



# Backflow Prevention Containment Guidelines



City West Water  
LIMITED

This document was established in June 2011 and has been adopted by the following water authorities in Victoria:



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## Operating Statement

For the purpose of ensuring the protection and integrity of the Network Utility Operator's reticulated water supply system, this document prescribes a set of guidelines that shall be adopted in conjunction with any existing Network Utility Operator's Backflow Prevention Containment Policy. In the absence of such a Policy the Network Utility Operator shall adopt this document as the Backflow Prevention Containment Policy.

All property owners when notified by the Network Utility Operator (NUO) must comply with the requirements of AS/NZS 3500:1 (and as amended), the Plumbing Code of Australia 2011 (and as amended) and the Water Industry Regulations (and as amended). All property owners with reticulated water supply connection must arrange for a suitably qualified person to assess the potential hazard, install and maintain an appropriate backflow prevention device at the boundary/main water meter for containment purposes.

The property owner is also responsible to arrange a suitably qualified person to conduct ongoing annual servicing, testing and lodgement of test results forms for testable devices with the relevant Network Utility Operator.

The installation of an appropriate backflow prevention containment device is necessary to ensure the reticulated water supply is protected from unintended cross connection and backflow of possible contaminants into the reticulated water supply system.

These Guidelines are effective from June 2011.

## Background

City West Water initially developed a Backflow Prevention Policy in 2000 (Document POL-50) to address property containment for new and existing connections to ensure the protection of the reticulated drinking water supply system and to safeguard public health.

These guidelines have been developed to be used in conjunction with the current policy and will better assist customers in complying with City West Water's backflow prevention requirements. The document encompasses the varying aspects of backflow prevention and City West Water's commitment to maintaining a collaborative approach with property owners when managing the changing demands for reticulated water supply including alternative water supplies.

City West Water reserves the right to specify any additional requirements without notice as deemed appropriate to ensure the integrity of the reticulated water supply system.

## Introduction

This document applies to all property owners connected to a Network Utility Operator's system. It identifies the type of backflow prevention required for property connections with low, medium or high hazards as defined in Australian/New Zealand Standard AS/NZS 3500, Part 1 Water Services and the Plumbing Code of Australia 2011 (and as amended) and the conditions that property owners must comply with to remain connected to the reticulated water supply system.

## Objectives

1. To ensure the integrity of the Network Utility Operator's reticulated water supply system by minimising the risk of backflow contamination from connections to the system.

This may include potential threats from residential, commercial, mixed development processes, industrial processes and properties serviced by grey and black water recycling systems.

2. To specify when testable backflow prevention containment devices are required to be installed at properties with a medium or high hazard rating in order to protect the reticulated water supply system from contamination flowing back through the property water service, metered standpipes, separate fire service or hydrants.

3. To outline the Network Utility Operator's requirements to install and test backflow prevention containment devices on properties rated as medium and high hazards.
4. To outline the Network Utility Operator's requirements to ensure non-testable backflow prevention devices on properties rated as a low hazard.
5. To identify backflow prevention containment requirements for customers with multiple reticulated water supplies.
6. To identify backflow prevention containment requirements on fire services.

