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| Title | Demonstrate knowledge of pumps used in water reticulation | | |
| Level | 4 | Credits | 5 |

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| Purpose | People credited with this unit standard are, for water reticulation, able to describe: pumps; the use of pumps and the effects of pump delivery rates; pump arrangements; and the control of pumps. |
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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, Health and Safety at Work Act 2015, Local Government Act 2002, and subsequent amendments;
Water Meter Code of Practice (2003) available from www.waternz.org.nz;
 NZS 9201.7:2007 *Model general bylaws - Water supply*, and NZS 4404:2010 *Land Development and Subdivision Infrastructure*, available from <http://www.standards.govt.nz>;
Drinking Water Standards for New Zealand 2005 (Revised 2008), Ministry of Health, Wellington.
- 2 Definition
Water reticulation – in this context refers to all pipe systems, pumping systems, and components that contribute to the distribution of water, and collection and disposal of wastewater and stormwater.

Outcomes and evidence requirements

Outcome 1

Describe pumps used in water reticulation.

Evidence requirements

- 1.1 Pumps are described in terms of their mechanical components, and planned maintenance requirements.

Range impellor and body materials, pump mounting, motor and control systems, alternative power supply.

Outcome 2

Describe the use of pumps and the effects of pump delivery rates in water reticulation.

Evidence requirements

- 2.1 The use of pumps to recover hydraulic fall is described in terms of energy and ground level.
- 2.2 The effects of pump delivery rates are described in terms of fixed and dynamic heads.

Range includes but is not limited to – pump head-discharge curves, system head curves, control valve, well levels, suction pressure requirement.

Outcome 3

Describe pump arrangements for water reticulation.

Evidence requirements

- 3.1 The options for pump and motor siting are identified and described in terms of wet and/or dry well arrangements, and in-line configuration.

Range may include but is not limited to – suction and delivery head issues, flooding, settling or suspension of solids, flooding of stations, pipework options, station visibility, pipe station and reservoir siting options; evidence is required for at least three.

- 3.2 The options for the number of pump sets are identified and described in terms of flow rates and space requirements.

Range includes but is not limited to – inflow and outflow variability, standby requirements.

- 3.3 Ancillary equipment required is identified and described in terms of function and siting.

Range includes but is not limited to – washdown hoses, electrical supply, valve siting, control equipment, air venting.

Outcome 4

Describe the control of pumps used in water reticulation.

Evidence requirements

- 4.1 Normal duty pump control and control systems are described in terms of operating levels and duty/standby setting.

- 4.2 Pump station and reservoir size effects on pump operations are identified and described in terms of start frequency.

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| 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 | 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 | N/A |

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| 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 (CMRs). 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.