

Code of Practice for Product Approval of On-site Wastewater Management Systems

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Disclaimer

The information provided in the Code of practice for product approval of on-site wastewater management systems (the Code) is based upon requirements for the design of on-site wastewater management systems in the Northern Territory.

The Code and the information herein does not in any part act as an approval to install an on-site wastewater management system.

The Northern Territory Government accepts no liability for costs or damages to any person or property resulting from the application of the Code.

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| Definitions | |
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| Aerated Wastewater Treatment System (AWTS) | A system that uses the processes of aeration following clarification to achieve secondary (biological) treatment of wastewater. |
| Authorised service person | A person who has been suitably trained in the installation, operation and service requirements of the system or accredited by the system manufacturer. |
| AS/NZS | Australian Standards/New Zealand Standards (latest version). |
| Blackwater | Refers to wastewater containing products of human excretion. |
| BOD ₅ (Biochemical oxygen demand) | Refers to the amount of oxygen that would be consumed over a period of five days by microbiological action in a sample of wastewater at 20 degrees C. |
| Composting toilet | A device that receives and treats human excreta, domestic organic matter and bulking agents, using natural aerobic stabilisation and disinfection processes to produce a product that is not a public health risk. |
| Design capacity | The maximum number of people for a specified use. |
| Disinfection | The method of treatment of wastewater, which reduces the concentration of pathogens via inactivation to an acceptable level satisfactory for the intended use. |
| Effluent | The liquid discharged from a wastewater management system. |
| Greywater | The domestic wastewater from baths, showers, basins, laundries and kitchen sinks/dishwashers specifically excluding water from toilets and urinal wastes. |
| Greywater diversion device (GDD) | A device that collects and directs untreated greywater to a sub-surface irrigation area or to the sewer. This system does not allow storage or treatment, apart from a coarse screen filter, which may remove lint, hair and coarse particles. |
| Greywater treatment system (GTS) | A system or device that collects, treats and disinfects greywater arising from an individual single domestic premises for reuse for toilet and urinal flushing or laundry use, and / or for use in surface and sub-surface irrigation in dedicated non-trafficable areas. |
| JAS-ANZ | Joint accreditation system of Australia and New Zealand. |
| Land application system | The system used to apply effluent from a wastewater treatment system into or onto the soils for further in-soil treatment and soakage/reuse. |
| NATA (National Association of Testing Authorities) | Government-endorsed provider of accreditation for laboratories and similar testing facilities. Accredited laboratories in Australia will provide reliable and accurate test results of wastewater contaminants. |
| On-site wastewater system (OWMS) | A system that collects treats and disposes of or reuses domestic wastewater within an individual allotment. This includes land application of treated wastewater which is to be on the same allotment. This applies to septic tanks, aerated treatment units, composting toilets, leach drains, soak wells, greywater systems and temporary site toilets. |
| Performance criteria | The quantitative or qualitative description of the performance requirements. |
| Secondary treatment | Microbiological digestion and physical settling and filtering processes and decomposition of wastewater constituents following primary treatment. |

| Definitions | |
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| Secondary treatment system | A system which produced treated effluent of secondary standard, i.e. ≤ 20 mg/L of BOD ₅ , ≤ 30 mg/L of TSS and ≤ 10 cfu/100 mL of <i>E.coli</i> (as specified in Section 2 of As 1546.3:2017). |
| Septic tank | A single or multiple chambered tank through which wastewater is allowed to flow slowly to allow suspended matter to settle and be retained, so that organic matter contained therein can be decomposed (digested) by anaerobic bacterial action in the liquid. The term covers the tanks that are used to treat all wastewaters, greywater and blackwater. |
| Service agent | A person contracted by the manufacturer or system owner to regularly maintain the onsite wastewater system (may be the system supplier). |
| Serviceable life | The period of time in which with only normal and routine maintenance, the onsite wastewater system including any associated fittings perform satisfactorily without failure. |
| Sewage | Wastewater generated in a domestic premise, including refuse liquids, wastewater or waste matter (including both greywater and blackwater). |
| Sewerage | The network of collection drains carrying domestic wastewater to the treatment plant. |
| Sub-surface irrigation | Irrigation at a depth of at least 100mm below the surface level of soil or mulch. |
| Surface Irrigation | Irrigation applied to the ground from above the ground surface. |
| Wastewater | The used water arising from domestic activities consisting of all wastes, greywater and blackwater. |
| WaterMark | A graphic symbol that is issued for products that have been approved under the WaterMark Certification Scheme as defined in the Plumbing Code of Australia (PCA). |

1. Introduction

Manufacturers of on-site wastewater management systems (OWMS) are required to obtain Department of Health (DoH) approval to produce and/or sell these systems in the NT.

