

<b>Title</b>	<b>Demonstrate knowledge of the installation and maintenance of water mains and water supply systems</b>		
<b>Level</b>	<b>4</b>	<b>Credits</b>	<b>4</b>

<b>Purpose</b>	<p>This unit standard is for people who work, or intend to work, in the plumbing industry.</p> <p>People credited with this unit standard are able to:</p> <ul style="list-style-type: none"> <li>– demonstrate knowledge of regulatory requirements, selection of methods and materials, and the concepts of hydrostatics and hydraulics, as applied to the installation and maintenance of water mains and water supply systems and reticulation;</li> <li>– demonstrate knowledge of the installation and commissioning of water mains;</li> <li>– describe the installation of water supply systems and reticulation;</li> <li>– describe treatment methods for household water purification; and</li> <li>– describe the maintenance of water mains and water supply systems and reticulation.</li> </ul>
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<b>Classification</b>	Plumbing, Gasfitting and Drainlaying > Plumbing
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<b>Available grade</b>	Achieved
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## Guidance Information

- 1 References
- Building Act 2004;  
 Health Act 1956;  
 Health and Safety at Work Act 2015;  
 Plumbers, Gasfitters, and Drainlayers Act 2006;  
 Plumbers, Gasfitters, and Drainlayers Regulations 2010;  
 Water Supplies Protection Regulations 1961;  
 The following standards, which are available at <http://www.standards.govt.nz>:  
 AS/NZS 3500.1:2015 *Plumbing and drainage – Part 1: Water services*,  
 NZS 3604:2011 *Timber-framed buildings*,  
 NZS 4302:1987 *Code of practice for the control of hygiene in air and water systems in buildings*,  
 NZS 5807:1980 *Code of practice for industrial identification by colour, wording or other coding*;  
 The following clauses, and any related compliance documents, which are available at <https://www.building.govt.nz/>:  
 New Zealand Building Code Clause G10 Piped Services,

New Zealand Building Code Clause G12 Water Supplies;  
and all subsequent amendments and replacements.

- 2 This unit standard relates to both reticulated network authority mains and self-contained water supply systems. Self-contained water supply systems may refer to private water collection or bore and distribution systems.
- 3 Credit for this unit standard does not entitle the candidate to legally perform certain electrical aspects of this work unless registered or supervised by a registered person under the provisions of the Electricity Act 1992.
- 4 **Range**  
jointing methods – determined by the type of pipe material and may include compression, flange, electrofusion weld, fusion weld, couplings (gibault type), glued, RRJ push fit, threaded;  
pipe materials – MDPE polyethylene, uPVC, concrete lined steel, copper;  
water mains fittings – hydrants, isolation valves, meters, branches;  
water mains structures – anchor blocks, thrust blocks.
- 5 **Definitions**  
*Job requirements* – specific requirements of the job at hand not covered by job specifications.  
*Job specifications* – 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. Where job specifications are in conflict with applicable legislation, standards, and/or codes, such legislation, standards, and/or codes shall take precedence for the purpose of assessment.  
*Maintain* may refer to all or any of – repair, upgrade, alter, remove.  
*Water mains* – water mains and associated fittings and structures.  
*Water supply systems and reticulation* – water collection, storage, and distribution pipework to buildings, and to metering equipment.
- 6 Candidates must hold a current limited certificate or exemption under supervision as issued under the Plumbers, Gasfitters, and Drainlayers Act 2006.
- 7 Recommended skills and knowledge for the unit standard: Unit 30532, *Demonstrate knowledge of excavating and trenching for plumbing, gasfitting, or drainlaying.*

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## Outcomes and performance criteria

### Outcome 1

Demonstrate knowledge of regulatory requirements, selection of methods and materials, and the concepts of hydrostatics and hydraulics, as applied to the installation and maintenance of water mains and water supply systems and reticulation.

**Performance criteria**

1.1 Describe applicable sections of legislation, standards, and codes in terms of their application to the installation and maintenance of water mains and water supply systems and reticulation.

Range includes – knowledge of national requirements, understanding of how to determine local regulations and specifications.

1.2 Justify selection of methods and materials.

Range job specifications, operation of the installed system and components, prudent use and longevity of materials; may include job requirements.

1.3 Explain the concepts and principles of hydrostatics and hydraulics in terms of their application to the installation and maintenance of water mains and water supply systems and reticulation.

Range material compatibility, thrust/anchor blocks.

**Outcome 2**

Demonstrate knowledge of the installation and commissioning of water mains.

**Performance criteria**

2.1 Describe the construction of water mains and the installation of associated fittings in accordance with job specifications and with particular reference to fire applications such as the capacity to deliver sprinkler and riser mains for fire purposes.

2.2 Describe the installation of water mains, hydrants, thrust block/s, and valve/s and their connection to connections and discharge points in accordance with job specifications.

2.3 Describe the commissioning of water mains and associated fittings to ensure they operate to design function and comply with network utility operator requirements.

2.4 Describe processes and required results for flushing and purification of new installed water mains and water supply systems.

**Outcome 3**

Describe the installation of water supply systems and reticulation.

**Performance criteria**

3.1 Describe the installation of water supply systems in accordance with job specifications and relevant standards and codes.

- 3.2 Describe the connection of water supply systems to connection and termination points in accordance with job specifications and relevant standards and codes.
- 3.3 Identify relevant commissioning tests and reporting.  
Range reporting includes – photographic evidence, as-built plans.
- 3.4 Describe how to test water supply systems for soundness in accordance with job specifications and relevant standards and codes
- 3.5 Describe how water supply systems and pipelines are identified by label and/or colour and direction of reticulated flow in accordance with relevant standards and codes.
- 3.6 Describe the installation of water supply systems to prevent contamination and/or damage in accordance with job specifications and relevant standards and codes.

#### Outcome 4

Describe treatment methods for household water purification.

Range chemical, distillation, filtration, straining, UV lighting.

#### Performance criteria

- 4.1 Describe treatment methods in accordance with relevant standards and codes.

#### Outcome 5

Describe the maintenance of water mains and water supply systems and reticulation.

#### Performance criteria

- 5.1 Describe how to identify faults in terms of causes and means of rectification.
- 5.2 Describe the rectification of faults in accordance with maintenance requirements, job specifications, and relevant standards and codes.

<b>Replacement information</b>	This unit standard and unit standard 30615 replaced unit standard 23849.
<b>Planned review date</b>	31 December 2022

**Status information and last date for assessment for superseded versions**

Process	Version	Date	Last Date for Assessment
Registration	1	26 October 2017	N/A

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

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**Comments on this unit standard**

Please contact The Skills Organisation [reviewcomments@skills.org.nz](mailto:reviewcomments@skills.org.nz) if you wish to suggest changes to the content of this unit standard.