a labelled pressure gauge located at the control valves showing the pressure upstream of each check valve/backflow prevention device in accordance with 406.2. If the check valves or backflow prevention devices are installed in a remote location (such as at the boundary), the gauges shall be located at the control valves. The connections may be run in a suitably pressure rated small bore plastic tube. Attention is drawn to the need to ensure that this tube is not subject to freezing.*

*604.1.6 Connections for hose reels and other low demand uses provided the town's main and the branch connection are not less than 100 mm nominal diameter:*

*(e) Where required by the Building Consent Authority, such connections are fitted with an approved backflow prevention device.*

*604.1.7 Connections for industrial and/or high demand use water for industrial, large domestic demands or other purposes requiring a supply greater than 40 mm, may only be taken from the branch connection from a town's main with approval and if all the following conditions are complied with:*

*(g) Where required by the Building Consent Authority, such connections are fitted with an approved backflow prevention device.*

*(f) N/A*

### **3.7 NZS 4517:2002 Fire Sprinkler Systems for Houses**

*3.1.1.1 An independent system shall be a system permanently charged with water both above and below the installation control valves.*

*Note- Backflow prevention, in accordance with the New Zealand Building Code, Clause G12, is required to separate an independent system from potable water.*

#### **6.5.2 Backflow Protection**

*6.5.2.1 Backflow protection is required for independent systems*

*Notes-*

*Acceptable Solution G12/AS1 of Approved Document for New Zealand Building Code, Clause G12 requires a Dual Check Valve backflow preventer for systems that do not contain hazardous or toxic anti-freeze.*

*Acceptable Solution G12/AS1 of Approved Document for New Zealand Building Code, Clause G12 requires a reduced pressure zone backflow preventer for systems that contain hazardous or toxic anti-freeze.*

*Adding a plumbing fixture to induce regular flushing flow will effectively change an independent system into a combination system and a backflow preventer may be omitted.*

6.5.2.2 Backflow prevention is not usually required for combination systems.

## APPENDIX B

### Backflow prevention - Roles and responsibilities

#### General

The Building Act 2004 requires all buildings to have a safe and adequate water supply. If there is any likelihood of contamination from a cross connection, an approved backflow prevention device is required to eliminate it, ensuring that all end users are protected against contaminated water. To maintain a current building warrant of fitness all backflow devices must be inspected and tested annually, by an Independent Qualified Person (IQP).

The Health Act 1956, and the Health (Drinking Water) Amendment Act 2007, section 69ZZZ "Protecting water supplies from risk of backflow", authorises the Wellington City Council (WCC) to enforce backflow prevention, whether the hazard is new or historic, and recover all reasonable costs incurred for testing, survey, and retrofitting devices.

WCC is responsible for enforcing this legislation and managing its Backflow prevention containment policy.

The Wellington City Council requires the following protection of the water supply:

- **Source protection** - Backflow prevention devices shall be installed as close as possible to the source of potential contamination on all buildings covered by the Building Act. The selection of the appropriate device shall be in accordance with the New Zealand Building Code Approved Document G12.
- **Boundary protection** – in addition to the source protection a backflow prevention containment device shall be installed as close as practicable to the point of supply at the boundary. This device shall be installed in accordance with and as authorised by the Health Act 1956 and the Health (Drinking Water) Amendment Act 2007, section 69zzz – "Protecting water supplies from the risk of backflow". Where there are multiple levels of risk, the highest risk shall be used to select the device.
- **Zone protection** – this will generally only be required on large industrial sites to ensure separation between workshop or production facilities and office facilities.

It is the property owner's responsibility to ensure that the correct backflow prevention devices are installed, maintained and tested. The property owner shall be responsible for all costs associated with this.

All devices shall be appropriate to the hazards on site and tested annually (where testable) by an authorised Independent Qualified Person (IQP) who is permitted to test these devices. The test results are to be forwarded to WCC.

If a hazard is identified within a property WCC will require the property owner to install appropriate backflow prevention within a specified timeframe. If the property owner does not comply with WCC's requirements or if the risk to the water supply network is considered high WCC will install an appropriate backflow prevention containment device at the property boundary. WCC will charge the property owner all costs associated with the

installation in accordance with the Health (Drinking Water) Amendment Act 2007. The property owner shall be responsible for the maintenance and testing of the installed device.

