SO, YOU NEED TO GET A NEW SEPTIC SYSTEM?

If you are considering purchasing a new domestic on-site wastewater management system (called a septic system), you need to know about the systems available and how they work. This information will help you to select the right type of system for your property and to get approval from council.

How do septics work?

Septics treat water that flows from your toilet (called blackwater) and sinks showers and laundry (called greywater) and then drain the treated water into an area of land in your backyard (or have it pumped out and taken away). Septics are only installed in houses not connected to the sewerage system. All septic systems need to be looked after so they function well.

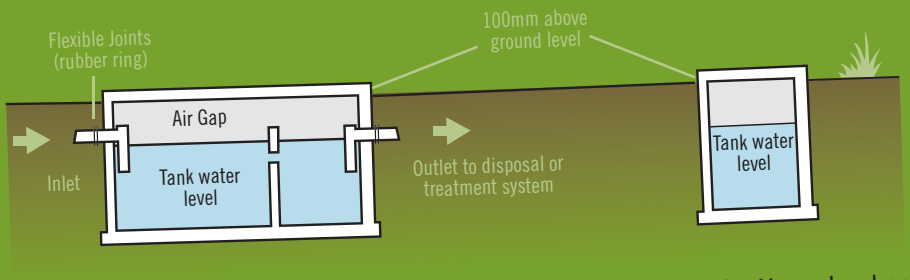
How are various systems approved?

Only those systems approved by EPA Victoria can be installed in Victoria. These systems are designed for domestic use with water flow of less than 5000 litres per day. Before you can select a septic system, you need to arrange for a land capability assessment to determine the water usage rate and the absorption rate of the site. Contact council or your plumber for assistance.

What kinds of systems are available?

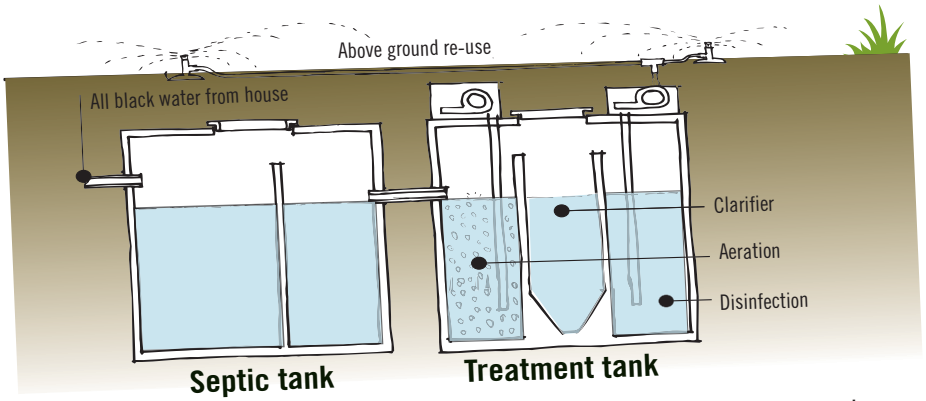
Although there are a large number of different types of septic systems available, they can be divided into three categories:

1. Septic Tanks. These are installed in the ground and treat both black and greywater. They have two compartments that contain bacteria to treat solids, which sink to the bottom, and grease and fats, which float on the surface. Outflow from the tank must only occur under ground level. The following diagram shows how a septic operates

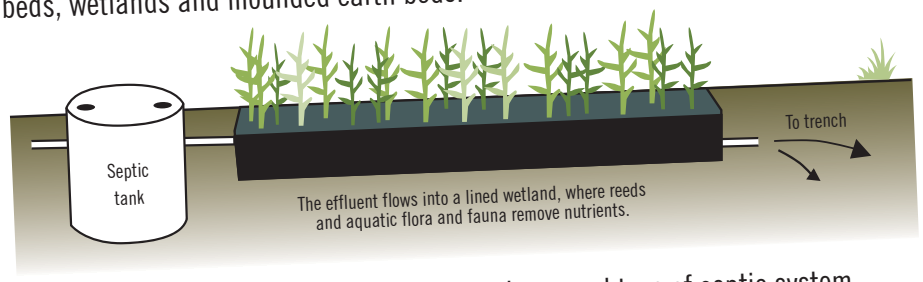


There are many different septic tanks approved for use in Victoria. Your plumber will suggest some different manufacturers' systems.

2. Aerated Wastewater Treatment Systems. These contain a number of different treatment compartments and use air and chlorination to assist in the treatment of the wastewater. They provide a higher level of treatment than septic tanks and provided they are maintained and tested regularly, water may be applied above the ground to a special area of land via trenches and/or surface irrigation. Owners of aerated systems need to maintain these very effectively.



