

Title	Design an on-site wastewater management system		
Level	4	Credits	20

Purpose	People credited with this unit standard are able to: determine wastewater volumes, temporal patterns, and characteristics for on-site wastewater land application; select the treatment and land application system for an on-site wastewater management system; configure and size the land application areas for the selected on-site wastewater management system; and complete a report for the design, installation, commissioning, operation and maintenance of the on-site wastewater management system.
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Classification	Water Industry > Wastewater Treatment
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Available grade	Achieved
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Guidance Information

- 1 Evidence presented for assessment against this unit standard must be consistent with safe working practices and be in accordance with applicable legislative and industry requirements.
- 2 Legislation, regulations and industry standards relevant to this unit standard include but are not limited to the:
 - Resource Management Act 1991;
 - Building Act 2004 and relevant Building Codes;
 - Health Act 1956;
 - Historic Places Act 1993, and subsequent amendments and replacements;
 - regional and district plans, and regulatory authority requirements;
 - AS/NZS 1547:2012 *On-site domestic wastewater management*;
 - AS/NZS ISO 31000:2009 *Risk Management – Principles and guidelines*;
 - SA/SNZ HB 203:2012 *Managing environment-related risk*; available from <http://www.standards.govt.nz>.
- 3 Definition
Industry requirements include manufacturers' specifications; and enterprise requirements which cover the documented workplace policies, procedures, specifications, business, and quality management requirements relevant to the workplace in which assessment is carried out.
- 4 It is recommended that the assessor uses design guidelines issued by the regional or local authorities in the candidate's locality.

- 5 Assessment
 Assessment against Outcome 2 and 3 must be based on data collected from Outcome 1.
 Assessment against Outcome 4 must be based on the results of Outcomes 1, 2, and 3.
 Evidence of a design for three separate sites is required.
- 6 Credit for this unit standard does not qualify the candidate to work in a drainlaying situation that comes under the drainlayer's licence requirements issued under the Plumbers, Gasfitters, and Drainlayers Act 2006 and any subsequent amendments.

Outcomes and performance criteria

Outcome 1

Determine wastewater volumes, temporal patterns, and characteristics for on-site wastewater land application.

Performance criteria

- 1.1 Average, maximum, and short-term peak flows of wastewater to be managed for the site are determined.
- Range includes but is not limited to – dwelling size, occupancy, water supply, per capita flow allowances, water conservation measures and/or fixtures.
- 1.2 Wastewater volumes and temporal patterns for an on-site wastewater design are determined in accordance with maximum daily volume of wastewater to be discharged.
- 1.3 Wastewater characteristics are determined for the site.
- Range wastewater characteristics for treatment stages – raw, primary, secondary, advanced secondary, tertiary, reclaimed or recycled water;
 includes but is not limited to concentration of – biochemical oxygen demand (BOD), total suspended solids (TSS), indicator micro-organisms, nutrients, oil and grease.

Outcome 2

Select the treatment and land application system for an on-site wastewater management system.

- Range treatment processes may include – reduction of BOD, TSS, nutrients and indicator micro-organisms via primary, secondary, advanced secondary, and tertiary processes;
 land application systems may include – trench systems, beds, mounds, low-pressure effluent distribution, irrigation.

Performance criteria

- 2.1 Options for treatment processes and land application systems are assessed in terms of suitability.
- 2.2 A treatment and land application system is selected, consistent with the recommendations of the site and soil evaluation.
- Range client requirements, environmental constraints, setback distances.
- 2.3 A loading method for gravity or pressure dose distribution is selected, consistent with the selected land application and treatment system.

Outcome 3

Configure and size the land application areas for the selected on-site wastewater management system.

Performance criteria

- 3.1 Design loading rate (DLR) and design irrigation rate (DIR) are set in accordance with soil category determination based on site and soil characteristics.
- Range soil characteristics include – texture, structure, indicative permeability.
- 3.2 The land application and reserve areas are sized and configured in accordance with the DLR, DIR and effluent loading method.
- 3.3 Land application and reserve areas are sited in accordance with regional and district council compliance requirements.
- Range setback distances, site constraints, client requirements, access for operation and maintenance.
- 3.4 The land application system is optimised for the site in accordance with approved dispersal processes.
- Range approved dispersal processes – evapotranspiration, seepage, in-soil treatment, nutrient uptake.

Outcome 4

Complete a report for the design, installation, commissioning, operation and maintenance of the on-site wastewater management system.

Performance criteria

- 4.1 A report of the design process is completed in accordance with AS/NZS 1547:2012.

- 4.2 Plans and specifications for installation of the on-site wastewater management system are described in accordance with AS/NZS 1547:2012 and are consistent with the risk management plan.
- 4.3 Procedures for commissioning of the on-site wastewater management system are described in accordance with AS/NZS 1547:2012.
- 4.4 Procedures for operation and maintenance of the on-site wastewater management system are described in accordance with AS/NZS 1547:2012.

Replacement information	This unit standard replaced unit standard 25128.
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Planned review date	31 December 2025
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	23 July 2020	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>.

Comments on this unit standard

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