

BOUNDARY BACKFLOW CODE OF PRACTICE PATHWAY TO EXCELLENCE

Kevin Healy – affiliation consultant to Hydroflow and committee member Water NZ Backflow Group

ABSTRACT

The second edition of BBCOP was requested by Water NZ Water Managers Group to clarify the Health (drinking water) Amendment Act October 2007 to be able to use it as a model for policy statement and bylaws.

This paper covers guidelines for water suppliers to develop Safety Plans for Backflow Protection using risk assessment to determine the level of backflow protection required.

The ownership of boundary devices is discussed with varied options available to the Water Supplier depending on their Councils policy.

- A. Water Supplier owned
- B. Customer owned
- C. Combined ownership

A Backflow Prevention Programme should be developed:

- That starts with identifying potential risks by means of inspection
- Ensure all boundary devices are tested annually
- Installation/replacement programme for non-testable dual checks
- Water tankers
- Public awareness response team

The Code of Practice for Backflow is then covered highlighting the Water Suppliers responsibilities for various devices, testing requirements, and additional requirements for fire systems.

Responsibilities of the Water Supplier, Property Owner and Testers are clarified and clearly laid out ensuring the Backflow Safety Plans are robust. From inspected hazards, installation of devices, annual testing and recording of incidents are all required for inspection and proving the Safety Plan is working to the satisfaction of the Water Assessors appointed by the Ministry of Health and employed by the Local District Health Board.

KEYWORDS

Backflow Safety Plans, Hazards, Responsibility

1 INTRODUCTION

The code was written at the request of the Water Managers Group after the Drinking Water Amendment Act 2007 was released. The code would be used as a model policy statement in bylaws by each water supplier.

The drinking water act is based on risk assessment using high, medium, low and very low risk situations.

This calls for a backflow survey to be done by a recognized qualified person physically checking premises to determine the risk status considering all aspects of their supply and distribution systems, including:

- Areas of low pressure;
- Parts of the network with high supply interruption rates;
- Upstream rural connections;
- The location of industrial customers and sewage pumping stations;
- The size of the water connection;
- Potential volume of backflow;
- The elevation of the property above the water mains; and
- The proximity to sensitive customers (eg hospitals).

The Backflow Group is currently writing an industry survey standard.

2 DEVICES REQUIRED

2.1 HIGH RISK

- Could cause death – Reduce pressure zone device or air gap required

2.2 MEDIUM RISK

- Become very ill, hospitalisation likely –a double-check device or air gap.

2.3 LOW RISK

- Bad odour or taste –a double-check device or air gap.

2.4 VERY LOW RISK

- Households / residential dual check devices

It is recommended that dual checks should be installed on all new residential connections and when tobys are replaced at point of supply a dual check should be installed. A sampling programme should be established when dual check valve devices will have to be replaced. Eventually the Drinking Water Act recommends over time that every water connection including residential should have some sort of protection. Single checks are not recommended.

Reduced Pressure Zone (RPZ) and Double-Check (D/C) must be registered using the serial numbers as the identity with RPZ and D/C being test annually by a qualified tester with 10% being audited. There are costs involved setting up a backflow programme so it is vital to have the backing of councilors and management.

3 BACKFLOW PREVENTION PROGRAMME

The backflow prevention programme will:

- Identify potential risks and provide a timeframe for the risks to be reduced or eliminated through the installation of appropriate boundary devices;
- Have a system in place to ensure that all testable boundary devices are tested at specified intervals;
- Have in place an installation/replacement programme for non-testable backflow devices;
- Cover situations where water is being extracted from bores or taken from water mains by water carriers;
- Heighten public awareness to the risks of backflow contamination; and
- Include a response plan to deal with a water supply contamination incident due to a backflow event.

The water supplier should have one qualified tester / surveyor on their staff. This enables the water supplier to seek out new premises and change of use or upgrades may be necessary.