An OWMS is a wastewater management system that collects treats and disposes of or reuses domestic wastewater within an individual allotment. This includes land application of treated wastewater which is to be on the same allotment. This section applies to septic tanks, secondary treatment systems, composting toilets, greywater systems and any apparatus for the treatment or disposal of sewage.

All such products must be of sound construction and adequate design to ensure that sewage is effectively collected, treated, contained and disposed of or reused without risk to public health or the environment.

The assessment process and documentation requirements may vary, depending on the nature of the product. Product approval fees apply and manufacturers are responsible for any costs associated with product trials, quality assurance requirements or in providing engineering certification and structural test reports.

The status of manufacturers and various products including product approval fees is available on the [Northern Territory Government website](#).

All OWMS shall be approved by the Chief Health Officer before they can be sold to the public or used for the treatment and disposal of sewage in order to:

- Minimise the risk of pathogens in wastewater and the spread of enteric disease.
- Reduce the risk of environmental degradation.
- Ensure product compliance with regulations and relevant standards.

Applicants must apply to the DoH for product approval and to register their mark or distinguishing brand. Every article used in the construction of an apparatus for the treatment and disposal of sewage and effluent is required to be marked with the manufacturer's name or brand.

2. Scope

The Code:

- Sets the minimum requirements for manufacturers to obtain product approval by the Chief Health Officer to produce or sell their OWMS in the NT.
- Defines the documentation that applicants need to submit to the Department of Health (DoH) as well as the application process to obtain approval for their systems.
- Sets out the requirements for the design, manufacture, quality assurance, installation, operation and maintenance of OWMS serving individual allotments.
- References several Australian/New Zealand Standards (AS/NZS) and is in line with national standards. The Code needs to be read in conjunction with the relevant standard(s).

3. Legislation and Standards

3.1. Public and Environmental Regulations

The main legislative requirements concerning product approval of OWMS are contained in the Public and Environmental Health Regulations. The Regulations detail the requirements to be satisfied with regard to the manufacture, installation and operation of wastewater systems. The Code should be read in conjunction with these Regulations. The design, manufacture and use of an OWMS must be approved by the Chief Health Officer.

3.2. Plumbing Code of Australia and Plumbing and Drainage Standards AS/NZS 3500

The essentials of good plumbing and drainage are simple design, sound materials and good workmanship. All materials, fittings and fixtures used must be according to a standard approved for sanitary plumbing and drainage.

All sanitary plumbing and drainage work including the installation of fixtures and connection to the OWMS via traps, waste pipes and drains shall be carried out in accordance with the Plumbing Code of Australia (Section A “General Provisions,” Part B3 “Non Drinking Water Services,” Section C “Sanitary Plumbing and Drainage Services,” Section F “Onsite Wastewater Management Systems” and Section G “Materials and Products Certification) and the Plumbing and Drainage Standards AS/NZS 3500.

3.3. Australian/New Zealand Standards adopted

The following Australian/New Zealand Standards (AS/NZS) are adopted in this Code:

- AS/NZS 1546.1 On-site domestic wastewater treatment units Part 1: Septic tanks.
- AS/NZS 1546.2 On-site domestic wastewater treatment units Part 2: Waterless composting toilets.
- AS 1546.3 On-site domestic wastewater treatment units Part 3: Secondary treatment systems.
- AS 1546.4 On-site domestic wastewater treatment units Part 4: Domestic greywater treatment systems.
- AS/NZS 1547 On-site domestic wastewater management.
- AS/NZS 3000 Electrical installations (known as the Australian/New Zealand Wiring Rules).
- AS/NZS 3500.1 Plumbing and drainage Part 1: Water services.
- AS/NZS 3500.2 Plumbing and drainage Part 2: Sanitary plumbing and drainage.
- AS/NZS 2845.1 Water Supply – Backflow prevention devices.
- AS 3600 Concrete structures.