## Definition of Terms

Term	Definition
AS/NZS 3500.1 and PCA 2011	Australian/New Zealand Standard for Plumbing and Drainage Part 1: Water Services and the Plumbing Code of Australia 2011
Backflow	The unplanned reverse flow of water or mixtures of water and contaminants into the reticulated water supply system.
Backflow Prevention Containment Device AS/NZS 3500.1	A device to prevent the reverse flow of water from a potentially contaminated source, into the Network Utility Operator's reticulated water supply system.
Backpressure	The difference between the pressure within any water service and a higher pressure within any vessel or pipework to which it is connected.
Back-siphonage	Backflow that occurs when the water supply pressure falls below atmospheric pressure.
Compliance Program for Existing Properties	A program identifying existing properties having a medium or high hazard rating requiring to be fitted with appropriate containment protection.
Containment protection	The installation of a backflow prevention containment device on the reticulated water supply system at the property boundary, to prevent backflow from within the property entering the system.
Cross connection	Any connection or arrangements between the system, connected to the water main or any fixture that may enable non-drinking water or other contamination to enter the system.
Double check valve AS/NZS 3500.1	A medium hazard testable device in accordance with AS 2845 Part 1.
Drinking water	Water that is suitable for human consumption, food preparation, utensil washing and oral hygiene (see AS/NZS 4020). Compliance with the Australian Drinking Water Guidelines 2004 (and as amended) is required.
Dual check valve	Low hazard non-testable device in accordance with AS 2845 Part 1.
Fire service	Services comprising water pipes, fire hydrants, fire hose reels, fittings and including water storage or pumping facilities, which are installed solely for fire fighting and extinguishing purposes in and around the building or property.
Grey/black water treatment system	A system that provides a localised water treatment system owned and operated by the Network Utility Operator and/or private operator.
High Hazard Rating AS/NZS 3500.1	Any condition, device, or practice, which in connection with the system, has the potential to cause death.
Individual protection	Installing a backflow prevention device at the point where the water pipes connect to a fixture or appliance.
Low Hazard Rating AS/NZS 3500.1	Any condition, device, or practice, which in connection with the system, is a nuisance but does not endanger health or cause injury.
Medium Hazard Rating AS/NZS 3500.1	Any condition, device, or practice, which in connection with the system, could endanger health.
Mixed development	A property with both commercial and residential classifications on-site
Network Utility Operator (NUO)	The organisation responsible for the supply and on-going management of Reticulated Water Supply Systems in a designated area of supply.
New properties	Any new or existing property, undergoing construction or redevelopment that must submit a development application.
Reduced Pressure Zone Device AS/NZS 3500.1	A high hazard testable device in accordance with AS 2845 Part 1.
Registered Air Gap	A device or system installed for backflow prevention registered by, or on behalf of, a Network Utility Operator for inspection and maintenance.  Air gap for water supply system is specifically defined as the unobstructed vertical distance through the free atmosphere between the lowest opening of a water service pipe (or fixed outlet) supplying water to a fixture or receptacle and the highest possible water level of that fixture or receptacle.
Registered break tank	Installation of a Registered Air Gap will be applied to sites rated as a high hazard backflow risk. A tank system specifically designed for backflow prevention registered by, or on behalf of a Network Utility Operator, for inspection and maintenance.  Installation of a registered break tank will be applied to sites rated as a high hazard backflow risk.
Reticulated water supply system	The supply system into which the Network Utility Operator delivers drinking and/or non-drinking water.
Suitably qualified person – backflow testing	A plumber registered and/or licensed in backflow according to the Plumbing Industry Commission (PIC).
Zone protection	Installing a backflow prevention device at the connection point of specified sections of a plumbing system within a building or facility.

## Legislation and Standards

The following are the principal Acts, Regulations and Standards that are relevant to the area of backflow prevention.

### **The Water Act 1989 (and as amended)**

It defines water entitlements and establishes the mechanisms for managing Victoria's water resources.

Section 8 provides for an individual's rights and Section 9 sets out the rights of water corporations.

### **Water Industry Act 1994 (and as amended)**

This requires the Network Utility Operator to provide, manage, operate and protect the water supply system. It allows Network Utility Operator to outline conditions with which all property owners must comply with when connecting to the water supply.

### **Water Industry Regulations 2006 (and as amended)**

Section 11 and 17 outlines the property owner's responsibility for the installation and ongoing maintenance of backflow prevention devices.

### **Safe Drinking Water Act 2003 (and as amended)**

The purpose of this Act is to make provision for the supply of safe drinking water. This includes making specific directives to water supply authorities in managing water quality.

### **AS/NZS 2845 Water Supply – Backflow Prevention Devices (and as amended)**

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

### **AS/NZS 3500 Part 1 Water Services and Part 5 Cold Water Plumbing (and as amended)**

#### **Part 1 (Section 4)**

This section specifies the requirements and methods for the prevention of potential contamination of drinking water within the water service and the water main and provides for the selection and installation of backflow prevention devices.

### **Plumbing Code of Australia 2011**

This legislation empowers the regulation of certain aspects of plumbing and drainage installations, and contains the administrative provisions necessary to give effect to the legislation.

## Operating Principles

1. The property owner is responsible for the purchase and installation costs of a backflow prevention containment device appropriate to the hazard rating of the development type as specified in AS/NZS 3500.1 Water Supply Section 4 and the Plumbing Code of Australia 2011 (and as amended).
2. The property owner is responsible for the maintenance and testing of the device as detailed in AS/NZS 3500.1 and the Plumbing Code of Australia 2011 (and as amended), AS/NZS 2845 Part 3 (and as amended) and the Water Industry Regulations 2006 Section 11 and 17 (and as amended) by a suitably qualified person.
3. The Network Utility Operator will maintain a register of all installed testable backflow prevention containment devices and annual test reports. They will conduct audits of installations from time-to-time to ensure on-going compliance with AS/NZS 3500.1 and the Plumbing Code of Australia 2011 (and as amended) and the Network Utility Operator's Backflow Prevention Containment Policy.
4. If the Network Utility Operator issues a notice that a backflow prevention containment device does not comply with AS/NZS 3500.1 and the Plumbing Code of Australia 2011 (and as amended) and the Network Utility Operator's Backflow Prevention Containment Policy, the property owner must engage a suitably qualified person to repair, maintain, test, replace or install the backflow prevention containment device as specified in the notice within the timeframe given.
5. If the property owner fails to comply with the notice issued by the Network Utility Operator to repair, maintain, test, replace or install the backflow prevention containment device, the Network Utility Operator in accordance with the **Water Industry Act 1994\*** may remove or disconnect the Reticulated Water Supply System to the property or to carry out the required maintenance works and recover from the property owner all reasonable costs applicable.  
  
