Title	**Demonstrate knowledge of selection, installation, testing, and maintenance of water supply backflow prevention devices**		
Level	**4**	**Credits**	**4**

Purpose	This unit standard is for people who work in the plumbing industry. People credited with this unit standard are able to: – determine requirements for water supply backflow prevention devices; and – demonstrate knowledge of regulatory requirements, selection of methods and materials, and underpinning concepts and principles, as applied to the installation, testing, and maintenance of water supply backflow prevention devices.

Classification	Plumbing, Gasfitting and Drainlaying > Plumbing

Available grade	Achieved

Guidance Information

1 Legislation, regulations and/or industry standards relevant to this unit standard include but are not limited to the:
Building Act 2004;
New Zealand Building Code (Building Regulations 1992 – Schedule 1);
Health and Safety at Work Act 2015;
Local Government Act 2002;
Plumbers, Gasfitters, and Drainlayers Act 2006;
Plumbers, Gasfitters, and Drainlayers Regulations 2010;
Water Services Act 2021.

The following standards, which are available at http://www.standards.govt.nz:
AS/NZS 2845.1:2022 *Water Supply – Backflow prevention devices, Part 1: Materials, design and performance requirements*,
AS/NZS 2845.3: 2020 *Field testing and maintenance of testable device*
AS/NZS 3500.1:2021 *Plumbing and Drainage, Part 1: Water services,* Section 5.2*,*
NZS 3604:2011 *Timber-framed buildings.*

The following codes available at https://www.waternz.org.nz;
New Zealand Water and Wastes Association, *Boundary Backflow Prevention for Drinking Water Suppliers Code of Practice,* 2019,
New Zealand Water and Wastes Association, *NZ Backflow testing standard 2019 - Field testing of backflow prevention devices and verification of air gaps.*

The following Building Code clauses, and any related Acceptable Solution and Verification Method documents, which are available at https://www.building.govt.nz:
New Zealand Building Code Clause B2 Durability,
New Zealand Building Code Clause G10 Piped Services,
New Zealand Building Code Clause G12 Water Supplies.

Any new, amended or replacement referenced standards, codes of practice, guidelines, Building Code Acceptable Solutions and Verification Methods, or authority requirements affecting this unit standard will take precedence for assessment purposes, pending review of this unit standard.

2 Definitions

Job requirements refer to specific requirements of the job at hand not covered by job specifications.
Job specifications refer to instructions (oral, written, graphic) and may include any of the following – manufacturer instructions; design drawing detail specifications; specifications from a specialist source such as an architect, designer, engineer, or a supervisor; and site or work specific requirements.
Maintenance may refer to all or any of – repair, upgrade, alteration, removal.

3 Range

Backflow prevention devices – air gap (AG), atmospheric vacuum breaker (AVB), pressure vacuum breaker (PVB), spill proof vacuum breaker (SPVB), reduced pressure zone device (RPZD), reduced pressure detector assembly (RPDA), double check valve (DCV), double check detector assembly (DCDA), hose connection vacuum breaker (HCVB), dual-check valve (DUAL CV), dual-check valve with atmospheric port (DCAP).

Outcomes and performance criteria

Outcome 1

Determine requirements for water supply backflow prevention devices.

Performance criteria

1.1 Describe the operation of backflow prevention devices.

1.2 Identify the requirements for backflow prevention devices in accordance with the water supply system features and regulatory requirements.

Range includes but is not limited to – identifying cross connection hazards, maintaining water supply continuity (BFPD bypass's), pressure (negative, positive, pressure losses through valves), flow, associated drains, location (individual zone and containment protection).

1.3 Determine suitable types of backflow prevention devices for different levels of cross-connection hazard.

Range high hazard, medium hazard, low hazard

Outcome 2

Demonstrate knowledge of regulatory requirements, selection of methods and materials, and underpinning concepts and principles, as applied to the installation, testing, and maintenance of water supply backflow prevention devices.

Performance criteria

2.1 Describe the application of relevant sections of Acts, regulations, referenced standards, codes of practice, guidelines, Building Code Acceptable Solutions and Verification Methods, to the installation, testing, and maintenance of water supply backflow prevention devices.

Range includes but is not limited to – specified system/compliance schedule/building warrant of fitness requirements, independent qualified persons, liaison with network utility operators regarding containment/boundary protection.

2.2 Justify the selection of backflow prevention methods and materials.

Range includes but is not limited to – job specifications, operation of the installed devices, suitability and durability of materials, cross connection hazard ratings.

2.3 Explain the application of underpinning concepts and principles to the installation, testing, and maintenance of water supply backflow prevention devices.

Range includes but is not limited to – back pressure, back siphonage, differential pressure, testing equipment, test procedures, fault identification and possible means of rectification, reporting results of water supply backflow prevention device testing.

Replacement information	This unit standard and unit standard 30599 replaced unit standard 2117.

Planned review date	31 December 2029

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	26 October 2017	31 December 2028
Review	2	30 May 2024	N/A

Consent and Moderation Requirements (CMR) reference	0003

This CMR can be accessed at http://www.nzqa.govt.nz/framework/search/index.do.

Comments on this unit standard

Please contact Waihanga Ara Rau Construction and Infrastructure Workforce Development Council qualifications@waihangaararau.nz if you wish to suggest changes to the content of this unit standard.