

Australian/New Zealand Standard™

**On-site domestic-wastewater
management**

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee WS/13 On-site Domestic Wastewater Management. It was approved on behalf of the Council of Standards Australia on 12 May 2000 and on behalf of the Council of Standards New Zealand on 3 May 2000. It was published on 24 July 2000.

The following interests are represented on Committee WS/13:

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Australian/New Zealand Standard™

On-site domestic-wastewater management

Originated in Australia as part of Int 320-1951.

Previous edition AS 1547:1994.

Originated in New Zealand as part of NZS 4610:1982.

AS 1547-1994 and part of NZS 4610:1982 jointly revised,
amalgamated and redesignated as AS/NZS 1547:2000.

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Jointly published by Standards Australia International Ltd, PO Box 1055, Strathfield, NSW 2135 and Standards New Zealand, Private Bag 2439, Wellington 6020.

ISBN 0 7337 3439 1

PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee WS/13/1 On-site Domestic-wastewater Management to supersede AS 1547-1994, *Disposal systems for effluent from domestic premises* and, in part, NZS 4610:1982 *Household septic tank systems*.

The revision has been broadened in scope to:

- (a) Include performance statements necessary to define outcomes and to accommodate new technologies.
- (b) Provide the basic performance provisions for septic tanks ([AS/NZS 1546.1-1998](#)) and introduce performance requirements to cover all types of wastewater-treatment units and land-application systems.
- (c) Set out the administrative and managerial responsibilities, and the education and training needed to ensure that on-site domestic-wastewater systems could be effective long-term options.
- (d) Give guidance on operation and maintenance of on-site domestic-wastewater systems.
- (e) Give guidance for on-site evaluation.
- (f) Give guidance on soil assessment.
- (g) Provide options for on-site domestic wastewater-treatment and land-application systems.
- (h) Give guidance on design, construction and installation.

This revision does not address issues of sustainable reuse of wastewater.

This Standard is presented in four parts:

- PART 1: General
General background and definitions relevant to the whole Standard.
- PART 2: Performance
Performance statements for on-site domestic-wastewater systems.
- PART 3: Management of on-site domestic-wastewater systems
Detailed discussion of the requirements for effective management of on-site domestic-wastewater systems, including their operation and maintenance.

This is an informative Part of the Standard.
- PART 4: Means of compliance
Means of compliance with the performance statements of Part 2.
- 4.1 Site-and-soil Evaluation
 - 4.2 Land-application systems
 - 4.3 Wastewater-treatment units
 - 4.4 Other wastewater systems
 - 4.5 Construction and installation

Appendices accompany Clauses 4.1, 4.2, 4.3 and 4.5.

Part 3 of this Standard covering management of the construction and use of on-site domestic-wastewater systems is informative only. Its presence in this Standard reflects its importance to the Committee.

The terms 'normative' and 'informative' have been used in this Standard to define the application of the appendices to which they apply. For example, a 'normative' part or appendix is an integral part of the Standard, whereas an 'informative' appendix is for information and guidance only.

Clauses prefixed by "*Comment*" and printed in italic are comments, explanations, and summaries of technical background, recommended practice or suggest approaches that satisfy the intent of the Standard.

ACKNOWLEDGEMENT

Standards New Zealand gratefully acknowledges the use of some figures which were extracted from ARC Environment, Technical Publication No. 58, 2nd edition, November 1994, published by the Auckland Regional Council.

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FOREWORD

The WS/13/1 Committee is made up of public health regulators, environmental protection regulators, consultants, soil scientists, local government health and environment inspectors, system manufacturers, plumbers and drainlayers, who collectively represent many years of experience in this area. It is the Committee's firm belief that on-site domestic-wastewater-treatment is a viable, long-term, sustainable system of wastewater management.

At least 20 % of the populations of Australia and New Zealand depend on on-site wastewater-treatment of their personal and domestic wastes.

For a Joint Australian/New Zealand Standard to have status, it must accommodate the current legislative requirements and on-site domestic-wastewater practices of both countries. Land-development pressures, the need for quality, and need for practical guidance on means of enhancing the overall performance of on-site wastewater practices must also be accommodated.