**\*Note:** Or the *Water Act 1989*
6. If the process at the property has changed affecting the hazard rating, the property owner must have a suitably qualified person assess the site and provide a written report of their assessment to the Network Utility Operator certifying the change in hazard level. The Network Utility Operator may conduct a site audit to verify the revised hazard rating.

## Operating and Administrative Requirements

1. A testable backflow prevention containment device must be installed on all properties with a medium or high hazard risk in accordance with AS/NZS 3500.1 and the Plumbing Code of Australia 2011 (and as amended) at or near the property boundary. No connection may bypass the backflow prevention containment device.
2. The type of backflow prevention containment device installed is based on the on-site water processes and or the type of reticulated water supply system present.
3. In the absence of a known hazard for any new development the Network Utility Operator will automatically default to a high hazard device. The owner/ developer shall engage a suitably qualified person to conduct an assessment to determine the appropriate hazard rating.  
**Note:** Consent to connect will only be granted once relevant backflow documentation is completed and received by the Network Utility Operator.
4. Where multiple processes occur on a site, the hazard rating of the backflow prevention containment device will be equal to or greater than that of the highest hazard required to protect the zone and or individual hazard.
5. The property owner must complete a registration form agreeing to maintain and test the backflow prevention containment device(s) at intervals of no more than 12 months from the date of the initial commissioning or as otherwise determined by the Network Utility Operator.
6. Residential properties provided with reticulated Class A recycled water supply are provided with a dual check valve/dual check meter on the Class A recycled water supply, which provides a minimum control against cross connection.
7. The backflow prevention containment device(s) shall be installed, commissioned and tested annually by a suitably qualified person.

8. Results of annual testing of the device must be forwarded to the Network Utility Operator within 14 days of the test for recording. Test reports must clearly show:
  - The property address
  - Location of device
  - Test date
  - Device test results
  - Device type, make, serial number and size
  - Water meter number
  - Tester's name, licence/ registration number, contact phone number and address
  - Test kit calibration date and serial number.

**Note:** The test report must be in accordance with the provisions of AS2845 Water Supply – Backflow prevention devices; Part 3 Field testing and maintenance (and as amended).
9. Owners of properties with high hazard ratings must install a reduced pressure zone device, registered break tank or registered air gap.
10. Owners of properties with a medium hazard rating must install a double check valve.
11. Standpipes (portable and fixed for tankering / water carrying / temporary supply purposes) connected to the Network Utility Operator's reticulated water supply system shall be rated as a high hazard.
12. a) Fire services require a single check valve testable as a minimum.  
b) If fire services using alternative water are inter-connected to the fire service, a higher hazard level would apply in this instance.
- c) Where fire appliances are provided in a high hazard area, backflow prevention commensurate with the hazard level shall be provided.
13. Drinking and non-drinking water services must not be cross connected without the installation of an appropriate backflow prevention containment device. The device installed must be the same on both the drinking and non-drinking water services. These properties include mixed developments and areas serviced by grey and black water treatment systems.

## Compliance

1. The property owner is responsible for arranging the installation, maintenance and annual testing (where applicable) by a suitably qualified person of the backflow prevention containment device(s) within their property in accordance with AS/NZS 3500.1 and the Plumbing Code of Australia 2011 (and as amended).
2. A licensed plumber in water supply may install all backflow prevention containment devices. Only a suitably qualified person may commission and test these devices.
3. A licensed plumber in water supply may install registered break tanks, and registered air gaps. Only a suitably qualified person may commission and test these devices.
4. The property owner is responsible for ensuring that the backflow test report is submitted to the Network Utility Operator within 14 days of the test being conducted.

**NOTE:** The property owner has a legal obligation to maintain the reticulated water supply system inside their property and depending upon the plumbing system and hazard ratings of the internal processes, to install additional individual/zone protection backflow prevention devices.

## Non-Compliance

As the aim of these Backflow Containment Guidelines is the protection of the system and public health, it is vital that all parties co-operate with the relevant Acts, Regulations and Standards.

In the event of a property owner refusing to rectify a potential backflow hazard or cross-connection hazard the Network Utility Operator has the authority to disconnect the reticulated water supply system to the relevant property in order to protect the system and public health as per Section 65 of the *Water Industry Act 1994\** (and as amended).

**\*Note:** Or the *Water Act 1989*

Examples where the system may be disconnected include:

- Failure to install a backflow prevention containment device following request from the Network Utility Operator.
- Failure to carry out tests or maintain a backflow prevention containment device in accordance with AS/NZS 3500 (and as amended) and AS/NZS 2845 (and as amended).
- Failure to replace or repair a backflow prevention containment device.

- Removal or bypassing of a backflow prevention containment device without the authority of the Network Utility Operator.

The Network Utility Operator reserves the right to install the appropriate containment device at the relevant property and to take necessary action to recover all associated costs.



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