## **WCC Building Consents and Licensing Services**

Wellington City Council's Building Consents and Licensing Services will be responsible for:

- Establish a backflow prevention programme to ensure properties are assessed for hazards, cross connections, the presence of appropriate source, boundary and zone backflow prevention devices, and that records of inspections and test data are maintained in accordance with the requirements of the Health (Drinking Water) Amendment Act 2007
- Liaise with and provide advice to IQPs and the public regarding backflow prevention
- Facilitating, maintaining and updating a register (database) of all backflow prevention devices in Wellington City and linking this register to the compliance schedules. The data base is to record the following:
  - Relevant property detail including name, location, contact details and ownership details
  - Property hazard level classification 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
  - Inspection and correspondence records
- Ensuring that properties are assessed in accordance with the three hazard (risk) ratings identified by G12/AS1 of high, medium and low hazard
- Review all current risk classifications for each property each year as the new test certificate becomes due or more frequently as required
- Liaise with IQPs (testers) to ensure that premises are assessed and classified correctly
- Liaise with other Territorial Authorities, industry bodies, training organisations, manufacturers and suppliers to ensure that the current levels of risk classification used in Wellington meets the current industry and legislative requirements
- Ensuring the requirements of the Building Act 2004 are met by identifying risks within a building, ensuring any necessary source, boundary and zone protection devices are installed and included on the compliance schedule
- Ensuring that Annual Building Warrant of Fitness checks are carried out and all protection devices included in the compliance schedule are tested at the time
- Processing of consents for the installation of devices including checking for compliance schedule requirements

- Advising property owners to apply for a Compliance Schedule where one is required
- Coordinating the final inspection and issuing the Code Compliance Certificate
- Conduct cross connection surveys for high rise residential, commercial and industrial properties and report on site hazards and the course of action required to remedy any hazard. The cross connection surveys are to be on a pro-active basis and actively target properties that are not known to have backflow prevention in place and may pose a hazard to the potable water supply
- Conduct cross connection surveys of properties at the request of the property owner/tenant
- Properties that have been identified as a risk to the water supply and are not known to have backflow preventers installed shall be added to the database and a cross connection survey arranged and undertaken
- Ensuring that annual testing is carried out for all devices not on compliance schedules
- Monitor the currency of test certification of all testable backflow prevention containment devices and take follow up action to ensure certification remains current
- Ensuring the test certificate is received upon installation of a consented device
- Ensuring the requirements of the Building Act 2004 regarding Building Warrants of Fitness (BWOFs), Building Consents and Certificates of Acceptance are met, including linking backflow prevention device installations to compliance schedules. This includes follow-up of non compliance issues notified by Capacity.
- Auditing BWOF
- Coordinating the final inspection and issuing the Code Compliance Certificate
- Ensuring that an acceptable Backflow Test Certificate is provided with the BWOF paperwork in addition to the Form12A certificate of compliance.
- Auditing properties for hazard level classification and arranging random testing of boundary backflow containment devices to ensure they are operable
- Ensure that records are available for inspection by the Medical Officer of Health
- Carry out surveys of properties as and when required to determine backflow hazards
- Proactively survey all commercial and industrial properties in Wellington City for backflow compliance on approximately a ten year cycle, as part of WCC's duty under S23 of the Health Act 1956

- Assessing the appropriateness of installed devices based on the hazard level classification for the property. Where the level of hazard is unable to be confirmed, a high hazard is to be assumed
- Ensuring that properties with potential hazards not eliminated at the source are noted on the property file to appear during the LIM process and lodging of building consents
- Sending annual device test reminders to property owners where device(s) are recorded on the backflow register but the property does not qualify to have a compliance schedule
- Education of the public on the hazards associated with backflow
- Education of IQPs, plumbers, and relevant WCC staff and connection applicants on the requirements of the Building Act, the Backflow prevention containment policy, and the relevant installation procedures
- Investigating and comparing other data sources such as the yellow pages or trade waste discharge consents to determine activities requiring backflow protection
- Enforcing the Backflow prevention containment policy and undertaking compliance audits as necessary
- Facilitating regular meetings with Capacity and other relevant parties within WCC

### **Capacity Infrastructure Services**

Capacity Infrastructure Services will be responsible for:

- The assessment of all new connection, disconnection and alteration applications for water supply connections against the Backflow prevention containment policy to determine the property hazard rating and backflow prevention containment device requirements. The installation of the required device at the property boundary will be a condition of approval of the application
- Updating this document, the Backflow prevention containment policy, and the relevant installation procedures
- Advising BCLS where a requirement for a new device has been identified
- Education of the public on the hazards associated with backflow
- Education of contractors and connection applicants on the requirements of the Backflow prevention containment policy and the relevant installation procedures
- Ensuring that all contractors that work on or access the water supply, especially where water is drawn from hydrants and tanker filling points, comply with the Backflow prevention containment policy and the relevant installation procedures