4 WATER TANKERS

These should be registered as water carriers, under the Ministry of Health registry system, and comply to the guidelines for the safe carriage and delivery of drinking water. There should be a testable backflow device for protection or a permanently mounted air gap of not less than 25mm or twice the normal diameter of the delivery pipe should be installed at the pipe outlet and at the filling tank.

5 RESPONSE PLAN TO A CONTAMINATION INCIDENT

The programme should include a contingency plan to be followed in the event of a backflow incident. Guidance can be found in the safety guide-contingency plans with exercises carried out to help staff know what to do.

6 OWNERSHIP

Ownership of devices is not straightforward and requires careful thinking, as there are pros and cons for each scenario.

Table 1: Issues and Considerations re Ownership of Boundary Devices

Option 1: Water Supplier Owned	Issues	Comments
Point of supply after last fitting of meter and backflow assembly. Water supplier responsible for testing, maintenance and replacement. Customer responsible for paying for installation, testing and maintenance.	Accepting and vesting of devices. Customers wishing to retain ownership. Possible access issues if existing or new devices inside the boundary. Also may have private supply pipe in between. Customer resistance to paying for devices they don't own or where	Water supplier arranges annual testing and also repair and retest of failed devices. Lower risk of devices not being tested annually or non-compliant. Less administration time chasing and auditing test reports.

	one was not previously installed.	
Option 2: Customer Owned	Issues	Comments
Point of supply upstream of the backflow device. Owner to test and maintain device. Verifiable monitoring system being one approved by both water supplier and drinking water assessor. Verifiable monitoring system requires proof that an approved person has been engaged to do testing and maintenance.	The collation and maintaining of accurate records for devices and their testing. Reliant on customer to provide test reports. Need for water supplier to remind customer to test devices. Non-tested, failed devices or non-compliant devices a risk to the water supply and enforcement will be required.	Allows customer choice as per Commerce Act. Water supplier and building control authority need to work together.
Option 3: Combined ownership	Issues	Comments
Point of supply options in policy/bylaw. Options and responsibility for ownership detailed to customer at time of connection and agreements required.	Issues as for options 1 and 2 above. Disputes may arise if device not tested or test is duplicated because of BWoF compliance schedule timeframe differs from water supplier owned programme for testing.	Allows customer and water supplier choice. Water supplier may not wish to own large devices or those with access/shutdown issues.

I personally think payment of the device in installation by the property owner with the water supplier taking ownership is a better model, this ensures regular testing and reporting of the devices condition.

7 INSTALLATIONS

Clearly defining the point of supply is critical to determine where the water supplier and owners responsibilities start and finish. This may require a change of bylaws.

The installation details approved by the water supplier after consultation with the customer will take into consideration:

- The backflow device to be installed;
- The nature of the hazard and the likelihood of future change of use;
- The metering arrangement (if applicable);
- The size of the connection to meet anticipated flow rates;
- Head losses through the device;
- Manufacturer's recommendations;
- Protection against frost;
- The need for continuous water supply to the premises;
- Access for checking the device;

- Drainage requirements including size of drains;
- Protection from traffic, underlying hazards, vandalism, etc.; and
- The point of the supply beyond which customer responsibility begins.

8 FIRE SYSTEMS

These must have at least a double-check and be sized correctly. If additional chemicals are used such as anti-rust, anti-freeze or foam an RPZ is the minimum protection. A detector check assembly is often used to detect an authorized use of fire lines internally.

9 TESTING REQUIREMENTS

The act requires the annual testing of all devices except for dual checks. Testing should be carried out by a qualified tester approved by the water supplier. Test kits should be recertified annually by ISO registered laboratory. The results of the test should be supplied to the relevant authorities within five days.

10 CONCLUSION

If the water suppliers follow and implement all facets of the backflow code of practice they then will comply with the Drinking Water Act 2007. With the ratepayers and visitors being protected as the water supplier has followed the pathway to excellence

ACKNOWLEDGEMENTS

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REFERENCES

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