Australian/New Zealand Standards (1546 series and 1547 referred to above) are taken to apply to all OWMS and land application areas, however any additional information or requirement provided in this Code overrides corresponding or differing AS/NZS requirements. References to AS/NZS in this Code must be considered as the corresponding clauses of the subsequent versions of the AS/NZS will apply. If revisions of the AS/NZS differ considerably, DoH will determine which approach best meets the required performance outcomes.

4. Application process

Applications for product approval should be submitted in hard copy and electronic format to the DoH Public Health Directorate. They must include:

An application form for product approval signed and dated either by the applicant or a person authorised to act on their behalf (written confirmation of such authorisation should be provided with the application). The application form is available on the [Northern Territory Government website](#):

- Where applicable, a certificate of incorporation and business name certificate.
- Supporting technical information as required by the application form.

The application form for product approval shall be lodged with the following documentation:

- Copies of certification documentation from an independent product certification agency accredited by JAS-ANZ, showing certification of the OWMS to a relevant product certification program in accordance with Section 6.
- A certification evaluation report prepared by the product certification body detailing the testing methods used, inclusion of all log sheets, comparing performance against the test criteria and detailing the security arrangements adopted to ensure testing integrity.
- Documentation that the laboratories used for offsite chemical and bacteriological determinations are National Association of Testing Authorities (NATA) registered to carry out analyses for the parameters specified.
- A statement of the warranty and guaranteed service life of the prefabricated OWMS and all components.
- A complete and detailed specification of the prefabricated onsite wastewater treatment system describing the basis for design, effluent quality, materials, methods of construction, servicing intervals and manner of operation of all equipment supplied and giving capacity and efficiency of motors, pumps, and aerators.
- Drawings as detailed in Section 9.1 of this Code.
- A copy of the product literature specified in Section 9.2, 9.3 and 9.4 of this Code.
- Applicants are encouraged to contact DoH for clarification before submitting the application. Under no circumstances will a preliminary approval be issued.

4.1. Confidentiality

The information in an application may be subject to the freedom of information process. Applicants who want specific information to be treated as confidential should clearly indicate this by marking each and every relevant page 'commercial in confidence'.

5. Product certification and quality assurance

5.1. Product certification of systems covered by AS/NZS

Prior to seeking DoH product approval, the manufacturer must obtain certification to an approved product certification program, for each OWMS model.

A range of publications provide performance requirements for OWMS. The publications that are relevant depend on a system's technology.

Australian Standards provide the design, installation, performance and management requirements for the following OWMS:

- AS/NZS 1546:1 On-site domestic wastewater treatment units: Septic tanks.
- AS/NZS 1546.2 On-site domestic wastewater treatment units: Waterless composting toilets.
- AS 1546.3 On-site domestic wastewater treatment units: Secondary treatment systems.
- AS 1546.4 On-site domestic wastewater treatment units: Domestic greywater treatment systems.

Precast concrete steel-reinforced septic tanks and precast steel-fibre reinforced septic tanks shall demonstrate compliance to AS/NZS 1546.1 to obtain product approval.

Glass fibre-reinforced plastic septic tanks and plastic septic tanks are required to obtain product certification by an agency accredited by JAS-ANZ (Joint Accreditation System of Australia and New Zealand) to obtain product approval.

5.1.1. Effluent compliance criteria

Effluent that is to be of secondary quality, in accordance with AS/NZS 1547, shall meet the effluent compliance criteria detailed in AS 1546.3.

Composting toilet end product (composted solids) quality shall meet the requirements of AS/NZS 1546.2.

5.1.2. Nutrient compliance criteria

This criteria is optional. Septic tanks and aerated wastewater treatment systems (AWTS) do not significantly reduce nutrients. Manufacturers of OWMS specifically designed to remove nitrogen and/or phosphorous shall nominate the nutrient concentration in the final effluent prior to commencement of testing compliance.

