

<b>Title</b>	<b>Perform analysis of water</b>		
<b>Level</b>	<b>6</b>	<b>Credits</b>	<b>6</b>

<b>Purpose</b>	People credited with this unit standard are able to: describe the distribution of the components of natural waters; carry out the sampling and analysis of water; and calculate concentrations of chemical species in water.
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<b>Classification</b>	Science > Chemistry
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<b>Available grade</b>	Achieved
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### Guidance Information

- All work must be carried out in accordance with the quality management system, documented protocol system or Standard Operating Procedures typically acceptable in a commercial or research laboratory.
- Health and Safety practices must conform to Australian/New Zealand Standard AS/NZS 2243:2010 Set – Safety in Laboratories, available at <http://www.standards.co.nz> and <http://infostore.saiglobal.com/store>.
- Legislation applicable to this unit standard includes:  
 Health and Safety at Work Act 2015;  
 Hazardous Substances and New Organisms Act 1996;  
 Resource Management Act 1991.

### Outcomes and performance criteria

#### Outcome 1

Describe the distribution of the components of natural waters.

#### Performance criteria

- Vertical distribution of components is outlined in terms of non-flowing natural waters.  
  
 Range            may include – biounlimited, biolimited, biointermediate, trace metals, oxygen (O<sub>2</sub>), impounded waters, oceans, temperature.
- Processes influencing chemical behaviour are outlined in relation to estuaries.
- Processes influencing composition are outlined in relation to ground waters.

1.4 Metal ion complex formation and its importance are described in relation to toxicity.

1.5 pH value change is described in terms of the water source.

Range may include – lake, river, coastal water, ground water, industrial water.

## Outcome 2

Carry out the sampling and analysis of water.

### Performance criteria

2.1 Sampling plan is devised in accordance with analytical requirements.

Range sampling protocols, pre-treatment, preservatives, storage times, bottle types.

2.2 Representative sample is collected in accordance with the sampling plan.

Range one of – lake, river, coastal water, ground water, industrial water.

2.3 Preservation of sample is carried out in accordance with sampling plan.

2.4 Analysis of sample is carried out in accordance with standard methods.

Range may include – chlorinity, titration alkalinity, total hardness, dissolved oxygen, micronutrient concentration, pH, residual chlorine, chemical oxygen demand, biological oxygen demand; evidence for analysis of two contrasting types of water is required.

## Outcome 3

Calculate concentrations of chemical species in water.

### Performance criteria

3.1 Contributions to alkalinity are calculated using experimental data in accordance with standard calculation procedures.

3.2 Equilibrium concentration of oxygen is calculated using partial pressure data in accordance with standard calculation procedures.

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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	22 December 1996	31 December 2014
Revision	2	19 February 1998	31 December 2014
Review	3	23 November 1999	31 December 2014
Review	4	22 September 2004	31 December 2014
Review	5	18 June 2010	31 December 2016
Rollover and Revision	6	27 January 2015	31 December 2022
Rollover and Revision	7	15 June 2017	31 December 2022
Revision	8	26 October 2017	31 December 2022
Review	9	22 October 2020	31 December 2022

<b>Consent and Moderation Requirements (CMR) reference</b>	0113
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This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.