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1. **BACKGROUND**

(a) What is backflow?

The water supply system is designed so that water flows out of your tap under pressure. In certain unusual situations however, for example with a burst main or during fire fighting, water pressure may become so low that water flows in the other direction.

Reverse flow is known as backflow and may be due to:

- back-siphonage, when water is siphoned from the property, or
- back-pressure, for example when a pump is connected to the water supply.

(b) What is a cross-connection?

It is any connection between the water supply and a source of potential contamination, such as a fixture, storage tank or equipment, through which used, unclean, polluted or contaminated water or any other substance might enter the water supply.

Even the simple action of using a running hose to clear a blocked drain could develop into a potentially hazardous situation. A sudden drop in pressure caused by a burst pipe inside or outside the property could siphon the contaminated water back into the property plumbing and your drinking water supply.

(c) Has backflow contamination really happened and can you give me an example?

Yes, it has happened both in Australia and overseas. Fortunately, instances in Australia have been localised. For example, local contamination occurred when water was used to top up an air conditioning system and when groundwater was injected from connected bores in private property. Backflow contamination incidents were also caused by farmers injecting agricultural chemicals into the water supply while irrigating their paddocks.



2. PREVENTING CONTAMINATION

(a) How can backflow be prevented?

Backflow can be prevented by ensuring that plumbing systems are correctly designed and operated. Cross-connections should be avoided wherever possible, but where they exist they must be fitted with backflow prevention devices.

(b) What is boundary containment protection?

Boundary containment protection refers to the fitting of an appropriate backflow prevention device on all water service connections located at the property boundary (including all fire services), metered or otherwise. It *contains* any potential contamination *from* that property *to* the property.

Boundary containment protection is additional to any individual or zone protection devices within the property boundary. The provision for up to three levels of protection is consistent with the principle of multi-layer protection, as recognised by the nationally adopted “*Framework for Management of Drinking Water Quality*”.

(c) Don't the devices already installed on the property offer sufficient protection?

The Plumbing Regulations require boundary containment protection to be used where there is potential for unprotected cross-connections on the property. In effect, there is a known risk of this occurring on any property not only through backflow device failure but also through things such as human error. Commercial and industrial premises are of greatest concern due to the nature of likely contaminants. The Water Corporation therefore requires that new commercial and industrial service connections at the property boundary be fitted with a backflow prevention device appropriate to the property hazard.

3. LEGISLATION

(a) Requirement to have backflow prevention devices fitted

Property owners and occupiers are required by the following by-laws to ensure that their private services conform to the “plumbing standards” that are set out in the Plumbing regulations.

- 15.8 of the *Metropolitan Water Supply, Sewerage and Drainage By-laws 1981* (the MWSS&D By-laws); and
- 59 of the *Country Areas Water Supply By-laws 1957* (the CAWS By-laws).



The *Water Services Licensing (Plumbers Licensing and Plumbing Standards) Regulations 2000* “the regulations” are administered by the Plumbers Licensing Board and identify in the “plumbing standards” that these devices are required:

- at the source of any potential contamination (individual protection), and/or
- to isolate an area or zone, for example a building, within a property (zone protection) (Section 4 of the joint Australia/New Zealand Standard AS/NZS 3500.1:2003).

Refer [here](#) to a copy of the backflow prevention policy for customers.

(b) Where does it state that I am legally required to provide extra protection?

The power for the Water Corporation to require you to provide containment protection is identified by the MWSS&D by-law 28.7.1 and the CAWS by-law 61(1).

(c) What right do you have to come to my property?

The Water Corporation has power under the following to inspect properties to determine whether all fittings and their materials and mode of arrangement are in accordance with the by-laws:

- Section 49 of the Metropolitan Water Supply, Sewerage and Drainage Act 1909; and,
- Section 42 of the Country Areas Water Supply Act 1947.

(d) Why does the device have to be tested after installation, or repair and maintenance and at least every 12 months?

Devices need to be tested periodically to ensure that they are functioning properly. This is a requirement of the manufacturer and it takes account of the fact that internal seals, springs and moving parts are subject to fouling, wear or fatigue.