Where there is likely to be uncertainty in the outcome of the design and its installation, sufficient factors of safety must be available to ensure that the long-term performance objectives are met. Further, given the wide range of choice of design criteria utilized by designers and consultants, the Standard must ensure that sound public health and environmental outcomes are achieved, regardless of the design approach selected.

The failures of the past are due in large measure to a lack of understanding of the systems by the users, inappropriate capacity of tanks, or poor siting or design of land-application systems. In addition, people are transient; people are forgetful and negligent; there is a lack of knowledge about the operation and maintenance of on-site domestic-wastewater systems; and there is a lack of or insufficient, management, control, and provision of guidance for on-site domestic-wastewater systems.

Standards for septic tanks and domestic effluent land application have previously been developed in the expectation that a technically exact approach to design and implementation was possible. Time has shown this expectation to be misplaced. Any one of a number of factors can vary throughout the year and could prevail in determining the effective performance of an on-site system. In addition, most areas in Australia and New Zealand are composed of soils that are not amenable to a basic prescriptive approach of septic tank plus trench system, and in many cases the prescriptive approach has not achieved sound environmental outcomes. Finally, the standard clean water percolation test, which has been used for so long, has shown its limitations and is no longer used by most modern designers as the sole design approach.

The Committee has adopted a new approach that focuses on outcomes, i.e. desired results, that are needed to achieve sustainable public health and environmental performance and the processes needed to achieve these, rather than prescribing how to achieve such outcomes. This has resulted in a significantly different Standard.

It is the Committee's belief that if on-site domestic-wastewater systems are to be effective and sustainable, and to play their part in protecting public health and the environment, a system of management and control needs to be in place. The Committee largely considers that the initiation of a control process infrastructure and the establishment of on-going support and guidance, by default falls to the regulatory authorities to take up. However it is done, some system of management and control, either regulatory or private or both, needs to be instigated for the greater benefit of public health and the environment.

In creating Part 3, the Committee defines and builds up a system that should lead to two goals: sustainable on-site domestic-wastewater systems; and compliance with regulatory requirements for on-site wastewater systems. Formulation of a regulatory process, and allocation of responsibilities do not form part of this Standard.

The application of this Standard does not circumvent other approvals, licences or permits needed from any regulatory authority.

The term 'land-application' has been used in place of the more familiar term 'disposal'. This has been done to recognize that the septic tank (or other on-site wastewater-treatment unit) provides only partial treatment of wastewater flow and that the soil and vegetation within the land-application area both treat and take up the effluent.

PART 1 : GENERAL
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STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

Australian/New Zealand Standard
On-site domestic-wastewater management

Part 1: GENERAL

1.1 OBJECTIVE OF STANDARD

The objective of this Standard is to provide the requirements for primary and secondary-treatment units for all persons and agencies involved with sustainable and effective on-site domestic-wastewater management.

1.2 SCOPE AND INTERPRETATION**1.2.1 Systems covered**

The on-site domestic-wastewater systems covered by this Standard include both primary and secondary wastewater-treatment units and associated land-application systems. The Standard gives specific details for septic tanks for domestic all-waste, blackwater and greywater; and specific details for land-application and absorption systems, including conventional trenches and beds, evapo-transpiration systems, mounds and irrigation areas. These are regarded as the current most commonly used systems and are used as examples throughout the Standard.

1.2.2 System size

The systems covered in this Standard are designed for wastewater flows up to a maximum of 14 000 L/ week, from a population equivalent of up to 10 persons.

1.2.3 Greywater reuse

This Standard covers the subsurface land-application of greywater after primary treatment. It does not cover the direct application of greywater onto land for reuse purposes, nor does it provide details of greywater-diversion systems.

1.2.4 Interpretation

The word “shall” identifies a mandatory requirement for compliance with the Standard. The word “should” refers to practices which are advised or recommended.

1.3 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS	
1289	Methods of testing soils for engineering purposes Method 3.8.1 – Soil classification tests – Dispersion – Determination of Emerson class number of a soil
1319	Safety signs for the occupational environment
2439	Perforated plastics drainage and effluent pipe and fittings
2439.2	Perforated effluent pipe and associated fittings for sewerage applications
2698	Plastics pipes and fittings for irrigation and rural applications
2758	Aggregates and rock for engineering purposes
2758.1	Part 1: Concrete aggregates



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