3. Organic Systems. There are a large number of different systems that operate on organic principles and are approved for use under certain circumstances. These include waterless composting toilets (which only treat blackwater); sand filter beds, wetlands and mounded earth beds.



Your council can give you an information sheet on each general type of septic system.

How do I get approval to install a septic?

To get a septic system installed you need to:

- Undertake a land capability assessment and then decide what type of system you want (septic tank, aerated system or organic system).
- Research which specific system you would like to install. Talk with your plumber about this and get a quotation for the job.
- Contact council to obtain a "Permit for installation of a new system". You might need a land capability statement.
- Obtain a "Certificate of use" from council after the system has been installed
- Use a suitably accredited person to install the system. For help contact the council and/or the Master Plumbers' Association.

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ABOUT AERATED WASTEWATER TREATMENT SYSTEMS (AWTS)

Aerated Waste Water Systems (AWTS) are different to septic tanks in that they use oxygen to assist the treatment process. Septic tanks use bacteria to treat wastewater without the aid of oxygen and this is relatively slow, inefficient, and tends to produce odour. AWT systems are designed to treat wastewater in an oxygen-rich environment, and therefore tend to produce a cleaner outflow and treat wastewater more efficiently. They essentially use the same process of aerated activity that is commonly used by most sewage treatment plants.

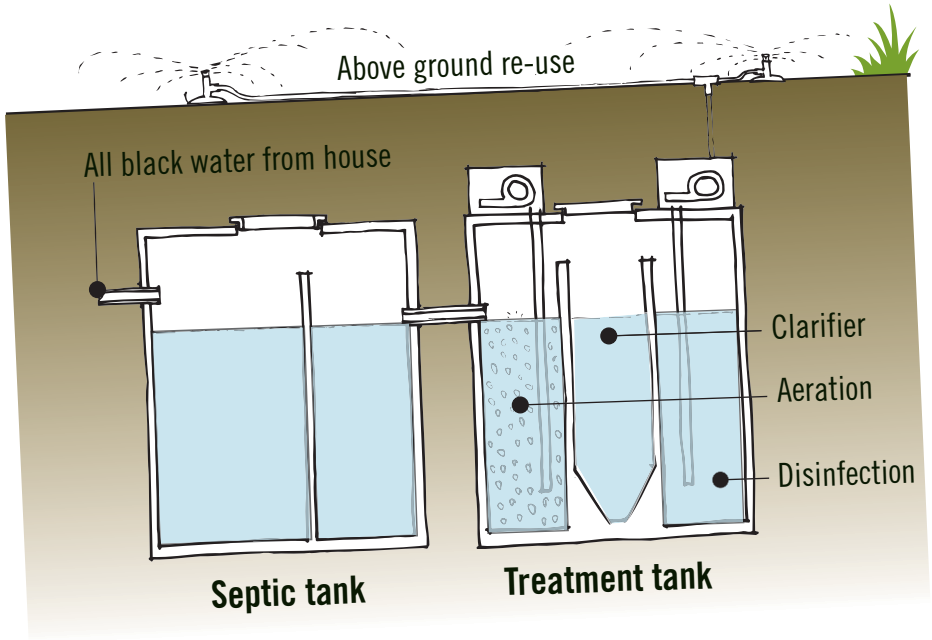
AWTS units contain a number of different treatment compartments (see diagram below) and use air, chlorination and a mechanical process to assist in the treatment of the wastewater. Provided they are maintained and tested regularly, water may be discharged above the ground to a special area of land via trenches and/or surface irrigation. An advantage of an AWTS is that the soil is able to take up more wastewater that has been treated in an aerobic treatment unit than from a conventional septic tank. Therefore, ATWS units are often used when limited land is available or the Land Capability Assessment indicates that there are limits on the amount of wastewater that can be discharged.

Landowners with aerated systems have to register for council approval in the same way as other septic system owners and aerated systems may also be subject to inspections and function checks in sensitive environments.

If the treatment process fails, run-off occurs above ground and can easily flow onto adjoining land and into our waterways. Therefore, aerated systems can become a serious sewage pollution hazard. Such failures are all too common and may be caused by quite simple factors like using the wrong type of household cleaning agents, leaving the system unattended for extended periods, and use of too much or too little of the treatment chemicals. Often the system fails when homeowners try to assume complete responsibility for its maintenance.

Some hints for managing your system include:

- Regular maintenance by a competent service company is essential.
- Regular (monthly at least) visual inspection of the run-off area. If this area is waterlogged or there is a smell of sewage contact the service company immediately.
- Regular monitoring of household water use so that the amount of wastewater entering the system is kept as low as possible.
- Regular (every three years) de-sludging of the system.