Testing requirements are identified in Australian Standard AS 2845.3:1993 and AS/NZS 3500.1:2003, which are both referenced by the Plumbing regulations.

The MWSS&D by-laws and the CAWS by-laws also require the testing and maintenance of backflow prevention devices in accordance with and at the intervals set out in AS 2845.3:1993.



4. **ABOUT THE DEVICE**

(a) How does it work?

Different types of backflow prevention devices are available. Their complexity varies depending on the level of risk being addressed. Various features may be present as follows:

Backflow Prevention - Containment

- Sprung loaded check valves that slam shut to prevent backflow.
- Opening of the waterway to the atmosphere when backflow occurs. This allows air to enter the valve thereby breaking any siphon.
- A relief valve that allows automatic dumping of all liquid passing through the device during backflow due to backpressure.
- The inclusion of multiple test points that allow pressure gauges to be connected for annual device testing.

(b) Will it affect the pressure/flow and how much?

Yes, although the effect may not be noticeable. The actual effect depends on the type of backflow prevention device and the existing hydraulics for the service connection. You should use a skilled plumbing consultant and/or licensed plumber to identify any specific requirements for your own plumbing system.

(c) Do the devices need protection from the hot sun?

Before selection and installation of the device your licensed plumber should refer to the manufacturer's literature. Specialised devices are available for high temperature water conditions. Advice should be sought from the device manufacturer in relation to extreme atmospheric conditions.

(d) Will the devices still operate when temperatures reach freezing?

Backflow prevention devices should be protected from freezing temperatures. Your licensed plumber should consult the device manufacturer to determine the specific rating of the device and any special installation requirement.



5. **INSTALLING A DEVICE**

(a) How do you know that is the device I require?

Different types of devices are available and the type used depends on the hazard rating of the processes carried out on your property. The AS/NZS 3500.1:2003 provides guidance on their selection and all devices used are required to comply with AS 2845.1.

You should use a licensed plumber for a site evaluation and the detailed design of your plumbing system.

(b) Who can I get to install/test the device?

It is a requirement of the Plumbing regulations that only licensed plumbers install plumbing work and certify it as complying with the Plumbing regulations [regulation 9 and 42].

The Plumbers Licensing Board maintains a register of licensed plumbing contractors and can be contacted on (08) 9282 0478. The Water Corporation maintains a list of permitted testers who are actively engaged in this work and can be contacted on 13 13 95 or, for TTY users (hearing impaired only), on 13 36 77.

(c) Can I put it in the ground?

The Regulations do not permit backflow prevention devices to be buried in the ground. This ensures access to them for maintenance and testing (4.6.2 of the AS/NZS 3500.1:2003).

In addition, any vented testable backflow prevention device is not to be installed in a pit or chamber. This avoids their submergence through pit or chamber flooding, which could lead to water contamination if backflow occurs.

(d) Where do I have to install the device?

Boundary containment protection devices are required to be installed on the service connection downstream of the water meter. They are to be adequately supported and no part of any fitting or boundary containment device is to be installed closer than the greater measurement of five pipe diameters or 300 mm from the meter outlet.

Your licensed plumber will ensure that the installation complies with the Regulations.



6. BACKFLOW PREVENTION AS PART OF YOUR BUILDING APPROVALS

(a) Why did you select my business?

If you recently applied to the Water Corporation for a specific service request then your application may have been assessed for backflow prevention risk.

When BuilderNet® processes any of the following application types it determines the backflow risk for the service based on the nominated land use for the proposed new development or redevelopment:

- Changes to any existing water service, which includes:
 - o Standard water service
 - o Additional water service
 - o Temporary water service
 - o Alter level of service
 - o Downgrade service
 - o Upgrade service
 - o Relocate service over 0.5m
 - o Relocate service up to 0.5m
 - o Permanent/Exempt service
 - o Service by agreement
- Additions / Alterations (which also includes where no water service applications are included, but only if the property has existing meters);
- Multiple Residence and/or Commercial (which also includes where no water service applications are included, but only if the property has existing meters);
- Any applications that involve a fire service;
- Any applications where the minimum service size applied for is greater than 25mm service size (except fire services – where the advice applies regardless of the service size).

