

Boundary Backflow Prevention Standard Operating Procedure

Approved by:

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1.0 Purpose

This Standard Operating Procedure generally aims to strengthen Timaru District Council's (TDC) implementation of safety standards to protect the integrity of its potable water supplies and safeguard public health through backflow prevention (BFP).

Specifically, the Standard Operating Procedure aims to:

- a) Set out the requirements in the implementation of the Timaru District Consolidated Bylaw 2013 (Bylaw) pertaining to boundary backflow prevention which states:
 - i. Section 1519 (Urban Water Supply): Council reserves the right to require an assessment of the risk of backflow from any property and to require an appropriate backflow prevention device or system to be installed at the customer's expense at the point of supply; and
 - ii. Section 1524.1 (Rural Water Supply): All supply connections shall be fitted with an approved backflow prevention system;"
- b) Facilitate consistent interpretation and application of the Bylaw provisions;
- c) Delineate the roles and responsibilities of TDC and the customer in BFP;
- d) Define the terms of ownership of the backflow prevention device;
- e) Reduce the risk of backflow occurring;
- f) Support the implementation of Water Safety Plans to mitigate public health risks in TDC's drinking water supplies, as required under the Health Act 1956.

2.0 Background

Backflow is the unintended and undesirable reverse flow of water or other liquids within the plumbing system of a property to the public mains supply. Backflow may be caused by back pressure, back siphonage, or a combination of both. It can result in contaminants or pollutants, such as chemicals being drawn into the public drinking water system, posing a risk to public health.

Backflow can occur when water pressure in the water main is not maintained, and water pressure can be affected when:

- There is a break in the water main which supplies the property;
- Water is being pumped from the main supply during a fire;
- Water is being used at a higher pressure on the property than the pressure supplied from the public water supply system;
- Heavy water use downstream reduces water pressure upstream.

Backflow presents an ongoing threat to the quality and safety of Timaru District's potable water supplies. It can be prevented by installing a BFP device on service connections. A properly working and maintained BFP device will prevent water flowing in the wrong direction, thereby containing the unwanted backflow within the property.

This BFP Standard Operating Procedure reinforces TDC's commitment to the protection of the potable water supplies. TDC is committed to providing safe drinking water in accordance with the requirements of the Drinking Water Standards for New Zealand 2005 (Revised 2008). Water is treated, Water Safety Plans have been developed, and risk management systems are in place. However, the risk of contamination of the treated water supply due to backflow from consumer premises into the public water supply networks still exists.

The intent of this contaminant protection is to protect the public water supply against backflows from the property; it is not intended to protect activities within the property. Protection within individual premises is covered by the provisions of the Building Act 2004.

3.0 Key Definitions

Backflow Prevention Device - a device to prevent backflow as defined in AS/NZS 2845.1. These include:

- Dual check valves (non-testable);
- Air gap devices (verifiable);
- Double check valves (testable); and
- Reduced pressure zone devices (testable).

Point of Supply - the boundary between the water network infrastructure and a private supply.

Point of Use - an internal backflow device located inside the property that protects the source from backflow into other areas

Premises - any land, dwelling, storehouse, warehouse, shop, cellar, yard, building, or part of the same, or enclosed space separately occupied, and all lands, buildings, and places adjoining each other and occupied together shall be deemed to be the same premises.

Service Connection - section of pipe between an urban network infrastructure service and the point of supply or point of discharge, owned and maintained by Council and may include other fittings and equipment.

Toby - a valve at the end of an urban reticulation service pipe, owned by the Council.

Customer - means owner or occupier of a property who is responsible for the water reticulation within that property.

IQP - Independent Qualified Person under the Building Act 2004. Suitably qualified to test backflow prevention devices, assess hazards and provide written documentation.

Wherever this is referenced in the document it shall also be interpreted to mean IQP as per the Water NZ Code of Practice for Boundary Backflow Prevention 2013.

Cross Connection - means an actual or potential connection between the potable water supply and an auxiliary supply or pipe work containing a contaminant.

Back pressure - refers to a situation where the pressure in the downstream (customer's) plumbing is greater than the pressure in the water supplier's mains, resulting in a reversal of normal flow direction and thereby possible contamination of the mains water.

4.0 Standard Operating Procedure

4.1 Standard Operating Procedure Requirements

To minimise the risk that the water supply, once treated, becomes contaminated, Council's Standard Operating Procedure requires that an appropriate level of backflow prevention is provided on all water connections. Standard Operating Procedure requirements are as follows:

- a) All connections require a type of backflow prevention at, or in the vicinity of, the point of supply between the customer and the water supplier;
- b) The type of backflow prevention device being dependant on the risk to the water supply posed by the customer;

Table 1: Risk to Water Supply Assessment Table

Risk assessed	Required BFP device
Very Low – insignificant/non-threatening; does not warrant further consideration other than as general precautionary measure	Non-testable dual check valve
Low – any condition, device or practice which, in connection with the water supply system, is a nuisance but does not endanger health or cause injury.	Double check valve or air gap
Medium – any condition, device or practice which, in connection with the water supply system, could endanger health.	Double check valve or air gap Double check valve detector for fire protection
High – any condition, device or practice which, in connection with the water supply system, has the potential to cause death.	Reduced pressure zone or air gap Reduced pressure zone detector for fire protection Registered break tank

- c) Urban domestic connections will normally be assessed as a very low risk and will usually be required to have a non-testable dual check device at the point of supply. Urban domestic connections without backflow prevention will be upgraded progressively over time as a network maintenance and upgrade cost to TDC.
- d) Commercial, Industrial and extraordinary use customers will be assessed in accordance with Table 1: Risk to Water Supply Assessment Table; Industrial /

Commercial backflow protection devices will be installed at the business owners cost. These will be prioritised according to potential risk.

