

Backflow explained

About backflow prevention containment



Backflow Prevention Containment Policy

Sydney Water is licensed to operate water, sewerage and some stormwater drainage systems in Sydney, Illawarra and the Blue Mountains. This Operating Licence is granted under the *Sydney Water Act 1994*.

The Act requires Sydney Water to observe three equally important objectives:

- To protect public health
- To protect the environment
- To be a successful business

Sydney Water's Backflow Prevention Containment Policy supports these objectives, and aims to improve the safety of Sydney's water supply by reducing the risk of contamination by backflow from connections to the water supply systems, either from a customer's premises, fire service, or standpipe.

Policy Statement

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

All water services connected to Sydney Water's water supplies must meet the requirements of the *NSW Code of Practice for plumbing and drainage and Australian/New Zealand Standard for plumbing and drainage Part 1: Water services (AS/NZS 3500.1)* to protect Sydney Water's water supplies.

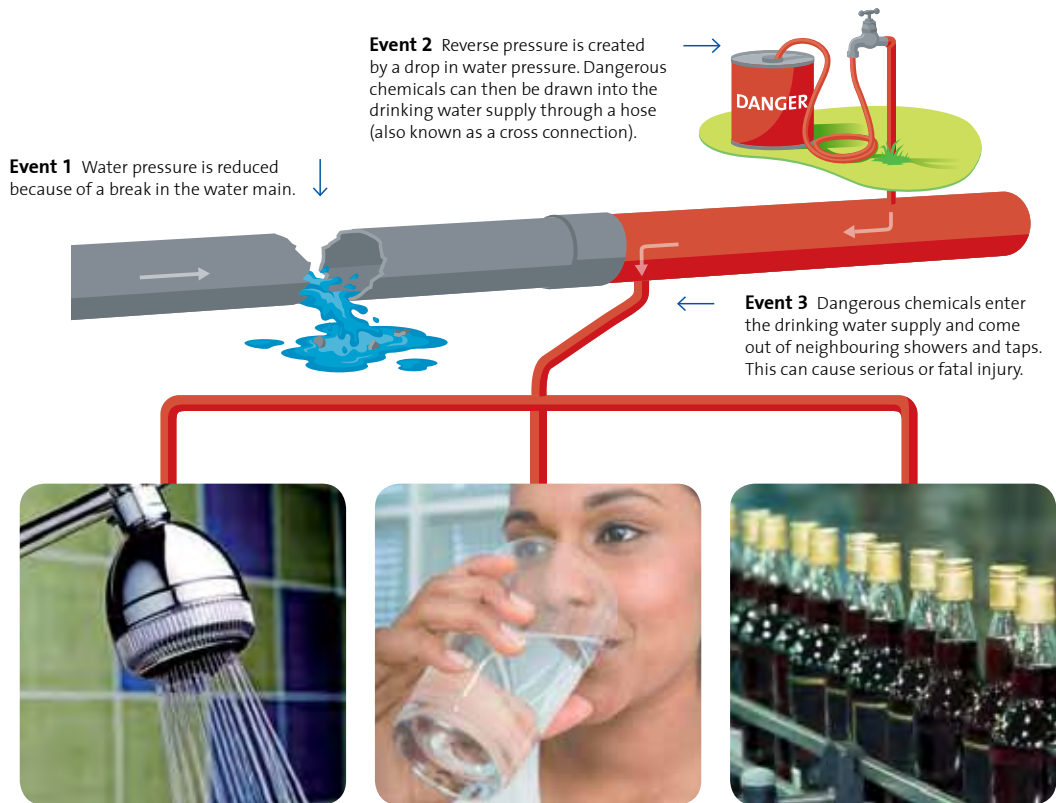
Property owners that have a high or medium hazard rated property must install a testable backflow prevention containment device at the property boundary for containment protection, appropriate to the property's hazard rating. They must have the backflow prevention containment device tested every year.

As of 1 January 2009, all new properties identified as having a low hazard rating must install a non-testable device, as a minimum. Where the water service is greater than 25 mm, the owner must pay for the installation.



How backflow can occur

Backflow can occur through a series of events, as outlined below:



Event 1

Water pressure is reduced in the water main

If the water pressure is not maintained, there is a chance the water could be drawn backwards into the water main.

