
ON-SITE WASTEWATER MANAGEMENT SYSTEM INFORMATION PACKAGE

The *Building Act 2016* and the *Local Government Act 1993* require that wastewater must be collected, treated and disposed of in a manner designed to prevent risk to public health. For those properties that do not have access to sewer infrastructure an on-site wastewater management system (OWMS) is necessary.

On-site wastewater management systems consist of:

1. Wastewater treatment unit/system; and
2. Land application area/system.

1. Wastewater Treatment Units/Systems

Wastewater treatment units include:

- septic tanks
- aerated water treatment systems (AWTS)
- sand filters
- grease traps
- composting toilets

The wastewater treatment unit treats the initial waste. This can be done at a primary level, as in the case of septic tanks, and involves anaerobic bacteria. Wastewater can also be treated to a secondary level, with additional treatment that utilises, for example, aerobic bacteria and chlorine disinfection. Secondary treated wastewater is generally suitable for irrigation.

2. Land Application Systems

A land application system refers to the way primary or secondary treated wastewater is delivered to the property. There are different land application systems:

- Trenches
- Beds
- Evapotranspiration-absorption systems:
- Mound systems
- Irrigation systems

Trenches and beds are the most common type of systems. Generally used on lots that are reasonably flat and where water soaks into the soil readily in all weather conditions. Properly designed absorption trenches can also be used in sloping sections where absorption is good. Perforated pipes, self-supporting arch trenching or box trenching are laid in trenches filled with aggregate or rock. Effluent flows out of the septic tank into the trenches and then soaks into the surrounding soil. The soil and bacteria in the soil treat the effluent further. The most common type of OWMS is a dual purpose septic tank and sub-soil absorption trench. Beds are shallower and generally wider, than trenches.

Evapotranspiration-absorption systems the effluent is piped through specially constructed beds or trenches incorporating plants. These plants absorb a proportion of the effluent through their root systems and release it to the atmosphere through their leaves during the natural process of transpiration. The ground also absorbs some of the effluent.

Mound systems permit the absorption area to be sited in a location where the natural water table can approach ground level. The mounds are filled with medium-grade sand to provide suitable filtering for treatment of the effluent, before it soaks down into the groundwater table. A pump or siphon-dosing system distributes effluent uniformly through a bed of aggregate placed over the top of the fill. The surfaces of the mound are grassed or planted with shrubs.

Irrigation systems utilise soil absorption and vegetative evapotranspiration to treat effluent. Irrigation systems can be sub-surface, surface drip, or spray systems.

Hybrid/other systems may only be installed if accredited by the State Government. A current list of systems can be found at <https://www.cbos.tas.gov.au/topics/technical-regulation/plumbing-standards/wastewater>

‘PIT AND PUMP’ SPRAY GREYWATER SYSTEMS ARE NOT PERMITTED

Under the *Building Act 2016* approval is required to install an OWMS and the effluent must be treated and disposed of as approved by a Council Environmental Health Officer.

Approval must be obtained before beginning any work associated with the installation of any plumbing, drains, septic tanks or aerobic wastewater treatment systems.

An application seeking approval to install or upgrade an OWMS must be made on the “**Application for Plumbing Permit Form 3**”. Application fees must be paid when the application form is submitted. Council’s Customer Service Team can provide information on the current application fees.

Site and Soil Assessment and Design

Every lot is different and therefore a comprehensive site and soil assessment will be necessary to determine the best type of OWMS for your property. A suitably qualified person must carry out the assessment. Once the site and soil evaluation has been completed the suitably qualified person can design the OWMS. The site and soil assessment and design must be undertaken in accordance with the relevant Australian/New Zealand Standard AS/NZS 1547:2012 On-site domestic wastewater management.

What is a Reserve Area?

The purpose of setting aside a reserve area for future extension of a land-application system is to allow a factor of safety against unforeseen malfunction or failure, perhaps following increased household occupancy or inadvertent misuse of the system. Generally speaking, the reserve area should be 100% of the original area. Your system designer should determine what the required reserve area should be and where it should be designated on the property.

