

Title	Describe drinking-water reticulation system management, and management of critical control points		
Level	5	Credits	8

Purpose	People credited with this unit standard are able to: describe the importance of maintaining continuity of supply of water and drinking-water; describe the factors that affect the risk of water supply contamination due to construction and maintenance of reservoirs and the reticulation system; describe the procedures for taking a reservoir and reticulation main out of service, cleaning, disinfection, and putting back into service; and identify critical control points, hazards, preventive actions, and corrective actions of water reticulation systems.
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Classification	Water Industry > Water Reticulation
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Available grade	Achieved
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Explanatory notes

- 1 Legislation and references relevant to this unit standard include: Health Act 1956, Local Government Act 2002, Fire Service Act 1975, and subsequent amendments; SNZ PAS 4509:2008 *New Zealand Fire Service Firefighting Water Supplies Code of Practice*; *Drinking-Water Standards for New Zealand*, 2005 (Revised 2008). Ministry of Health, Wellington.
- 2 Definitions
Critical control point – specific point, procedure, or step in water reticulation processes at which control can be exercised to reduce, eliminate, or prevent the possibility of a public health hazard.
Drinking-water supply – the supply catchment, treatment plant, and distribution including tankers. The drinking-water supplier has responsibility for managing the public health risks of the drinking-water supply.
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 evidence requirements

Outcome 1

Describe the importance of maintaining continuity of supply of water and drinking-water.

Evidence requirements

- 1.1 The supply of water and drinking-water is described in terms of the importance of continuity of supply, legislative requirements, and the implications for disruption of supply.
- Range pressure requirements, flow, storage.
- 1.2 Water service requirements for point of supply options are described in terms of organisational procedures.

Outcome 2

Describe the factors that affect the risk of water supply contamination due to construction and maintenance of reservoirs and the reticulation system.

Evidence requirements

- 2.1 Factors that contribute to poor water quality are described in terms of reticulation problem areas.
- Range includes but is not limited to – low pressure areas, long detention times, chlorine levels and forms, dead ends, 'dead spots', flushing.
- 2.2 The causes and impacts of corrosion and hard water are described in terms of the chemistry of the water.
- Range causes include but are not limited to – pH levels, hardness and alkalinity, langelier saturation index.
- 2.3 The opportunities for contamination during new pipeline construction are described in terms of water quality risks, and methods to reduce these risks.
- Range includes but is not limited to – pipe storage, site cleanliness, hygiene facilities, personal hygiene, trench inundation, pipe plugs, flushing, disinfection.
- 2.4 The opportunities for contamination during maintenance are described in terms of water quality risks, and methods to reduce these risks.
- Range includes but is not limited to – positive water flows, site cleanliness, trench inundation, flushing, pigging, disinfection, air scouring, hygiene facilities, personal hygiene.
- 2.5 The opportunities for contamination due to inadequate reservoir maintenance or security are described in terms of water quality risks and methods to reduce these risks.
- Range includes but is not limited to – protective equipment, site cleanliness, washing, disinfection, construction and security requirements, hygiene facilities, personal hygiene.

- 2.6 The hazards and causes of backflow, and methods of prevention in drinking-water reticulation systems are described in terms of the strengths and limitations of prevention methods.

Range evidence is required for at least three methods.

Outcome 3

Describe the procedures for taking a reservoir out of service, cleaning, disinfection, and putting back into service.

Evidence requirements

- 3.1 The purpose and timing of the procedures with consideration for safety are described in accordance with organisational procedures.

Range may include but is not limited to – safety plan(s) for confined space entry and/or excess height access, hazardous chemicals use.

- 3.2 The procedures to draw down the reservoir, take out of service, and drain down are described in accordance with organisational procedures.

- 3.3 The procedures for advising consumers and providing an alternative water supply are described in accordance with organisational procedures.

- 3.4 The cleansing procedure is described in accordance with organisational procedures.

- 3.5 The method and procedures for chlorine application are described in accordance with organisational procedures.

Range includes but is not limited to – dose levels, times, test measurements, disposal of chlorinated water in an environmentally acceptable manner.

- 3.6 The procedures for refilling the reservoir, checking the water quality and putting back into service, are described in accordance with organisational procedures.

Outcome 4

Describe the procedures for taking a reticulation main out of service, cleaning, disinfection, and putting back into service.

Evidence requirements

- 4.1 The purpose and timing of the procedure with consideration for safety are described in accordance with organisational procedures.

Range may include but is not limited to – safety plan(s) for confined space entry, trench safety, traffic, excess height access, hazardous chemicals use.

- 4.2 Procedures for advising consumers and providing an alternative water supply are described in accordance with organisational procedures.
- 4.3 Reticulation main shut-down and draining are described in accordance with organisational procedures.
- 4.4 The repair procedure and reticulation mains flush are described in accordance with organisational procedures.
- 4.5 Chlorine application is described in accordance with organisational procedures.
- Range includes but is not limited to – method, dose levels, times, test measurements, methods of disposal of chlorinated water in an environmentally acceptable manner.
- 4.6 The procedure for mains refill, water quality check, and mains put back into service is described in accordance with organisational procedures.

Outcome 5

Identify critical control points, hazards, preventive actions, and corrective actions of water reticulation systems.

Range piped reticulation systems, service reservoirs, reticulation components.

Evidence requirements

- 5.1 The critical control points in water reticulation system disinfection are identified in accordance with organisational procedures.
- 5.2 The hazards, the causes of the events leading to their appearance, and the level of risk are identified at each critical control point.
- 5.3 The preventive and corrective actions for persistent problems or events related to each hazard are identified in accordance with organisational procedures.

Planned review date	31 December 2021
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	27 August 2001	31 December 2018
Revision	2	12 February 2003	31 December 2018
Review	3	19 September 2008	31 December 2018
Review	4	16 March 2017	N/A

Consent and Moderation Requirements (CMR) reference	0101
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This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.

Please note

Providers must be granted consent to assess against standards (accredited) by NZQA, before they can report credits from assessment against unit standards or deliver courses of study leading to that assessment.

Industry Training Organisations must be granted consent to assess against standards by NZQA before they can register credits from assessment against unit standards.

Providers and Industry Training Organisations, which have been granted consent and which are assessing against unit standards must engage with the moderation system that applies to those standards.

Requirements for consent to assess and an outline of the moderation system that applies to this standard are outlined in the Consent and Moderation Requirements (CMR). The CMR also includes useful information about special requirements for organisations wishing to develop education and training programmes, such as minimum qualifications for tutors and assessors, and special resource requirements.

Comments on this unit standard

Please contact the Infrastructure Industry Training Organisation qualifications@connexis.org.nz if you wish to suggest changes to the content of this unit standard.