VICTORIAN BUILDING AUTHORITY

PLUMBING PRACTICE NOTE

Backflow BF 03 | Cross connections in drinking water supplies

Audience

The audience/s for this Practice Note include/s:

- ☒ Architects/ Designers
- ☒ Builders
- ☒ Building Surveyors/ Inspectors
- ☒ Engineers
- ☐ Homeowners / Residential Tenants
- ☒ Owner Builders
- ☒ Plumbers
- ☐ Real estate management agents
- ☐ Trades and Maintenance (inc. Electricians)

Purpose

This Practice Note provides guidance to clarify some of the plumbing issues associated with cross connections in drinking water supplies.

The content below provides guidance on:

- Backflow and cross connections
- Hazards rating

Providing protection

- Determining hazard rating
- Owners' responsibility
- Containment protection
- Installation/commissioning

For guidance on the plumbing regulatory framework refer to Plumbing Practice Note RF-01 | Regulatory Framework

Abbreviations & Definitions

The abbreviations and definitions set out below are for guidance only. They are not intended to vary those set out in the Building Act 1993, the Building Regulations 2018 or the National Construction Code.

- **NCC** – National Construction Code 2022 Volume Three
- **Regulations** – Plumbing Regulations 2018
- **ABCB** - Australian Building Codes Board
- **AS/NZS** – Australian/ New Zealand Standard

VICTORIA State Government

Backflow and cross connections – what are they?

Backflow is the unwanted reversal of flow into the drinking water supply which can occur under conditions of backpressure or back siphonage. Backflow can be prevented by installing mechanical backflow prevention devices.

A cross connection is any connection between a drinking water supply system either directly or indirectly and any non- drinking supply or other substance which could result in contamination of the drinking water supply system.

Hazard ratings

Cross connections are rated into three degrees of hazard

- High is any hazard that has the potential to cause death
- Medium is any hazard that has the potential to endanger health
- Low is any hazard that can be a nuisance but does not endanger health or cause injury

Providing protection

Hazard protection is classified as

- Individual, at the source of an individual cross connection
- Zone to a selected area protecting multiple hazards
- Containment at the outlet of the water meter to protect network utility operator's asset

Backflow prevention devices are classified as either testable or non-testable. A testable backflow device must be installed with cross connections of a medium or high hazard rating and should only be installed with an Annual Maintenance and Test Program. These devices can be tested in-situ.

The above does not include fixtures with integral backflow via an air gap or atmospheric vacuum breaker such as toilet douche seats

Water downstream (outlet side) of any device fitted for Individual or Zone Protection is classified as non-drinking whereas water downstream of a device fitted for Containment Protection is classified as drinking unless there are unprotected hazards within the property.

Determining hazard rating

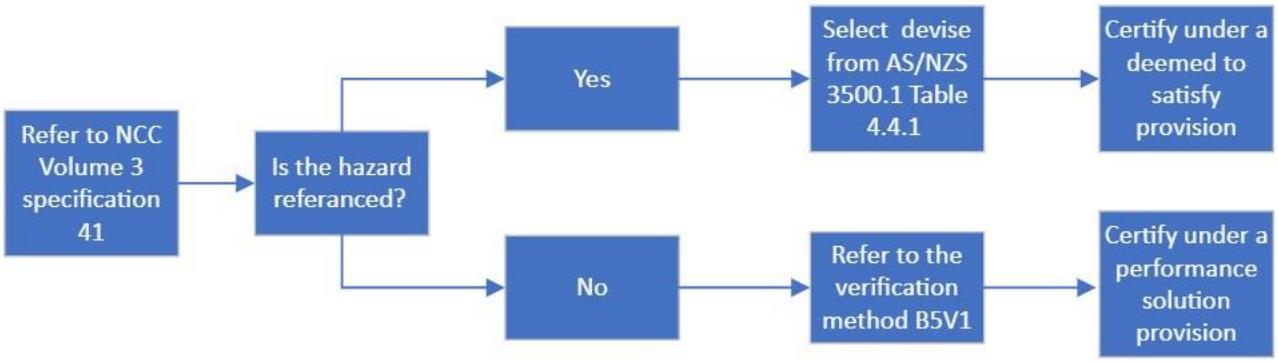
Hazard ratings for backflow and cross connections Appendixes E and F have been taken out of AS/NZS 3500.1 and elevated to Volume 3 of the NCC.

Specification 41 Cross-connection hazards provide hazard ratings for individual S41C4, zone S41C5 and containment protection S41C6.

A link to specification 41 is provided below.

Specification 41 Cross-connection hazards | NCC (abcb.gov.au)

When a situation arises that is not referenced in specification 41, the verification method B5V1 can be used to determine the hazard rating. A performance solution is required when using the verification method.



The verification pathway cannot be used for the lowering of any hazards that are already referenced in specification 41.

Owners' responsibility

It is the property owner's responsibility to ensure that all testable devices are inspected and tested annually.

The VBA recommends practitioner's installing testable backflow devices inform the property owner of their responsibility to have the device tested.

Containment protection

Where protection is provided at the property boundary from the outlet of the main water meter, this is known as Containment Protection. The requirements for Containment protection are specified by the relevant Utility Network Operator to prevent backflow and contamination of the Utility Network Operator's water main.

The type of containment device is at the discretion of the Network Utility Operator based on hazards within the property.

All cross connections and hazards within the property must first be identified. Where cross connection is identified, appropriate backflow protection must be provided.

All options to remove the cross connection must be considered. If possible, it is preferable to remove the cross connection.

When hazards are identified, the practitioner is required to contact the relevant water utility operator as the type of containment protection may be different to what is installed onsite.

Installation/commissioning

Plumbers with a Water Supply Licence and or Registration can install the backflow prevention device.

Installations must comply with Section 4 of AS/NZS 3500.1.

A compliance certificate is required if the total cost of any installation is $750 or greater. Where the hazard rating in any cold or hot water installation is Medium or High Risk, the licensed plumber must provide the installation details on the compliance certificate.

Commissioning, maintenance, initial testing and annual retesting of any testable backflow device installed, can only be performed by a person who is licensed in the specialised class “Backflow Prevention Work”.

Persons registered in the specialised class may also carry out this work under the supervision of a person who is licensed in the specialised class.

Related Documentation

- Plumbing Regulations 2018
- National Construction Code 2022 - Volume 3
- AS/NZS 3500.1:2021

List of Amendments

- Amended to reflect current requirements
- Pathway to determine hazard ratings

Document history

Sector	Plumbing
Category	Backflow
Topic	Cross connections in drinking water supplies
Document number	03
Version	1.0
Superseded	• Technical Solution Sheet 8.02 8: Backflow Prevention – Cross connections in drinking water supplies, published November 2018
Published	13 February 2024

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