

Title	Demonstrate knowledge of pumped drainage systems		
Level	4	Credits	5

Purpose	<p>This unit standard is for people who work in the drainlaying industry.</p> <p>People credited with this unit standard are able to:</p> <ul style="list-style-type: none"> – demonstrate knowledge of pumps used in drainage systems; – demonstrate knowledge of selecting pumps, pump stations, pumped discharge pipework, filters, and controls for pumped drainage systems; – demonstrate knowledge of concepts and principles underpinning the installation of pump stations in drainage systems; and – describe maintenance of pumps used in drainage systems.
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Classification	Plumbing, Gasfitting and Drainlaying > Drainlaying
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Available grade	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 1546.1:2008 *On-site domestic wastewater treatment units – Septic tanks*;
- AS/NZS 1547:2012 *On-site domestic wastewater management*;
- AS/NZS 3500.2:2021 *Plumbing and drainage, Part 2: Sanitary plumbing and drainage*;
- AS/NZS 3500.3:2021 *Plumbing and drainage, Part 3, Stormwater drainage*.

The following guides, which are available at <http://www.worksafe.govt.nz>:

- Excavation Safety – Good practice Guidelines*;
- Underground services – Guide for safety with underground services*.

The following clauses, and any related compliance documents, which are available at <https://www.building.govt.nz/>:

New Zealand Building Code Clause B2 Durability;
New Zealand Building Code Clause E1 Surface Water;
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

Drainage systems refer to drainage systems for the disposal of foulwater or stormwater that are constructed to convey the collected water to an appropriate outfall, using gravity flow where possible, but other means when necessary.

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.

Pump stations refer to any type of storage or collection chamber in which stormwater or wastewater is to be conveyed by pump to an approved outfall. This may include – pump chambers from septic tanks, private sewage or stormwater pump chambers and wet wells.

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

Outcomes and performance criteria

Outcome 1

Demonstrate knowledge of pumps used in drainage systems.

Performance criteria

- 1.1 Describe the types of pumps that are available and appropriate for use in drainlaying applications.
- 1.2 Determine pumping requirements to meet job specifications.

Outcome 2

Demonstrate knowledge of selecting pumps, pump stations, pumped discharge pipework, filters, and controls for pumped drainage systems.

Performance criteria

- 2.1 Describe factors that impact the selection of pumps, pump stations, pumped discharge pipework filters, and controls for drainage systems in accordance with job specifications.
- Range suction lift, viscosity, water type, delivery head, required flow rate, frictional head loss, size requirements, duty/standby configurations, available power supply.
- 2.2 Explain alarm and monitoring systems and pump switch operations for pump installations.
- 2.3 Explain testing and commissioning processes for pump drainage systems.
- 2.4 Identify what information is needed to determine the appropriate pump for a given application.
- 2.5 Determine from pump specifications whether a pump is appropriate (or not) for a given application.
- 2.6 Explain testing processes for pumped discharge pipework.
- 2.7 Identify appropriate outfalls and connection methods for pumped discharge pipework.

Outcome 3

Demonstrate knowledge of concepts and principles underpinning the installation of pump stations in drainage systems.

Range pump stations include sewerage, storm water, trade waste.

Performance criteria

- 3.1 Explain underpinning concepts and principles in terms of their application to the installation of pump stations in drainage systems.
- 3.2 Describe processes for jointing methods appropriate for the materials being joined.
- Range may include but is not limited to – loose sleeve/band clamped sleeve, flange, glue/solvent cement/solvent weld, screwed thread, fusion welding, compression fittings.

Outcome 4

Describe maintenance of pumps used in drainage systems.

Performance criteria

- 4.1 Describe preventative and ongoing maintenance requirements and processes for pumps.
- 4.2 Describe how to identify faults in terms of causes and means of rectification.
- 4.3 Describe how to rectify faults in accordance with maintenance requirements and job specifications.

Replacement information	This unit standard and unit standard 30601 replaced unit standard 1118.
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Planned review date	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

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 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.