Water pressure can be affected by:

- a break in the water main
- pumping water from the main water supply during a fire
- using water at a higher pressure than the pressure supplied by Sydney Water
- heavy water use downstream, reducing water pressure upstream
- water outlet at a property being higher than the water main, causing constant back pressure.

Event 3

Dangerous chemicals entering the drinking water supply come out of neighbouring showers and taps

If this water is used, occupants could be seriously or fatally injured.

Event 2

Reverse pressure is created by a drop in water pressure

This draws dangerous chemicals into the drinking water supply through a cross connection.

A number of different property types can pose a risk to public health through cross connections. These include:

- chemical plants
- shopping centres/malls
- market gardens
- golf courses/sporting ovals
- smash repairers
- metal processing plants
- residential properties with greywater treatment systems.

Why do I need to install a backflow prevention containment device?

A backflow prevention containment device ensures that the drinking water supplied by Sydney Water cannot be contaminated by any actual or potential cross connections from a customer's property.



Site cross connection

Hose connected to a tap and outlet submerged in oil water collection pit has the potential to contaminate the drinking water supply if there is a drop in pressure in the water main.



Contamination event

A contaminated water supply due to backflow from a high or medium hazard property can result in death or serious illness.

What are my backflow prevention requirements?

To protect the drinking water supply, you must install a backflow prevention containment device at your property boundary on the outlet side of all master water meter(s). This isolates your water supply from Sydney Water's drinking water supply.

When Sydney Water has determined that a device is required at your property, you have three months to install and test a backflow prevention containment device.

Property owner responsibilities

We recommend you engage a licensed plumber with backflow prevention accreditation. An accredited plumber can determine the hazard rating of your process, the type of device required, as well as install, commission and test the device. This may help reduce your costs. A list of backflow accredited plumbers is available at sydneywater.com.au

In order to prevent contaminating the drinking water supply, all property owners must:

- ensure an appropriate backflow prevention containment device is fitted to all water supplies entering the property regardless of the supply type or metering arrangements
- arrange for annual testing of the device.

If the property owner fails to install, repair, maintain, replace or test the backflow prevention containment device (as required by a notice issued by Sydney Water), Sydney Water may disconnect a non-residential property, or restrict a residential property or mixed development from the water supply system (under the *Customer Contract*, clause 6.3), until the property owner complies with the notice.

If your property has more than one master meter, you'll need to install a containment device on each of the master water meters.

What your plumber will do

Your backflow prevention accredited plumber will:

- install the appropriate device(s) on the outlet side of all master water meter(s) located at the property boundary. There should be no connections between the master water meter and the device.

- In cases where there is no master water meter(s), the containment device shall be installed on the water supply when it enters the property boundary.
- complete a Backflow Prevention Inspection and Maintenance Report for each device and complete a Certificate of Compliance.
- submit these forms to Sydney Water within two days of commissioning the device to ensure your compliance with our requirements. Test reports can be submitted online at sydneywater.com.au
- give you a copy of these forms

Sydney Water may audit the installation at your property to ensure ongoing compliance with the Backflow Prevention Containment Policy.

Yearly testing

Customers who have testable backflow prevention containment device(s) installed must have the device tested every 12 months by a licensed plumber with backflow accreditation. We will advise you in writing when this is due.

Yearly testing ensures that the backflow prevention device continues to operate correctly. A defective device can:

- cause a backflow incident
- allow water to escape through leaking devices
- reduce water pressure to your property.

What device do I install?

The hazard rating of the processes carried out on your property will determine what type of device you need to install. You will need to consult a licensed plumber with backflow prevention accreditation to determine what your property needs.

The three hazard ratings identified by *AS/NZS 3500.1* 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.

Types of backflow prevention devices



Hazard rating – high

Reduce pressure zone device

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.



Hazard rating – medium

Testable double check valve

Two independent action non-return valves arranged to be force-loaded to the closed position.



Hazard rating – medium

Testable double check detector assembly (Fire services)

A specially designed assembly composed of a line-sized approved double check valve assembly, with a specific by-pass water meter and a meter-sized approved double check valve assembly.