PROCESS FOR APPROVAL FOR AN ON-SITE WASTEWATER MANAGEMENT SYSTEM

The process can be broken down into a few steps grouped into three areas:

A. DESIGN & APPLICATION

An onsite wastewater management system needs to be suitable for the site and for the intended use. Specialists will assess not only your use of water and therefore the waste output, but also factor into consideration the topography of the land, soil quality and weather. There are many systems available and designers will use lots of information to ascertain the best type of system for you.

- 1. Engage the services of a suitably qualified site and soil evaluator and system designer.**
- 2. Submit an application with Council for a Plumbing Permit (Form 3) and attach the wastewater design report provided by the system designer.**



B. WORKS

Once you have obtained approval from Council (i.e. received your Plumbing Permit) you can:

- 3. Engage the services of a suitably qualified plumber and other professionals as needed to install the system.**



C. COMPLETION

Upon completion of all works relating to the Plumbing Permit:

- 4. Submit completion of works documentation to Council including Form 71B from the Plumber and certification from the system designer (if requested).**

Once all the required documentation has been submitted:

- 5. Council issues Certificate of Plumbing Completion for Plumbing works.**

NB: APPROVAL MUST BE OBTAINED FROM COUNCIL PRIOR TO COMMENCING ANY WORKS ASSOCIATED WITH THE INSTALLATION OF ANY SEPTIC TANKS, AERATED WASTEWATER TREATMENT SYSTEMS, LAND APPLICATION SYSTEMS (DRAINS, BEDS, IRRIGATION, ETC), COMPOSTING TOILETS AND ANY OTHER SIMILAR SYSTEM.

Documentation

Every step of the process involves documentation. It is the responsibility of the applicant (which may be the owner or agent) to ensure that the correct documentation is lodged with Council.

Timeframes

There are timeframes associated with Council permits, including Plumbing Permits. Upon lodgement, in accordance with the *Building Act 2016* Council's Officers have 21 days to assess or reject the application with the exception if the application is incomplete and further information is required. Once approved, Plumbing Permits are valid for 24 months from the date of issue. This means that the works must be completed, including sign off from plumbers and designers, within 24 months from the date of issue. Also, all works must commence within 12 months from the date of issue, and a start work notice must be issued within this timeframe. Should either of these timeframes not be met, the permit will automatically expire.

What does an expired permit mean?

An expired permit means that the permit has lapsed and is no longer valid. Legal implications may arise if works are undertaken when the Plumbing Permit has expired.

Can I get an extension?

You may make application with Council for an extension to your Plumbing Permit. An application form must be completed and fee paid at the time of lodgement.

SEPTIC SYSTEMS

In unsewered areas, the correct treatment and reuse of household wastewater onsite is critical in ensuring minimal impact to public health and the environment. Septic systems have been developed as a way of achieving this.

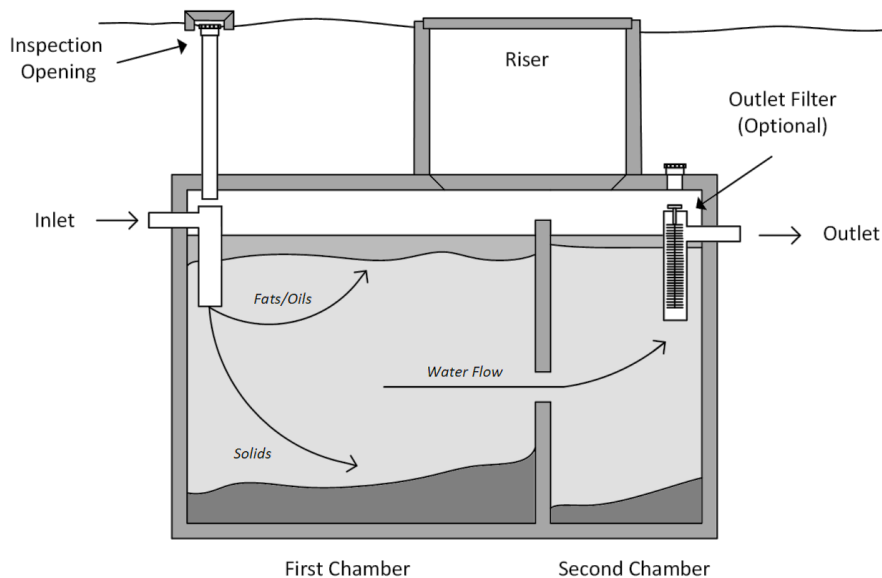
What is a septic system?