- e) All rural water supply connections shall have an air gap immediately after the point of supply, i.e. at the supply tank or trough. Should this not be obtainable, a testable Back Flow Prevention (BFP) device will be installed at an appropriate position on the water supply line to the premises;
- f) Point of supply backflow prevention devices will be vested with TDC and will be maintained and replaced as and when required by TDC;
- g) Testable backflow prevention devices will be tested by an Independently Qualified Person (IQP) at least annually and after any maintenance, at the customer's expense;
- h) Periodic surveying by TDC of existing rural water supply connections will be undertaken to determine compliance with this Standard Operating Procedure and enforcement as necessary;
- i) Periodic surveying by TDC of existing urban water supply connections will be undertaken to determine any change of use requiring upgrading of backflow prevention;
- j) Enforcement where necessary will be as set out in the Council's Bylaws.

4.2 Standard Operating Procedure Application

This Standard Operating Procedure applies to all potable water supplies operated by the Timaru District Council and to all new and existing connections to TDC's managed water supplies.

This Standard Operating Procedure is applicable at all times at the resource consent, building consent or new water connection application stage, or as identified during normal Council operations/inspections. The following application types will be assessed for backflow risk:

- New developments, or redevelopment of existing properties, facilities or rural properties;
- Additions/alterations to existing buildings;
- Changes to any water service;
- Changes in use on the property;
- Any application that involves a fire fighting supply for the premises.

The installation of a BFP device at the point of supply does not eliminate the need for zone and individual protection devices within the property. Water downstream of a BFP device is considered non-potable water if there are internal backflow hazards still remaining within the property. The installation of individual and/or zone backflow prevention devices may be necessary to protect against the potential risk of any internal property hazards. Boundary containment is to have equal or higher rated protection to that of any zone or individual requirement.

This Standard Operating Procedure shall be implemented in conjunction with the adopted Water NZ Code of Practice for Boundary Backflow Prevention 2013, which specifies Council's standards in BFP device selection, testing, installation, maintenance, inspection programme and replacement/removal, as well as the responsibilities of the customer within the whole process.

4.3 Responsibilities of TDC

TDC is primarily responsible to provide its customers with safe drinking water and in particular to ensure that treated water is prevented from being contaminated by backflows from customer properties. Through this Standard Operating Procedure, TDC shall:

- a) Maintain a Register of all registered backflow prevention devices, records of inspection and test data;
- b) Ensure properties are assessed in accordance with the three hazards (risk) ratings identified by AS/NZS 3500.1:2003 of high, medium and low hazard;
- c) Liaise with IQPs (testers) to ensure that customer premises are assessed and classified correctly;
- d) Arrange for the maintenance and annual testing of testable BFP devices by a registered IQP with copies of the test certificate submitted to TDC ;
- e) Keep up-to-date with industry standards and legislative requirements;
- f) Conduct cross connection surveys of identified high risk properties;
- g) Enforce this Standard Operating Procedure and undertake compliance audits when necessary;
- h) Continue to implement consumer education, personnel training and information management consistent with the requirements and objective of this Standard Operating Procedure

4.4 Responsibilities of the Customer

The Customer is primarily responsible to prevent contaminants and pollutants from entering the public water supply. Specifically, the Customer shall:

- a) Lodge a building consent or new water supply connection application for the installation, alteration and removal of all BFP devices when required;
- b) At their own expense, install an approved BFP device at the boundary on each low to high risk service connection to the property as assessed in Table 1 and in accordance with this Standard Operating Procedure;
- c) Use a BFP device appropriate to the risk level in the Customer's property, see Table 1;
- d) Ensure all information about the installed device, including as-built drawings, is submitted to TDC within one month of commissioning;
- e) Immediately notify TDC of backflow occurrence from the Customer's property;
- f) Have an accredited party certify the change in hazard due to changes in processes within the Customer's property and provide a copy of the certificate to TDC.

If the Customer fails to comply with the requirements of this Standard Operating Procedure, TDC may disconnect a non-residential property, or restrict the supply to a

residential property or mixed use property, until the customer complies to the satisfaction of TDC.

5.0 Delegations, References and Revision History					
5.1 Delegations					
Delegation				Delegations Register Reference	
<i>No further delegations required</i>				NA	
5.2 References					
Title				Document Reference	
<i>Timaru District Consolidated Bylaw 2013</i>				<i>TRIM document # 871154</i>	
<i>Water NZ Backflow Prevention for Drinking Water Supplies Code of Practice</i>				<i>TDC-Drainage and Water Unit (DWU) file copy (Internet)</i>	
<i>Drinking Water Standards for New Zealand 2005 (Revised 2008)</i>				<i>TDC-DWU file copy (Internet)</i>	
<i>Health Act 1956</i>				<i>TDC-DWU file copy (Internet)</i>	
<i>Water Safety Plans for TDC managed drinking water supplies</i>				<i>TDC-DWU Internal Document (Trim)</i>	
5.3 Revision History					
Revision #	Standard Operating Procedure Owner	Date Approved	Approval by	Date of next review	Document Reference
<i>Original Version</i>	<i>Drainage and Water</i>		<i>District Services Management</i>		<i>TRIM document # 896621</i>