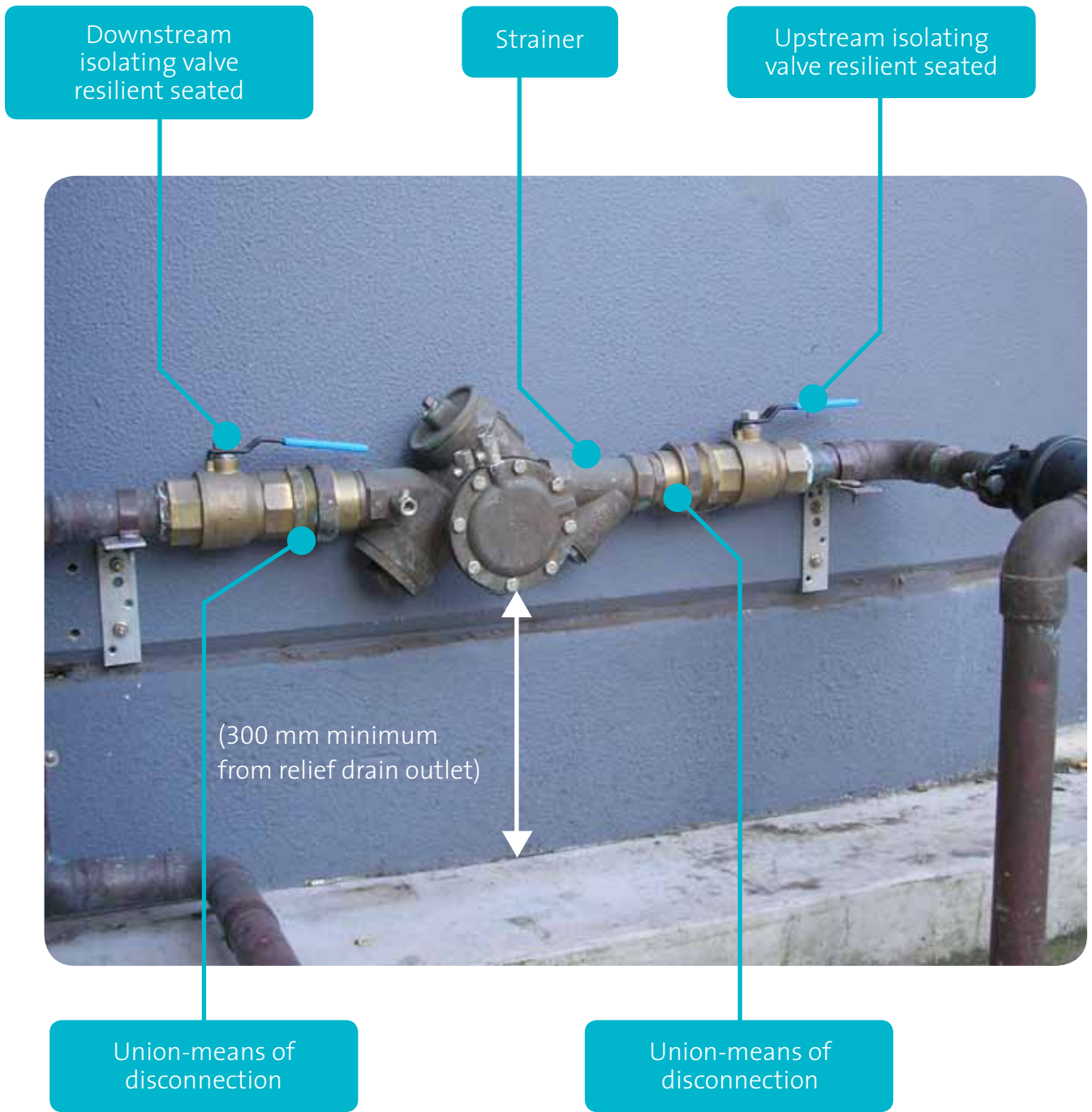
Hazard rating – low

Non-testable dual check valve

Two independently acting non-return valves in series arranged to be forced loaded to the closed position.

