

Title	Design foul water for sanitary plumbing systems and explain less common systems		
Level	5	Credits	20

Purpose	People credited with this unit standard will be able to: <ul style="list-style-type: none"> – design foul water for sanitary plumbing systems; and – explain less common foul water for sanitary plumbing systems.
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Classification	Plumbing, Gasfitting and Drainlaying > Plumbing
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Available grade	Achieved
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Guidance Information

- 1 This unit standard builds upon the pre-existing knowledge and skills held by a tradesman plumber. It reflects part of the increased knowledge and skill set that is required to become recognised as a certifying plumber. The competencies expected of a tradesman plumber have already been demonstrated and reassessment is not required.
- 2 References
Building Act 2004;
New Zealand Building Code;
Construction Contracts Act 2002;
Health Act 1956;
Health and Safety at Work Act 2015;
Plumbers, Gasfitters, and Drainlayers Act 2006;
Plumbers, Gasfitters and Drainlayers Board (Plumbing Registration and Licensing) Notice 2016;
Resource Management Act 1991;
The following standards, which are available at <http://www.standards.govt.nz>:
AS/NZS 3500.1:2018 *Plumbing and drainage – Part 1: Water services*;
AS/NZS 3500.2:2018 *Plumbing and drainage – Part 2: Sanitary plumbing and drainage*;
AS/NZS 3500.4:2018 *Plumbing and drainage – Part 4: Heated water services*;
NZS 3604:2011 *Timber-framed buildings*;
NZS 4219:2009 *Seismic performance of engineering systems in buildings*;
The following standard which is available at <https://www.bsigroup.com>:
BS EN 12056-2:2000, *Gravity drainage systems inside buildings (G13/VM1)*;
The following guides, which are available at <http://www.worksafe.govt.nz>:
Health and Safety by Design: 2018;
and all subsequent amendments and replacements.

- 3 Definition
Drawings – plans and schematics. Plans must be to scale, be drawn on the relevant architectural background, and include a legend and all pipe types (hot water, cold water, gas, etc.). It is expected that drawing instruments, Computer Aided Design (CAD), or Building Information Modelling (BIM) software will be used for drawing.
- 4 Assessment
Assessments requiring application or demonstration of skills and knowledge may be performed using workplace evidence or evidence derived from simulation or scenario-based activities.
Includes application of trade calculations and science. Trade calculations and science may be demonstrated through the use of graphs, tables, software tools, or online or other electronic resources.
- 5 All tasks must be carried out in accordance with:
Building Act 2004;
Health and Safety at Work Act 2015;
New Zealand Building Code; and
any other relevant legislation, regulations, codes, or standards as applicable to drainlaying.

Outcomes and performance criteria

Outcome 1

Design foul water for sanitary plumbing systems.

Range includes a minimum of three systems;
one system must be for a multilevel building;
one system must include a pump which is an integral part of the system;
includes but not limited to – sanitary appliances and fixtures;
may include – surcharge protection, grey water handling systems.

Performance criteria

- 1.1 Calculate pipe sizes and gradients for the system with consideration of flow rates and discharge units.
- 1.2 Determine the number and position of discharge pipes and vents for the system with consideration of discharge units.
- 1.3 Determine the type, number, and position of backflow prevention measures for the system.
- Range backflow prevention devices may include but are not limited to – atmospheric vacuum break (AVB), pressure vacuum breaker (PVB), spill proof vacuum breaker (SPVB), registered air gap, double detector check, double check valve (Dual check), hose connection vacuum breaker, reduced pressure zone device, vacuum break, vented dual check.
- 1.4 Determine the layout of the pipework for the system.

- 1.5 Specify the materials for the system.
- 1.6 Analyse potential adverse effects of the design on structure and adjust designs to mitigate these effects.
- Range may include but is not limited to – structural integrity, weathertightness, seismic, fire rating, internal water damage, positioning of system in relation to other services.
- 1.7 Assess the potential for risks resulting from the design in the installation stage.
- Range risks may include but are not limited to – risks to installers, risks to other on-site personnel, and risks to the public.
- 1.8 Prepare the drawings and specifications to document designs.

Outcome 2

Explain less common foul water for sanitary plumbing systems.

Range may include but is not limited to – irrigation system for foul water; evidence of one is required.

Performance criteria

- 2.1 Explain less common foul water for sanitary plumbing systems in terms of their design considerations.

Planned review date	31 December 2024
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	26 March 2020	N/A

Consent and Moderation Requirements (CMR) reference	0003
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This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.

Comments on this unit standard

Please contact The Skills Organisation reviewcomments@skills.org.nz if you wish to suggest changes to the content of this unit standard.