

Title	Demonstrate knowledge of water supply and reticulation systems		
Level	3	Credits	10

Purpose	People credited with this unit standard are able to describe: the purpose and components of water supply systems; the hydraulics of a water reticulation system; the operation of a water reticulation system; and the procedures for water supply mains shut-down and re-commissioning.
----------------	--

Classification	Water Industry > Water Reticulation
-----------------------	-------------------------------------

Available grade	Achieved
------------------------	----------

Guidance Information

- 1 Legislation and references relevant to this unit standard include: Health Act 1956, Local Government Act 2002, and subsequent amendments; *Drinking-Water Standards for New Zealand*, 2005 (Revised 2008). Ministry of Health, Wellington; Local Authorities' water supply bylaws.
- 2 Definition
Organisational procedures – instructions to staff, and procedures which are documented in memo or manual format and are available in the workplace. These requirements include but are not limited to – site specific requirements, manufacturers' specifications, product quality specifications, and legislative or regulatory requirements.

Outcomes and performance criteria

Outcome 1

Describe the purpose and components of water supply systems.

Performance criteria

- 1.1 The purpose of water supply systems is described in terms of protection of public health.
- 1.2 Raw water is described in terms of types, and factors that affect quality and quantity.
- 1.3 Raw water systems are described in terms of their size and elevation.
- 1.4 Treatment options are described in terms of their purpose.

- 1.5 Primary distribution systems to deliver water from treatment plant to reservoir are described in terms of supply security and flow management.
- 1.6 Reservoirs are described in terms of their position, functions, and valving.
- Range diurnal peak storage and attenuation, fire reserves, elevation control, supply loss storage, inlet and outlet arrangements, drain/overflow lines, bypass valves, check valves, flow meters.
- 1.7 Trunk, reticulation, and rider mains and fittings are described in terms of their functions and layout.
- 1.8 Property services connections are described in terms of their component parts and sizing.

Outcome 2

Describe the hydraulics of a water reticulation system.

Performance criteria

- 2.1 The concept of pressure is described in terms of static pressure, variation of pressure, and its effect on hydraulic grade lines.
- 2.2 Sources of pressure losses are described in terms of flow rate changes.
- 2.3 Variation of pressure loss is described in terms of flow rate changes.
- 2.4 Internal pipe pressure forces are described in terms of anchorage requirements.
- 2.5 The role of pumps is described in terms of the impact on hydraulic grade lines.

Outcome 3

Describe the operation of a water reticulation system.

Performance criteria

- 3.1 The identification and impacts of leaks are described in terms of system operation.
- 3.2 Water flow meters are described in terms of their applications, installation, and features.
- Range evidence is required for at least two types of water meters.
- 3.3 Poor water quality is described in terms of causes, impacts, and control.
- 3.4 Corrosion and hard water are described in terms of causes and impacts.

Outcome 4

Describe procedures for water supply mains shut-down and re-commissioning.

Performance criteria

- 4.1 Action plan for water supply mains shut-down and re-commissioning is described in accordance with organisational procedures.
- Range includes but is not limited to – time, contingencies, trial shut-down.
- 4.2 Notification of affected people or organisations is described in accordance with organisational procedures.
- Range service providers include but are not limited to – fire service; key clients include but are not limited to – businesses, schools, hospitals; private clients include but are not limited to – people on dialysis; client call centre.
- 4.3 Shut-down is described in accordance with organisational procedures.
- 4.4 Procedures to action contingencies are described in accordance with organisational procedures.
- Range includes but is not limited to – temporary water supply.
- 4.5 Re-commissioning the water supply is described in accordance with organisational procedures.
- 4.6 Notifying the client call centre is described in accordance with organisational procedures.

Replacement information	This unit standard, unit standard 19209, unit standard 19211, unit standard 22097, unit standard 22100, and unit standard 27330 were replaced by unit standard 31449.
--------------------------------	---

This unit standard is expiring. Assessment against the standard must take place by the last date for assessment set out below.

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	19 September 2008	31 December 2018
Review	2	16 March 2017	31 December 2021
Review	3	27 September 2018	31 December 2021

Consent and Moderation Requirements (CMR) reference	0101
--	------

This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.

This unit standard is Expiring