Remember keep your backyard healthy. Call your council for more information

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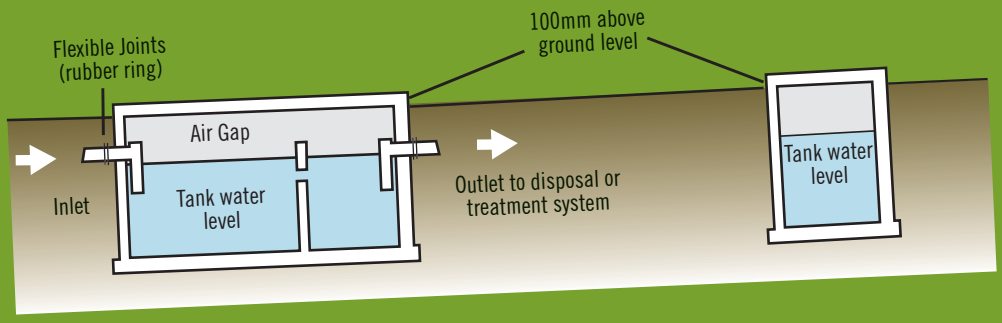
ABOUT SEPTIC TANKS

A septic tank is designed to treat sewage and greywater in your backyard. Tanks are generally 3,000 litres in capacity and are installed in the ground. The system treats solids, which sink to the bottom, and grease and fats, which float on the surface, by the use of bacteria present in the tank.

Your septic tank does not purify the sewage. Its purpose is to reduce the volume of solids and prepare sewage for disposal. Your septic tank system has the following components:

1. A sewer line that connects the house's plumbing to the septic tank;
2. A septic tank, usually with two compartments to allow for treatment. A properly functioning septic tank will reduce pollutant levels and produce run-off of a fairly uniform quality. This happens by reducing the speed of the liquid moving through the tank preventing solids from leaving the tank.
3. A distribution system that directs the flow from the septic tank to the leaching area. Most systems are "gravity" systems, meaning the flow runs through piping and distribution boxes without the assistance of a pump.
4. A leaching area, which disperses the sewage effluent into the surrounding natural soils under the ground. There are many types of leaching systems. The specific type utilised on a particular property is usually dependent on the soil conditions that exist on the site. Most residential installations use stone-filled leaching trenches, but galleries, pits and beds are also used.

There are a lot of different septic tanks approved for use in Victoria. Your plumber will suggest some different manufacturers' systems.



Most septic tanks are designed to accept, treat and dispose of all domestic wastewater by sub-soil absorption. However, split systems are sometimes used. These comprise a blackwater only septic tank where run-off occurs under the soil, with a separate disposal system for the remaining domestic greywater – kitchen bath and laundry.

A septic tank is designed to allow for scum to form on the surface of the liquid so that anaerobic bacteria are present. These digest sludge and help in the breakdown of the solids. Therefore, a system without a thick scum layer will not operate as efficiently.

Septic tanks must be de-sludged every 3yrs for them to work effectively. In a system that is not de-sludged for a long time, scum levels become thicker and eventually cause blockages. Similarly, when there is too much sludge it overflows into the discharge lines and causes blockages. If you don't manage your septic well it can cost you a lot of money to fix the problem.

In general, you can keep your system working well if you:

- Are careful about what goes down the sink and the toilet: no oils, grease, food scraps, paints, medicines, tampons or condoms.
- Use only small amounts of cleaning product and bleach.
- Use kitchen and laundry detergents with low/no phosphorus (check the label).
- Take care not to use too much water and spread water use over the day.
- Take care not to drive a car over any part of your system; including the trenches.
- Fix leaking taps and limit water use by having short showers and turning off taps.
- Use less water by installing a front-loading washing machine and dual flush toilets.
- Get to know your system. Check that it is working properly and keep records of what you do to keep it healthy.
- Get your system de-sludged every three years without fail.
- Refer to the owner's manual for your system for specific things you need to do to ensure your septic works well.

Remember, keep your backyard healthy. Call your council for more information

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Organic Waste Water Treatment Systems.

This information sheet provides basic advice about wastewater treatment systems, which have been grouped together under the term organic. They primarily use ecological processes to treat wastewater.

