

<b>Title</b>	<b>Describe water quality monitoring and preventative measures in water supply reticulation systems</b>		
<b>Level</b>	<b>4</b>	<b>Credits</b>	<b>5</b>

<b>Purpose</b>	People credited with this unit standard are able to describe: the causes and effects of variation in water quality in a water reticulation system, and the reasons for water quality monitoring; water sampling programmes; water tests carried out on water supplies; and measures for preventing deterioration in water quality.
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<b>Classification</b>	Water Industry > Water Reticulation
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<b>Available grade</b>	Achieved
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### Guidance Information

- 1 Legislation and references relevant to this unit standard include:  
 Health Act 1956, and subsequent amendments;  
*Drinking Water Standards for New Zealand 2005 (Revised 2008)*, Ministry of Health, Wellington;  
*Guidelines for Drinking-water Quality Management for New Zealand 2015 (2<sup>nd</sup> edn)*;  
 NZS 9201.7:2007 *Model general bylaws - Water supply*, and AS/NZS 4020:2005 *Testing of products for use in contact with drinking water*, available from <http://www.standards.govt.nz>.
- 2 Definitions  
*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.  
*Water reticulation* – in this context refers to all pipe systems, pumping systems, and components that contribute to the distribution of water.  
*Water Safety Plan* refers to a plan to ensure the safety and continuity of drinking water through the use of a comprehensive risk assessment and risk management approach that encompasses all steps in water supply from catchment to consumer.

### Outcomes and performance criteria

#### Outcome 1

Describe the causes and effects of variation in water quality in a water reticulation system, and the reasons for water quality monitoring.

**Performance criteria**

- 1.1 Variations in water quality as indicated by the presence of helminths, protozoa, bacteria, and viruses are described in terms of the causes.
- 1.2 The presence of microbes in the water supply is described in terms of the effects on human beings.
- 1.3 The chemical and physical causes of variations in water quality are described in relation to their effect on water.
- 1.4 Water quality monitoring is described in terms of the reasons for its requirement.

**Outcome 2**

Describe water sampling programmes.

**Performance criteria**

- 2.1 Water sampling programmes are described in terms of their features.  
Range frequency of sampling, location of sampling.
- 2.2 Water sampling programmes relevant to the water supplier are described in terms of the *Drinking Water Standards for New Zealand*
- 2.3 The procedures for investigating causes of, and responses to, reported transgressions from the requirements of the *Drinking Water Standards for New Zealand* are described in accordance with organisational procedures.

**Outcome 3**

Describe the water tests carried out on water supplies.

**Performance criteria**

- 3.1 Water tests are described in terms of the reasons they are carried out and the implications of levels achieved.  
Range two types of tests from each of – bacteriological, aesthetics, chemical.
- 3.2 Water tests are described in terms of the implications to the water supplier of variations from normal results of water tests.  
Range at least two bacteriological tests;  
one of – two aesthetics tests, two chemical tests.

3.3 Indicator testing is described in terms of its use, limitations, and implications of results for public health.

Range indicator testing for – E coli, total coliforms, heterotrophic plate count, chlorine residual, turbidity, pH.

**Outcome 4**

Describe measures for preventing deterioration in water quality.

**Performance criteria**

4.1 Hygienic procedures are described in terms of their impact on water quality deterioration.

4.2 Flushing programmes are described in terms of the reasons for their implementation, the situations where they are used, their impact on water quality deterioration, and contract requirements.

4.3 Methods for maintaining reservoir integrity and water circulation are described in terms of their impact on water quality deterioration.

Range methods – operational, design.

4.4 Backflow prevention and testing programmes, and valve status checking are described in terms of their impact on water quality deterioration.

4.5 Pipeline condition assessment is described in accordance with organisational procedures.

4.6 Water Safety Plans are described in terms of the reasons for their implementation.

<b>Replacement information</b>	This unit standard and unit standard 22105 were replaced by unit standard 31521.
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**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	26 October 2005	31 December 2016
Rollover and Revision	2	20 February 2009	31 December 2016
Rollover	3	21 July 2011	31 December 2018
Review	4	16 March 2017	31 December 2021

Process	Version	Date	Last Date for Assessment
Review	5	29 November 2018	31 December 2021

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

This unit standard is Expiring