A septic system consists of a septic tank combined with a soil absorption system and/or transpiration beds. The system enables people living in unsewered areas to treat and disperse their sewerage.

A septic tank is a structurally sound watertight tank used for the treatment of sewage and liquid wastes from a single household, amenity buildings, shed, etc.

How does a septic system work?

Wastewater from the kitchen, bathrooms and laundry enter the tank. The septic tank allows the solids to settle on the bottom of the tank forming a sludge layer, whilst fats, oils, hair and other 'floatable' materials form a "scum" layer on the surface of the water in the tank. The liquid



layer that forms between the scum and sludge overflows and discharges into a trench in the ground, usually called an absorption trench.

Over time, the sludge and scum layers build up and the tank will need to be pumped out. The frequency of pumping is dependent on the level of use, input into the system and climatic conditions however it is generally recommended to occur every 3 years.

What should not be placed in a septic system?

- Bleach or other strong disinfectants
- Sanitary napkins, condoms, nappies or any other foreign materials
- Large volumes of detergents
- Fats, oils or food waste
- Stormwater

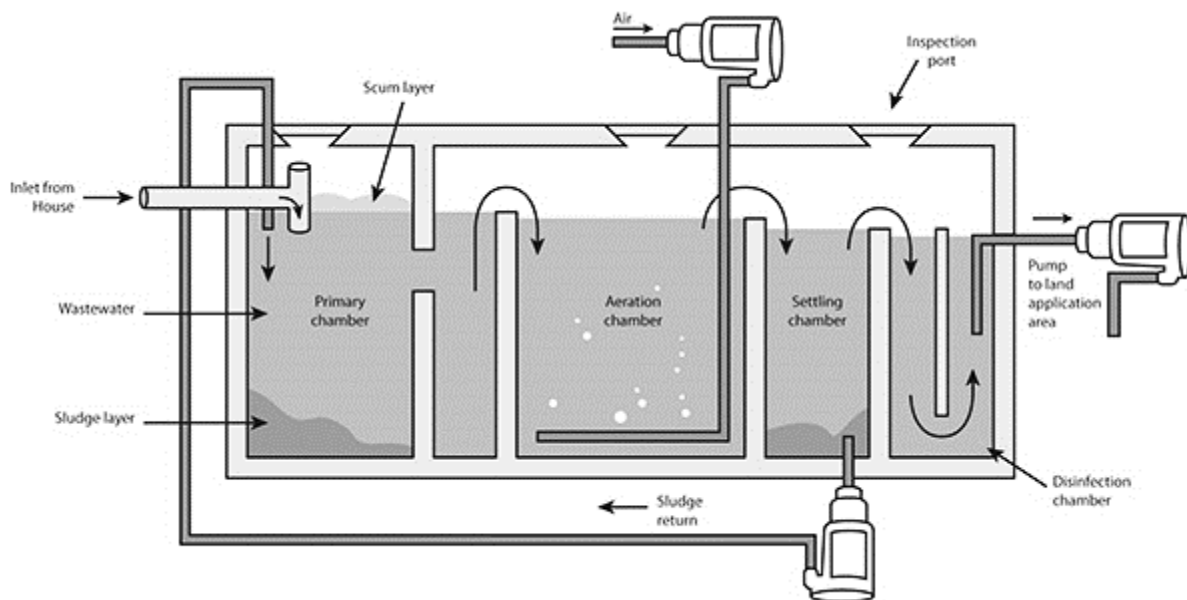
The liquid effluent/wastewater leaving the septic tank contains high levels of bacteria and other organisms that are highly infectious and can cause disease. It is for this reason that the effluent must not be sprayed or allowed to 'pool' on your property, and should be applied to land below the ground surface in an absorption trench/bed.

AERATED WASTEWATER TREATMENT SYSTEMS (AWTS)

An Aerated Wastewater Treatment System (AWTS) is a small scale onsite sewage treatment plant. Through a series of treatment and disinfection processes, household wastewater is transformed into non-potable water that is distributed on lawns and gardens.