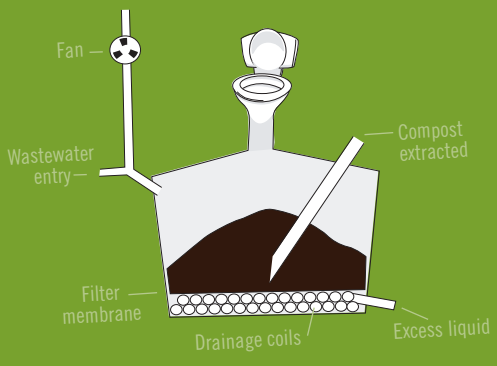
There are natural (organic) and efficient ways of turning human waste into a useable resource. A large number of different systems operate on organic principles and some of them are approved for use under certain circumstances. These include waterless composting toilets (which only treat sewage); sand filter beds, and wetlands, including reed beds and mounded earth beds. These are briefly described below but it is important to note that stringent conditions apply to their approval and operation. If you wish to install one of these systems it is important that you follow council processes very carefully. You must:

- Undertake a rigorous land capability assessment.
- Follow approval processes fully
- Obtain a Certificate of Use and comply completely with its conditions.

Council will need to be certain that the system you propose complies with the EPA Septic Tank Code and will be effectively installed and managed.

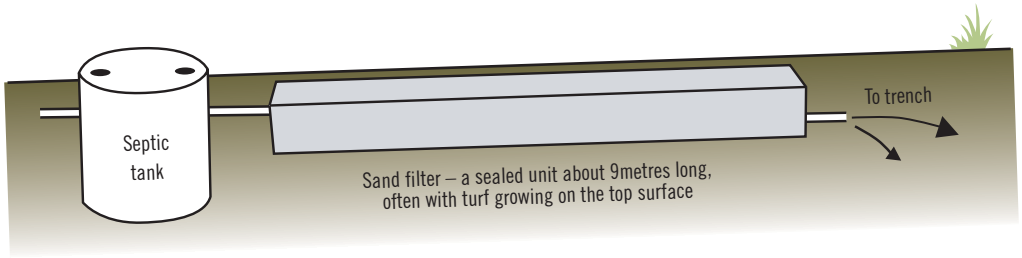
Composting toilets: These treat sewage on-site only so you need to identify another way to treat greywater. An advantage is that most composting toilets use no water and instead use sawdust or similar to assist the process of aerobic decomposition into a solid fertilizer, which can be used on the garden. Others use some water and power but also breakdown vegetable scraps, paper and other organic materials for use as liquid fertiliser.

Waterless composting system

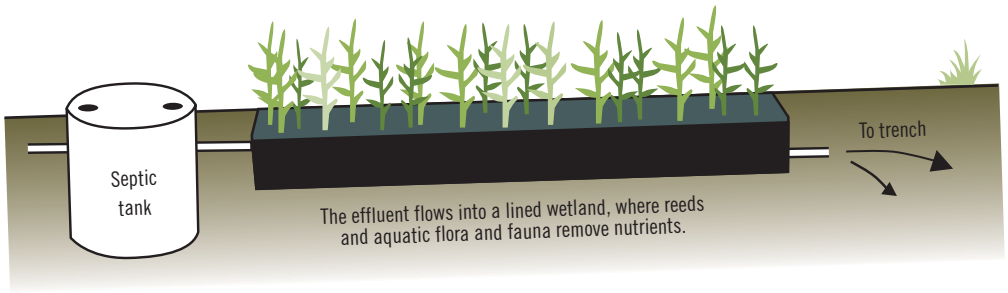


Wet system

Sand Filters: These filters can be located either above or below ground, depending on the site conditions. They can be used in conjunction with a septic tank, an aerated wastewater treatment system, or under certain circumstances, they can be used alone. The sand acts as a filter to reduce the amount of suspended solids and dissolved organic material present in the water. Micro-organisms attached to the sand particles are able to aerobically digest the organic material within the wastewater. Underneath the sand bed is a layer of gravel that further treats the wastewater.



Constructed wetlands (including reed beds etc.) can provide a reliable and cost effective means of treating wastewater. The purpose of the system is to artificially recreate the filtering capacity of natural wetlands. In most cases a constructed wetland does not take the place of a septic system; instead it provides an additional treatment stage, necessary when a conventional system alone is not enough to overcome the limitations of a particular site. Bulrushes, cattails, reeds, rushes, and sedges are common types of vegetation used in constructed wetlands. Native wetland vegetation can be found in all regions of the country and has the advantage of being well adapted to the climate as well as being better able to contend with local pests. The vegetation provides several functions; it aerates the water thus adding oxygen to the treatment process and it allows for the presence of more micro-organisms; also, the plant roots take up some of the water thus reducing the amount that needs to be discharged.



Often these systems are used in conjunction with on-site aerated wastewater treatment systems.

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