The testing agency shall test the total nitrogen and total phosphorous in accordance to AS 1546.3: Appendix A – Performance Evaluation. All nutrient results in the raw wastewater and final effluent shall be submitted to the DoH.

6. Product certification agency

Applicants must use an accredited product certification agency to certify their product complies with the design, installation, performance and management criteria in the relevant Australian Standard.

The product certification agency must be accredited by JAS-ANZ (Joint Accreditation System of Australia and New Zealand). Contact JAS-ANZ to find an accredited testing agency which offers product certification on the web at www.jas-anz.org.

All laboratories used for offsite effluent/end product quality determinations must be National Association of Testing Authorities (NATA) registered to carry out analyses for the parameters specified. Sampling must be undertaken by a NATA accredited laboratory or an independent body as agreed to by DoH and the product certification agency, and directly transported and delivered to a NATA accredited laboratory, to carry out analyses for the parameters specified. Where applicable, residual disinfectant and dissolved oxygen samples must be analysed on site.

Applicants should demonstrate that their product has obtained product approval under the Standards Mark Quality Assurance program, has ISO 9000 accreditation, or has gained comparable accreditation under a quality assurance process. If manufacture of the product has not commenced, the applicant must provide evidence that the product has been submitted for accreditation under the type of process described above.

7. Marking, labelling and signage

The minimum marking requirements for a prefabricated OWMS shall be in accordance with AS/NZS 1546.1, AS/NZS 1546.2, AS 1546:3 of AS 1546.4, whichever is applicable. All marking shall be permanent, legible and clearly visible.

All pipes, valves and outlets must be clearly and permanently labelled with safety signs in accordance with AS 1319 and AS 2700. Land irrigation areas utilising surface or subsurface irrigation must have at least two warning signposts, complying with Standards AS 1319, at the boundaries of the irrigation area. The signs must be clearly visible to property users, with wording such as, "Recycled Water – Avoid Contact – DO NOT DRINK".

The following minimum information shall be marked on the product:

- Manufacturer's name or trademark.
- Date of manufacture.
- Design capacity in litres.
- Product identification (model or design identification number).
- Top load or any other load limitations.
- Contact details for service.
- Identification of the inlet and outlet, where applicable.
- Weight of product.
- Lifting and transport instructions, where applicable.

All marking shall be permanent, legible and clearly visible at the time of installation.

Marking location and information shall be included on the design drawings.

8. Warranty and service life

By applying for and accepting an approval pursuant to the procedures in this Code, the manufacturer of a prefabricated OWMS guarantees that the product is:

- Manufactured and supplied as approved.
- Built in accordance with an approved product specification.
- Fit for purpose.

The manufacturer shall nominate the guaranteed service life of the system. The service life of a system means the period for which that system is designed and rated to comply with the test criteria reliably, using the components specified.

The service life of components means that period for which they are designed and rated to perform reliably to specification and may vary from the performance life of the system. The guaranteed service life of components shall be as following:

- All metal fittings, fasteners and components of the OWMS other than the pumps and motors shall be of non-corroding material and shall have a service life of at least 15 years
- All mechanical and electrical parts shall have a minimum service life of 5 years and minimum warranty period of 12 months.

9. Product literature

The manufacturer must produce and submit to DoH the following drawings and manuals for product approval, as indicated in the following subsections.

9.1. Drawings

Certified engineering drawings, dimensioned and accompanied by a listing of all components must be submitted. The plans must show the intended layout of the system, including typical siting of tanks, chambers and control panels, pipes, effluent application areas and other relevant details.

The drawings must be scaled engineering drawing(s), preferably A3 size (min. A4), to include both plan-views and cross-sectional drawings of the system as a whole and for each of its components with name, model, size, description, function, material of manufacture and location in the product.

The drawings must be detailed fabrication drawings providing all necessary dimensions, sizes and locations of all elements of the OWMS, including the fittings in their final locations.

