

<b>Title</b>	<b>Demonstrate knowledge of pumps used for water supply and disposal systems in plumbing</b>		
<b>Level</b>	<b>4</b>	<b>Credits</b>	<b>6</b>

<b>Purpose</b>	<p>This unit standard is for people who 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 underpinning concepts and principles, as applied to pumps and controls for water supply and disposal systems;</li> <li>– demonstrate knowledge of pumps used for water supply and disposal systems; and</li> <li>– determine pumping requirements for water supply and disposal systems.</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 Legislation, regulations and/or industry standards relevant to this unit standard include but are not limited to the:  
 Building Act 2004;  
 Health and Safety at Work Act 2015;  
 Plumbers, Gasfitters, and Drainlayers Act 2006;  
 Plumbers, Gasfitters, and Drainlayers Regulations 2010;  
 Resource Management Act 1991.

The following standards, which are available at <http://www.standards.govt.nz>:  
 AS/NZS 3500.1:2021 *Plumbing and drainage, Part 1: Water services*  
 AS/NZS 3500.2:2021 *Plumbing and drainage, Part 2: Sanitary plumbing and drainage*,  
 NZS 3604:2011 *Timber-framed buildings*.

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 G10 Piped Services,  
 New Zealand Building Code Clause G12 Water Supplies,  
 New Zealand Building Code Clause G13 Foul Water.

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 – manufacturers' 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.

## 3 Candidates must hold a current limited certificate trainee authorisation or exemption under supervision as issued under the Plumbers, Gasfitters, and Drainlayers Act 2006.

## 4 Range

Pumps – positive displacement and non-displacement, must include but are not limited to reciprocating, screw, centrifugal (including macerating, submersible), gear, hydraulic ram, jet, vortex.

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# Outcomes and performance criteria

## Outcome 1

Demonstrate knowledge of regulatory requirements, selection of methods and materials, and underpinning concepts and principles, as applied to pumps and controls for water supply and disposal systems.

## Performance criteria

1.1 Describe the application of relevant sections of legislation, standards, and codes to the selection of pumps and controls for water supply and disposal systems.

1.2 Justify the selection of methods and materials.

Range job specifications, operation of the installed system and components, suitability and durability of materials.

1.3 Explain underpinning concepts and principles in terms of their application to pumps and controls for water supply and disposal systems.

Range atmospheric pressure, corrosion, expansion and contraction, friction, hydrostatics and hydraulics, siphon, cavitation.

## Outcome 2

Demonstrate knowledge of pumps used for water supply and disposal systems.

### Performance criteria

- 2.1 Identify types of pumps and explain their application to water supply and disposal systems in plumbing.
- 2.2 Describe pump types in terms of their mechanical operation, uses and limitations.
- Range positive displacement, non-displacement.
- 2.3 Describe maintenance requirements for pumps used for water supply and disposal systems.
- 2.4 Describe commissioning requirements for pumps used for water supply and disposal systems.

## Outcome 3

Determine pumping requirements for water supply and disposal systems.

### Performance criteria

- 3.1 Determine the pumping requirements of the system in accordance with user and/or owner's requirements and job specifications.
- Range must include but is not limited to – suction lift, viscosity, water type, delivery head, required flow rate, frictional head loss, size requirements.
- 3.2 Describe appropriate pumps, components, and controls for water supply systems in accordance with job specifications.
- Range must include but is not limited to – pump type, non-return valve, filters and strainers, electronic controls, pressure vessels.
- 3.3 Describe appropriate pumps, components, and controls for water disposal systems in accordance with job specifications.
- Range must include but is not limited to – pump type, non-return valve, associated fittings and controls.

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<b>Replacement information</b>	This unit standard replaced unit standard 2149.
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<b>Planned review date</b>	31 December 2029
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**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

<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>.

**Comments on this unit standard**

Please contact Waihangara Rau Construction and Infrastructure Workforce Development Council [qualifications@waihangaararau.nz](mailto:qualifications@waihangaararau.nz) if you wish to suggest changes to the content of this unit standard.