How does an AWTS work?

In an AWTS, wastewater is treated in multiple stages through several different chambers within a one or two tank system. Wastewater enters the primary chamber where solids settle to the bottom and form a sludge layer. The scum layer, containing fats and greases, collects at the top of the chamber and the clarified wastewater flows from between the two layers to the aeration chamber. In the second chamber, the wastewater is aerated and broken down further by biological activity. The settling chamber allows further clarification of the wastewater through the settling of any remaining solids. The treated effluent is then usually disinfected in a chlorination or UV chamber and irrigated through fixed hoses across lawns or gardens either above ground or via a subsurface system.



Maintenance Agreement

The owner of a property where an AWTS is installed must maintain a current service agreement with a person who is qualified and accredited to service and maintain the AWTS.

An AWTS must be serviced in accordance with its certificate of accreditation and a fee is payable for this service. The service agent sets the fee and what is covered by the agreement.

Owner Maintenance

In addition to the maintenance agreement, the owner is required to effectively maintain the disposal area. Generally accepted methods of disposal are:

- Surface irrigation: consists of sprays or drippers located around mulched or barked areas planted out with suitable vegetation that will tolerate wet and high salt conditions. Owner maintenance of these areas will consist of regular weeding, replacement of plants as necessary and maintaining a 150mm minimum depth of mulch or bark.
- Subsurface irrigation: consists of special piping that is installed approximately 150mm under the ground and can be used to water garden beds or grassed areas. If grassed areas are used then maintenance entails mowing of the grass.

- A combination of surface and sub-surface irrigation areas may be used but they will need to be tapped to allow for the different pressure requirements of the system components.

The owner is required to maintain a minimum area for irrigation, as conditioned in the Plumbing Permit.

It is recommended that the AWTS be operated continuously and avoid turning off the power to the system.

Suitable signage must be displayed around the disposal area, i.e. "Recycled Water, Avoid Contact, Do Not Drink".

Do's & Don'ts to maintaining a healthy AWTS

There are a number of things you can do to maintain a healthy OWWMS.

Avoid or minimise use of cleaning agents, detergents, degreasers, photographic chemicals, cosmetics, lotions, pesticides and herbicides. Even small amounts of these chemicals can upset chemical and biological activity within the system.

Do not place disposable nappies, tissues, sanitary napkins, tampons, paper towels, plastics, cigarette butts, bones and coffee grinds into the system. These materials can potentially overload the system or cause pump failure.

Do not use the treated water to water vegetable gardens, fill swimming pools or for any other domestic purpose.

Do not turn off the power to your AWTS.

Do not put fats and oils down drains and sinks.

Do practice water conservation to avoid overloading the system.

Do ensure that the system receives servicing following the specified regime.

Do monitor your system for signs of ill-health including: unusual or foul odours, leaks or overflow from the tank, pooling of wastes or liquid in and around the disposal area. Contact your service technician if you think there is a problem with your system.

Do use products that are labelled as biodegradable or septic-safe.

Do use alternative cleaning products

OTHER SYSTEMS

Waterless Composting Toilets

Waterless composting toilets are designed to receive human excreta, urine and organic household kitchen scraps and rely on the principle of composting by microorganisms. Systems are either continuous or batch. Continuous systems contain one chamber, whilst batch systems contain several bins, with rotation occurring after each bin is filled. In both systems, chambers or bins are installed below floor level. Waterless composting toilets do not treat wastewater from other sources such as showers, sinks, and washing machines (also known as 'greywater'), so an alternative system is required for this.

There are several types of waterless composting toilet available, but the principles they use are basically the same. Excreta (both urine and faeces) is collected in a sealed chamber beneath the toilet pedestal. Extra organic matter such as wood shavings, paper, or lawn clippings are added to create an ideal composting environment. Microorganisms decompose the material, with around three quarters of it being converted to carbon dioxide and water vapour. Air drawn through the pile removes these gases and assists the microorganisms.

The remaining material slowly moves down a sloping floor by gravity as more material is added to the pile. It then moves under a dividing baffle into the humus chamber as friable compost after about a year.