9.2. Owner's manual

Each OWMS (except septic tanks) must be accompanied by an owner's manual prepared by the manufacturer. The authorised representative must provide the manual to the owner at the time of system installation or on occupation of the premises. The manual must be written so as to be easily understood by the intended reader and must include, at a minimum:

An overview of the product and intended use including a clear statement of examples of the types of wastewater/waste that can be effectively treated by the product:

- A diagram explaining the system and the process.
- Warranty and service life.
- Servicing requirements.
- Troubleshooting guide and signs of failures including the name and phone number of an appropriate service representative to be contacted in the event that a problem with the product occurs.
- Desludging requirements.
- Safety information.
- Alarm information and use restriction.
- A statement confirming that the product meets the requirements of the Code.
- A list of toxic substances/loads to be avoided including a list of household substances that, if discharged to the treatment plant, may adversely affect the integrity of the product, the process, or the environment and the spreading of hydraulic loads.
- Comprehensive operating instructions that clearly delineate proper function of the treatment plant, operating and maintenance responsibilities of the owner and authorised service agent, and service-related obligations of the manufacturer or system builder.
- A course of action to be taken if the product is to be used intermittently or if extended periods of non-use are anticipated.
- A list of terms and their definitions.

9.3. Installation manual

Manufacturers must provide comprehensive and detailed installation instructions to authorised representatives. The manual must be written so as to be easily understood by the intended reader and must include, as a minimum:

- A numbered list of product components and an accompanying illustration, photograph, or print in which the components are respectively identified.
- Design, construction, and material specifications for the components of the product.
- Wiring schematics for the treatment plant's electrical components, where applicable.
- Off-loading and unpacking instructions including safety considerations, identification of fragile components and measures to be taken to avoid damage to the product.
- Required soil properties for installation.
- A process overview of the function of each component and the expected function of the product when all components are properly assembled and connected.
- A clear definition of product installation requirements including plumbing and electrical power requirements, ventilation, air intake protection, bedding, hydrostatic displacement protection, water tightness, slope and miscellaneous fittings and appurtenances.
- Repair or replacement instructions in the event that a product possesses flaws that would inhibit proper functioning and a list of sources where replacement components can be obtained.
- A detailed start-up procedure.

9.4. Operation and maintenance manual

Manufacturers must provide comprehensive and detailed operation and maintenance instructions to authorised service agents. The manual must be written so as to be easily understood by the intended reader and shall include, at a minimum:

- A maintenance schedule for all components.
- Requirements and recommended procedures for the periodic removal of residuals from the product.
- Recommended methods for collecting effluent samples or end products.
- The expected effluent produced by the operational system.
- Service report sheet.
- An evaluation of the effluent management system and the land application characteristics.

9.5. Renewal of product approval

Certified OWMS by a certification body to the corresponding AS/NZS standard is endorsed by DoH until the expiry date of the product approval.

For OWMS not covered by AS/NZS, the DoH product approval shall normally be valid for a period of five years. In some cases the DoH may choose a lesser period for the product approval.

Prior to the expiry date, the manufacturer must submit the renewed certificate from the corresponding AS/NZS standard certification body. For non-standard OWMS, the manufacturer shall submit six months prior to the expiry date, an application to the DoH for renewal of the product approval.

DoH will determine based on the type of OWMS what documentation listed in section 5 of this Code is required for product approval renewal.

Assessment for renewal of product approval shall take into account all application documentation requirements.

NOTE: Any modifications or variations of the approved design shall be submitted to the product certification body that issued the licence. Once the product certification body has considered the application, completed additional testing if required and re-issued the certification documentation, the manufacturer shall seek separate consideration and variation of approval of the system by the DoH.

DoH requires all products for which an Australian Standard exists be fully certified to that standard. If a product was previously approved by the DoH without being certified, it will not have its product approval renewed unless it is certified to be in compliance with the latest relevant Australian Standard.

9.6. Product approval for NT manufactured septic tanks

Existing product approvals for Northern Territory manufactured septic tanks remain current, however the manufacturer must reapply to the DoH for renewal of the product approval upon expiry. Upon consultation with each manufacturer, DoH will make a determination whether the manufacturer must submit a renewed engineer's certification for their septic tank.

Any new septic tanks proposed to be manufactured in the Northern Territory require product certification in accordance with sections 5 and 6 of this Code.