

Title	Demonstrate knowledge of excavating and trenching for plumbing, gasfitting, or drainlaying		
Level	3	Credits	5

Purpose	<p>This unit standard is for people who work in the plumbing, gasfitting, or drainlaying industries.</p> <p>People credited with this unit standard are able to:</p> <ul style="list-style-type: none"> – demonstrate knowledge of how to determine the position of the excavation or trench and allow for other services; – demonstrate knowledge of collapse control in respect of excavations; – explain excavation dewatering; – demonstrate knowledge of notification requirements and procedures for excavation and trenching; and – demonstrate knowledge of concepts and principles underpinning excavation, trenching, and backfilling for plumbing, gasfitting, or drainlaying.
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Classification	Plumbing, Gasfitting and Drainlaying > Core Plumbing, Gasfitting, and 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;
 - Health and Safety in Employment Regulations 1995;
 - 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*.

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

- Good practice guidelines – Excavation safety*, Wellington: WorkSafe, 2016
- Guide for Safety with Underground Services*, Wellington: Department of Labour, 2002.

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 E1 Surface Water,
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 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.

Notifiable Events refers to those as defined in *the Health and Safety at Work Act 2015 (Section 24)*.

Notification of particular hazardous work processes – as set out in the *Health and Safety in Employment Regulations 1995 (Section 26)*.

Other services refer to new and existing services such as water, gas, electricity, or telephone network cables.

Outcomes and performance criteria

Outcome 1

Demonstrate knowledge of how to determine the position of the excavation or trench and allow for other services.

Performance criteria

1.1 Explain how to determine the position and level of an excavation or trench.

Range includes establishing line, level, and gradient.

1.2 Explain sources of information that are useful in determining any need to allow for other services that may be placed in the same excavation.

1.3 Describe the process to determine the location, position, and type of existing services.

Range underground, overhead.

1.4 Describe typical needs for separation of services and means of achieving required separation.

1.5 Describe the requirements to identify other services by label or colour.

Outcome 2

Demonstrate knowledge of collapse control in respect of excavations.

Performance criteria

- 2.1 Explain methods for the control of collapse of excavations.
Range includes benching, battering, shoring.
- 2.2 Describe the requirements for the installation of shoring to excavations.
- 2.3 Describe common methods of shoring, and the situations in which different methods are appropriate.
- 2.4 Describe the limitations of different methods of preventing collapse.

Outcome 3

Explain excavation dewatering.

Performance criteria

- 3.1 Explain when excavation dewatering is required, and the related equipment and methods.
- 3.2 Explain factors that will affect the equipment that needs to be used, and the impact of those factors.
Range size of excavation, amount and rate of water to be removed, quality of water to be removed.
- 3.3 Explain the installation and operation of dewatering equipment.
Range spears, shafts, well pointing, header/manifold, vacuum pumps, surface pumps, submersible pumps.
- 3.4 Explain issues and impact to be considered in managing the outfall from a dewatering process.
Range amount and rate of water to be removed, quality of water to be removed.

Outcome 4

Demonstrate knowledge of notification requirements and procedures for excavation and trenching.

Performance criteria

- 4.1 Describe site specific conditions likely to arise during excavating and trenching that would generate notification requirements under relevant health and safety legislation.
- 4.2 Explain the Notification of particular hazardous work (Notifiable works) procedures and requirements in accordance with Health and Safety Regulations 1995 and WorkSafe safety guides.
- Range what works are notifiable, procedure to notify, maintenance of records.
- 4.3 Explain the requirements and processes for notification of Notifiable Events.
- 4.4 Describe typical situations requiring notification to other authorities or landowners when crossing/using other land, and the nature of that notification.

Outcome 5

Demonstrate knowledge of concepts and principles underpinning excavation, trenching, and backfilling for plumbing, gasfitting, or drainlaying.

Performance criteria

- 5.1 Explain underpinning concepts and principles that apply to excavating and trenching.
- Range ground stability, scouring, soil properties, slippage, undermining of structures, bulking, compaction.
- 5.2 Perform measurements and calculations to determine details of required excavation to meet job specifications.
- Range volumes, distances, depths, and diameters; includes irregular cuts to accommodate other services in the same excavation.
- 5.3 Explain requirements to be considered in managing excavated material.
- Range safe storage of excavated material, bulking, disposal of excess excavated material, contaminated material.
- 5.4 Explain the impact of key factors that will affect backfilling of an excavation.
- Range job specifications, codes and standards, selection of bedding and backfill material, method of compaction, compaction rate, expected finished surface, placement or reinstatement of means of identifying below ground services.

Replacement information	This unit standard and unit standard 30533 replaced unit standard 1099 and unit standard 1122.
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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	28 September 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@waihanga.nz if you wish to suggest changes to the content of this unit standard.