Typical backflow prevention device installation

Reduced pressure zone device



Conditions of installation

- A backflow prevention containment device must be installed on all properties as defined in *AS/NZS 3500.1*.
- Where the hazards are unknown for a new commercial or industrial property or mixed development, the hazard rating will be declared high, requiring the installation of an appropriate device.
- All backflow prevention containment device(s) installed on properties in Sydney Water's area of operations must be manufactured and quality assured to *AS/NZS 2845*.
- Property owners must ensure a backflow prevention containment device is fitted to all water supplies entering the property, regardless of the supply type or metering arrangements.
- All containment devices must be installed on the outlet side of the master water meter(s) supplying the property. There must be no connections between the water meter and the containment device.
- In cases where there is no master water meter(s), the containment device shall be installed on the water supply where it enters the property boundary. No connection may bypass the backflow prevention containment device.
- As of 1 January 2009, all new properties identified as having a low hazard rating must install a non-testable device as a minimum. Where the water service is greater than 25 mm, the owner must pay for installation.
- Note: Sydney Water proactively addresses potential low hazard properties by installing either a 20 or 25 mm water meter with an integrated dual check valve as part of its water meter renewal program and for new connections. In most cases this will be sufficient.
- A reduced pressure zone device must be installed so that the relief drain outlet is not less than 300 mm above the ground surface to prevent vegetation from blocking the drain and to allow for testing.
- A containment device must not be placed in pits or below ground level as the pit may fill with water and cause a backflow incident.
- Customers are to take responsibility for providing zone and individual backflow prevention from hazards within their property as specified in *AS/NZS 3500.1*.
- Owners of properties with separate hydrant and sprinkler fire services must install a testable double check detector assembly. The device must be installed close to where the water service crosses the property boundary, upstream of any booster assembly on, or off-take from, the fire service.



Glossary

Australian/New Zealand Standards 2845 (AS/NZS 2845)

A standard of design and performance requirements for backflow prevention devices, consistent with Sydney Water's *Backflow Prevention Containment Policy*.

Australian/New Zealand Standards 3500 (AS/NZS 3500:1)

A guideline for installing and maintaining a backflow prevention device, consistent with Sydney Water's *Backflow Prevention Containment Policy*.

Backflow

Flow in a direction against the normal or intended direction such as the unintended flow of water from a potentially polluted source into a drinking water supply.

Backflow prevention accredited plumber

A licensed plumber who has completed a TAFE NSW backflow prevention course.

Backflow prevention containment device

A device to prevent the reverse flow of water from a potentially polluted source into the drinking water supply system.

Backflow Prevention Containment Policy

Sydney Water's backflow prevention containment requirements for all customers connected to Sydney Water's water supply where there is a risk of contaminating the water supply.

Backflow Prevention Device Inspection and Maintenance Report

Form that accredited plumbers complete to certify the correct commissioning and functioning of the backflow device.

Containment protection

The installation of a backflow prevention containment device on the water service(s) at the property boundary to prevent backflow from the property entering the main water supply.

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 that may enable non-drinking water or other contamination to enter the drinking water supply system.

Customer

The property owner.

Drinking water

Water that is suitable for drinking.

Individual backflow protection

A backflow prevention device installed at the water connection to a fixture or appliance.

Licensed plumber

A plumber with a license issued by the NSW Office of Fair Trading.

New South Wales Code of Practice

Government legislation to provide uniform administration and technical requirements for the installation of plumbing and drainage in New South Wales.

Master water meter

A water meter owned by Sydney Water located at the property boundary on the water supply to that property.

Non-drinking water

Water that is deemed as non-drinking due to a potential for contamination from an unprotected source.

Standpipe

A rigidly supported vertical length of pipe emerging from the ground with a tap or valve and incorporating a water meter which serves as an outdoor water supply point.

Sydney Water Customer Contract

A legally enforceable document legislated by the New South Wales Government to spell out the rights and responsibilities of Sydney Water and its customers. It also introduces Sydney Water's policies for handling complaints and giving redress, eg a rebate on your service availability charge or compensation if we fail to provide our services at the agreed standards.

Sydney Water Operating Licence

This licence enables Sydney Water to undertake water, wastewater and stormwater activities in Sydney, Illawarra and the Blue Mountains.

The Operating Licence sets quality and performance standards for Sydney Water for:

- customer rights
- drinking water (health and aesthetic), environmental and other water quality
- systems performance, water continuity, water pressure and sewage overflows
- water conservation and demand management
- environment indicators and plans
- Environmentally Sustainable Development (ESD) indicators, energy management, pollution reduction and trade wastewater.

Zone protection

Installing a backflow prevention device at the connection point of specified sections of a plumbing system within a building or facility.



Contact us

To know more, visit
sydneywater.com.au
or call 13 20 92

Postal address

Sydney Water
PO Box 399
Parramatta NSW 2124

