Title	**Demonstrate knowledge of the installation and maintenance of stormwater handling systems**		
Level	**4**	**Credits**	**9**

Purpose	This unit standard is for people who work, or intend to work, in the drainlaying industry. People credited with this unit standard are able to: – demonstrate knowledge of concepts and principles underpinning the installation and maintenance of stormwater handling systems; – describe stormwater retention and detention systems; – describe onsite stormwater disposal systems; – describe positioning for installation of stormwater handling systems; – describe the installation of stormwater handling systems; and – describe the maintenance of stormwater handling systems.

Classification	Plumbing, Gasfitting and Drainlaying > Drainlaying

Available grade	Achieved

Guidance Information

1 Legislation, regulations and/or industry standards relevant to this unit standard include but are not limited to:
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 standard, which is available at https://www.standards.govt.nz:
AS/NZS 3500.3:2021 *Plumbing and drainage, Part 3: Stormwater drainage*.

The following guides, which are available at http://www.worksafe.govt.nz/worksafe:
Good practice guidelines – Excavation safety, Wellington: WorkSafe New Zealand, 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 B2 Durability;
New Zealand Building Code Clause E1 Surface 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 – 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.
Stormwater handling systems refer to drainage systems for the disposal of stormwater that will be constructed to convey surface water to an appropriate outfall, using gravity flow where possible, and include –
surface water intake and outfall structures – pre-cast and in-situ wingwalls; *surface water collection systems* – pre-cast concrete, in-situ, open drains, kerbs, and channels;
sub-soil systems – to capture and redirect subsurface water;
sumps – which include silt traps;
stormwater retention systems – to collect stormwater for later use
stormwater detention systems – to detain stormwater so as to reduce immediate load on network utility operator's stormwater systems;
onsite stormwater disposal systems – which includes all manner of ground soakage disposal systems (soak pits).

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

Outcomes and performance criteria

Outcome 1

Demonstrate knowledge of concepts and principles underpinning the installation and maintenance of stormwater handling systems.

Performance criteria

1.1 Describe relevant sections of legislation, standards, and codes in terms of their application to the installation of stormwater handling systems.

1.2 Explain underpinning concepts and principles in terms of their application to the installation and maintenance of stormwater intake and outfall structures.

Range flow, velocity, volume, contamination.

1.3 Explain concepts underlying installation and maintenance of collection systems.

Range collection area, characteristics of surface, contour.

1.4 Explain underpinning concepts and principles in terms of their application to the installation and maintenance of sumps.

Range type one sump, type two sump, bubble up sump, half siphon, full siphon.

1.5 Explain underpinning concepts and principles in terms of their application to the installation of sub-soil drainage.

Range soakage, soil properties, impact on soil moisture regime, surface water contamination.

Outcome 2

Describe stormwater retention and detention systems.

Performance criteria

2.1 Describe the purpose of stormwater retention systems.

Range may include but is not limited to – firefighting, potable, non-potable, irrigation.

2.2 Describe the purpose of stormwater detention systems.

2.3 Describe the key elements of stormwater retention systems.

2.4 Describe the key elements of stormwater detention systems.

2.5 Describe types of stormwater retention systems.

Range includes but not limited to - buried tanks, above ground tanks, partially buried tanks.

2.6 Describe types of stormwater detention systems.

Outcome 3

Describe onsite stormwater disposal systems.

Performance criteria

3.1 Describe the purpose of onsite stormwater disposal systems.

3.2 Describe the key elements of onsite stormwater disposal systems.

3.3 Describe types of onsite stormwater disposal systems.

Range may include but is not limited to – plastic or rubber cell soak pits, coarse metal soak pits, rock soak pits, soakage ring, ground water recharge;
evidence of a minimum of two is required.

Outcome 4

Describe positioning for installation of stormwater handling systems.

Performance criteria

4.1 Describe how stormwater collection systems are positioned to measurements in accordance with job specifications.

4.2 Describe how sumps are positioned to measurements in accordance with job specifications.

4.3 Describe how sub-soil drains are positioned to measurements in accordance with job specifications.

4.4 Describe how stormwater retention systems are positioned to measurements in accordance with job specifications.

4.5 Describe how stormwater detention systems are positioned to measurements in accordance with job specifications.

Outcome 5

Describe the installation of stormwater handling systems.

Performance criteria

5.1 Describe the installation of stormwater collection systems in accordance with job specifications.

5.2 Describe the installation of sumps in accordance with job specifications.

5.3 Describe the installation of sub-soil drains in accordance with job specifications.

Outcome 6

Describe the maintenance of stormwater handling systems.

Performance criteria

6.1 Describe how to identify system faults in terms of causes and means of rectification.

6.2 Describe the rectification of faults in accordance with maintenance requirements, job specifications, and relevant Standards and codes.

Replacement information	This unit standard, unit standard 30578, and unit standard 30579 replaced unit standard 1100, unit standard 1104, unit standard 1108, and unit standard 1109.

Planned review date	31 December 2029

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

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.