Any excess liquids are drained and treated with the greywater. The compost produced is generally buried on-site.

The advantage of composting toilets is that they can be used on difficult sites as they do not require water. National Parks and low usage camping areas with limited water supplies are common sites. They can also be used in single domestic premises and may be installed externally or within the dwelling.

Wet Composting Toilets

Wet composting toilets function in a similar manner to a waterless composting toilet. However, unlike dry composting toilets, wet composting systems can be used in conjunction with flushing toilets, and all liquid deposited into the system filters through the solid matter within the chamber. Extra organic material such as food waste residues, paper or vegetable scraps can be added to improve the decomposition process. Worms and bacteria work to break down the solids in a similar manner to the dry composting toilets, and compost is removed from the base of the pile via a separate chute.

Filtered wastewater is collected at the bottom of the tank and either pumped or gravity fed to a land application area.

Sand Mounds – Sand Filters

Sand mounds and filters can be used to further treat wastewater that has undergone primary or secondary treatment (such as through a septic tank or AWTS) before land application. They use a combination of biological processes and adsorption to achieve high removal efficiencies for biochemical oxygen demand (BOD), suspended solids (SS), nutrients and pathogens.

There are many different systems that will adequately treat wastewater. Your system designer will recommend suitable options based on the site & soil evaluation undertaken on your property.

ACCREDITED SITE & SOIL EVALUATORS AND SYSTEM DESIGNERS

COMPANY	PHONE/EMAIL
JD Consulting (James Doherty)	0457469617 jldoherty581@bigpond.com
GeoTon Pty Ltd	03 6326 5001 admin@geoton.com.au
SEAM (Jamie Wood)	03 6228 1600 admin@seam.com.au
Environmental Service & Design	03 6431 2999
GEO-Environmental Solutions	03 6223 1839 0413 541 531 jcumming@geosolutions.net.au
EAW Geo Services (Warren Newell)	0419 242 732 warren.eaw@gmail.com
Strata Geoscience & Environmental	0413 545 358 sven@strataconsulting.com.au
Pitt & Sherry	03 6210 1400 info@pittsh.com.au
William C Cromer Pty Ltd	0408 122 127 billcromer@bigpond.com

DISCLAIMER

Dorset Council does not endorse nor recommend any particular person/company included on the above list. The information is provided to assist developers to identify those having previous experience with the preparation of site and soil evaluation reports and the design of onsite wastewater management systems. Others not included on this list having appropriate skills and knowledge may also submit reports, and are also invited to contact Council if they wish to be added to the above list.

PLANTS SUITABLE FOR SOME LAND APPLICATION AREAS

The best plants to use near land application areas are flowers, grasses, and small groundcovers that will not grow deep enough to disrupt the pipes associated with the OWMS. Fruits and vegetables should be planted at least three meters away from a land application area to avoid microbiological contamination. Below are some examples of plants that may be suitable for your land application area.

SCIENTIFIC NAME	COMMON NAME
<i>Baloskion australe</i>	Southern cordrush
<i>Baloskion tetraphyllum</i>	Tassel cordrush
<i>Callistemon pallidus</i>	Bottlebrush
<i>Callistemon viminalis</i>	Bottlebrush
<i>Carex appressa</i>	Tall sedge
<i>Carex fascicularis</i>	Tassell sedge
<i>Carex tasmanica</i>	Curly sedge
<i>Correa pulchella</i> × <i>reflexa</i>	Correa dusky bells
<i>Correa mannii</i>	Correa native fuschia
<i>Dianella revoluta</i>	Spreading flaxlily
<i>Dianella tasmanica</i>	Forest flaxlily
<i>Juncus pallidus</i>	Native rush
<i>Leptospermum horizontalis</i>	Ground cover tea-tree
<i>Leptospermum laevigatum</i>	Coastal tea-tree
<i>Leptospermum lanigerum</i>	Woolly tea-tree
<i>Melaleuca gibossa</i>	Small leafed paperbark
<i>Melaleuca thymifolia</i>	Thyme leaf myrtle
<i>Restio tetraphyllus</i>	Long leafed tassel rush
<i>Vimianana juncea</i>	Native broom

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