If your application was processed and assessed for backflow prevention then, as part of your conditional approval, must provide the appropriate level of backflow prevention protection on the property application in question.

(b) When did the requirement to install backflow prevention devices at the boundary come into effect?

As of 13 May 2010 all applications made to the Water Corporation for a specific service request mentioned above would have been assessed for backflow prevention risk at the property boundary level.

(c) I did not make the building application, so will my builder know what is required?



When an application has been approved and requires some form of backflow prevention protection at the property boundary then your delegated builder who made the building application on your behalf will be provided (among other approvals documentation) the following information relating specifically to backflow prevention:

- A *Backflow Prevention Advice Sheet* advising them of their assessed HIGH, MEDIUM or LOW backflow risk (as an example, refer [here](#) to the HIGH backflow risk advice *information sheet*).
- A *Plumbers Information* sheet for the builder to provide to their nominated licensed plumber advising the plumber of the assessed HIGH, MEDIUM or LOW backflow risk for the property in question (as an example, refer [here](#) to the plumbers advice *information sheet*).
- A *Conditions of Approval* relating specifically to backflow prevention and detailing the legal obligations as the property owner of the re/development to comply with these backflow conditions as part of your building approvals.

(d) My builder did not install backflow prevention as per the *Conditions of Approval* – what must I do as the property owner?

The installation and ongoing testing and maintenance are the responsibility of the property owner or occupier. It is your responsibility to ensure that your nominated builder complies with all of the conditional building approvals for the re/development in question.



7. **COMMUNICATION and LETTERS**

(a) What are the policy requirements for backflow prevention?

The Water Corporation has available a policy brochure for backflow prevention customers, and can be viewed [here](#).

Further backflow prevention policy information can be viewed on the *Builders and Plumbers* page of our website, located [here](#).

(b) I received a letter regarding backflow prevention requirements for my recently approved building application. What is the purpose of this letter?

If you or your builder recently received a building application approval from the Water Corporation then that application may have been assessed for backflow prevention risk.

The letter you may have received is to remind you as the *property owner* of this recently approved building application that you are legally responsible to ensure that you comply with the *boundary backflow prevention conditions* forming part of the approved application.

Should you as the property owner be engaging a builder then the Water Corporation encourages you to ensure your builder understands what is required of them in regards to backflow prevention *at the property boundary*.

(c) I received a letter regarding the annual testing of my backflow prevention devices located at the boundary. What is the purpose of this letter?

You may have received one of a few similar letters regarding annual testing. The purpose of these letters are to remind you (as an *owner* or *occupier* of the property) of your legal obligations to comply with the annual testing requirements of testable backflow prevention devices located on this property boundary.

Refer to [here](#) for more references to By-laws and Standards detailing these testing requirements.



8. **OTHER ISSUES**

(a) Why do I need it?

A backflow incident is serious and can have significant health impacts. A containment backflow prevention device is needed on all water services at your property boundary (including all fire services), metered or otherwise to ensure you address the risk of a backflow incident involving your property.

(b) Who pays?

The installation and ongoing testing and maintenance are the responsibility of the property owner or occupier. The Water Corporation will monitor properties with testable containment devices located at the property boundary to ensure that ongoing annual testing is being carried out.

(c) What happens if I don't do it?

Where a property owner or occupier fails to comply with a notice requiring the installation of a backflow protection device:

- An offence is committed under by-law 28.7.6 of the *MWSS&D by-laws* or by-law 61(6) of the *CAWS by-laws*. A person may be liable to a penalty of up to \$2000 with a daily penalty of \$200 for every day or part of a day during which the offence continues after notification of the offence has been given.
- The Water Corporation may disconnect the property from the water supply system. See section 41 of the *Metropolitan Water Supply, Sewerage and Drainage Act 1909* and section 33 of the *Country Areas Water Supply Act 1947*.

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