- Ensuring backflow prevention containment devices are provided for with all new water supply connections
- Working with BCLS to enforce the Backflow prevention containment policy and undertaking compliance audits as necessary
- Ensuring the risk management provisions of WCC's Public Health Risk Management Plans are followed to ensure that the correct backflow prevention devices are installed at all properties/premises
- Facilitating regular meetings with BCLS and other relevant parties within WCC

### **Property Owner**

The property owner will be responsible for:

- Ensuring the protection of the drinking water supply by preventing any potential contamination entering the water supply network from the property, regardless of occupancy or tenancy arrangements on the property
- Observing all legislative requirements regarding the correct use or change of use of all equipment connected to the drinking water supply
- Employing a suitably qualified IQP to identify site hazards and determine the hazard level classification for the property
- Installing, operating, testing and maintaining in proper working order at the property owners expense an appropriate approved backflow prevention containment device, at the boundary on each service connection to the property, in accordance with the Backflow prevention containment policy and the WCC Water Supply Connection Standards
- Lodging a building consent for the installation, alteration and removal of all backflow prevention devices when required. Any device installed or removed that is partially or wholly located within the property boundary requires a building consent
- Applying for a Compliance Schedule in conjunction with a building consent
- Ensuring all information about the installed device, including as-built drawings, is submitted to WCC within one month of commissioning
- Applying to WCC using WCC's "Application for water supply service" form where a new connection is required, including details of any existing backflow prevention devices and the hazard level classification for the property. All new connections must have a backflow prevention containment device installed at the property boundary as part of the connection and before any new connection to WCC's water supply is commissioned the applicant must demonstrate that the requirements of WCC's Backflow prevention containment policy have been met

- Implementing acceptable solutions (including installation of appropriate backflow prevention device(s)) within the specified timeframe given in writing by WCC
- Maintaining any device(s) in proper working order at all times
- Notifying WCC of any change in property use or alterations to plumbing (and applying for consent as required) that may compromise the quality of the drinking water supply or introduce additional potential hazards
- Arranging for the annual testing of testable devices by a registered IQP by the anniversary date of the last test
- Keeping a copy of the test certificates for at least the previous two years and submit all test certificates to WCC, as per the Building Act 2004 Section 110, within one month of the test date
- Ensuring all specified systems (as per the Building Regulations), specifically backflow preventers, are included on the Compliance Schedule for the property
- Ensuring that any device that is partially or wholly located within the property boundary is added to the property Building Warrant of Fitness compliance schedule and a copy of the annual IQP Test Certificate provided to the WCC BWOFF team as per the NZ Building Code Clause G12 Water Supplies - Third Edition (December 2007)
- Ensuring that all backflow prevention devices are accessible at all times and are not bypassed unless protected by another device of equivalent hazard rating
- Immediately notifying WCC if the property owner or occupant has reason to believe that backflow has occurred from the properties private water supply system to the public system
- Having an accredited party certify the change in hazard and informing WCC where the processes change at the property to either reduce or increase the hazard rating the property owner must. WCC may conduct a site audit to verify the new hazard rating
- Upgrading the backflow prevention containment device to ensure the correct device for the hazard is in place at the boundary where the hazard rating changes on the property
- Installing, testing and commissioning a backflow prevention containment device within three months where WCC determines that a device is required on the property
- Ensuring that cross-connections are immediately disconnected or altered to comply with WCC's requirements or otherwise removed where, in the opinion of WCC, a potential or physical cross-connection is found in the water service at any property

- Paying all required fees and costs associated with consent, installation, maintenance, testing, or removal of devices to meet the requirements of this document and relevant legislation
- Paying any fees or fines associated with demonstrating compliance with the Building Act retrospectively if installation of a complying backflow device is carried out without a building consent when one is required
- Reimbursing WCC for all installation, maintenance and testing costs for boundary device installations within its network, as required under the Health (Drinking Water) Amendment Act 2007
- Allowing access for WCC's Contractor as required for auditing or surveying purpose

If the property owner fails to install, repair, maintain, replace or test the backflow prevention containment device, or eliminate any cross-connection, (as required by a notice issued by WCC) or fails to comply with the Backflow prevention containment policy or meet the property owners responsibilities the property will be deemed non-compliant and WCC may disconnect a non-residential property, or restrict the supply to a residential property or mixed use property, until the property owner complies with the notice. The water supply will not be restored until the requirements of the policy are complied with and all applicable fees relating to re-establishing the water service are paid. In emergency situations, where the public water supply is being contaminated or is, in immediate danger of contamination, the water service may be disconnected at WCC's discretion.

WCC reserves the right to rectify or upgrade a faulty device to reduce risks to the water network. WCC will recover reasonable costs for this work from the property owner.

Properties that are not tested or do not comply with the legislation will be automatically classified as high risk.