

## FACTSHEET 1: INTRODUCTION TO ONSITE WASTEWATER SYSTEMS FOR NEW APPLICANTS

### Investigate before you invest

If you are planning to purchase land for a new home, check before you buy.

If a reticulated sewerage scheme is not available, you will need to consider a septic system or something similar.

Your first step should be to obtain advice from your local Council's Environmental Health Unit.

### Which system is best?

1. When choosing a septic system, the most important thing to consider is where it will be used, how it will be used, and who will use it.
2. A septic system in a weekend holiday home, for example, will get far less use than a septic system in a large permanently occupied family home.
3. The septic system you choose will depend on the suitability of the site for effluent absorption, how many people will live in the home, what area of land is available, what kind of lifestyle the family lives, and what heavy water-use appliances are in the home.
4. A septic system specialist/plumber will advise you about what is best for your particular situation.
5. Soil type, salt content, lot size, slope, proximity to wetlands/watercourses, local rainfall and the depth of the water table all need to be considered when deciding what type and where to put a new septic system. These decisions should be discussed with your local Council's Environmental Health Unit or Land Capability Assessor.
6. Don't forget to ask for a cost estimate for maintenance as well as installation, and consider the potential environmental impacts.

### Buying an existing home?

If you are buying an existing home, ask the seller a few important questions, such as:

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|---|---|
| <ul style="list-style-type: none"><li>• How old is the septic system?</li><li>• When was the tank last pumped out and de-sludged?</li><li>• How frequently was it pumped out?</li></ul> | <ul style="list-style-type: none"><li>• Have there been any signs of failure?</li><li>• Have there been any additions to the house that might make it necessary to increase the size of the system?</li></ul> |
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**It's always a good idea to get a plumber to survey the septic system before you buy a property.**

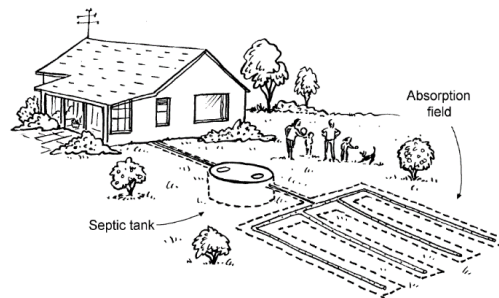
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### Types of septic systems

If you are in the market for a new septic system, or planning to upgrade your existing one, it's important to be aware that there are several different kinds of systems now available. Still the most common is the basic septic tank, virtually unchanged since it was first used for domestic purposes 100 years ago. Also on the market are aerated septic tanks, also called aerated wastewater treatment systems (AWTS). Composting toilets are also growing in popularity.

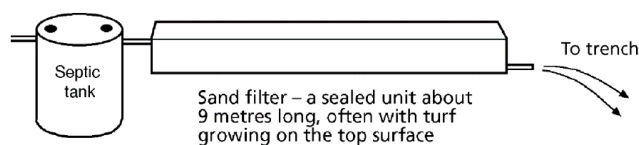
### Septic tank systems

Septic tanks and trench style absorption field systems are the most common type of septic systems in Australia. Septic tanks are simple technology but they are very versatile. They can be complemented with dual tanks, suspended growth media, effluent filters, reedbeds, flow forms, and sand filters to produce effluent suitable for ultra-violet disinfection and drip irrigation. They can be used to provide a separate greywater holding tank for water from the bathroom, kitchen and laundry.



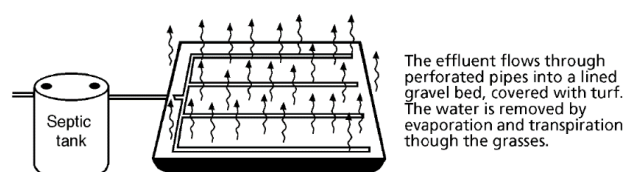
### Sand filters

Sometimes the effluent is further treated in a sand filter. The effluent percolates through the filter and is collected for disposal. Effluent treated in this way is more easily absorbed in the soil than effluent directly coming from a septic tank. Effluent treated in a sand filter may be suitable for sub-surface irrigation of landscaped areas or for discharge to a constructed wetland area. Sand filters capture suspended solids and provide an aerobic environment which encourages friendly bacteria that digest waste and reduce pollution.



### Evapotranspiration beds

These are used where soil conditions are less suitable for absorption trenches and where evaporation and transpiration rates normally exceed rainfall. Consult a septic system specialist for further information about designing evapotranspiration systems for effluent application to land.

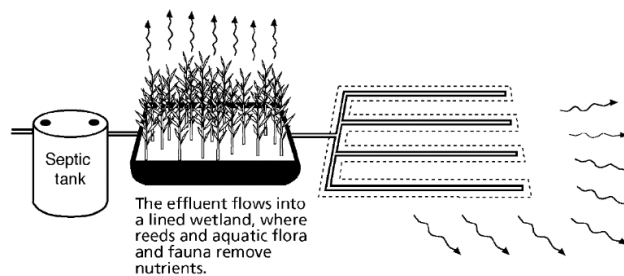


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### Wetland treatment systems

Reed beds and wetland treatment systems are widely used in municipal and industrial sewage treatment plants, particularly in Europe. They are now being used to treat septic tank effluent to high standards. Reeds and other water loving plants are grown in high quality soil/sand/gravel in a shallow pit sealed with a waterproof membrane.

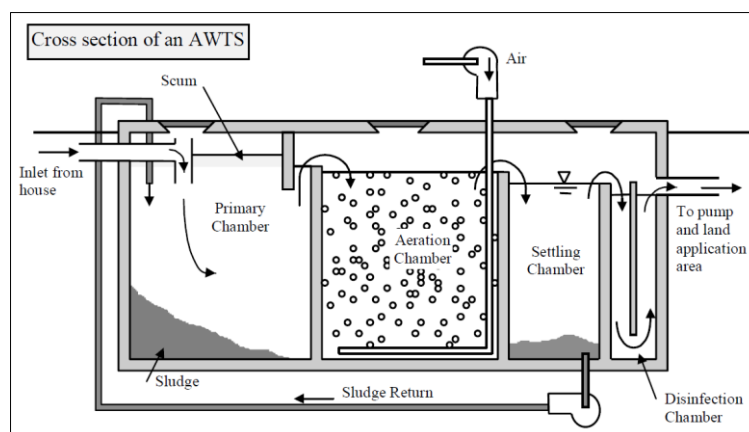
The effluent flows through the media and treatment is facilitated by friendly bacteria that colonise the root zone. Some wetland systems use rocks and sand as a growing medium, instead of soil. The effluent from reed beds can be directed to a standard absorption trench or may be pumped to a sand filter and ultra-violet light disinfection unit for discharge to a drip irrigation system. Consult a septic system specialist for further information about designing wetlands and reed beds systems for wastewater treatment.



### Aerated Wastewater Treatment Systems or AWTS

The effluent from an aerated septic tank is usually treated and disinfected to a standard suitable for subsurface irrigation. The AWTS system consists of two tanks (sometimes within a single larger tank). The first is a basic septic tank where solids settle and anaerobic digestion occurs. In the second, oxygen is bubbled through the effluent to encourage aerobic bacteria to digest the waste. Finally, the effluent is disinfected using chlorine or ultra-violet light before being pumped to an irrigation area. Subsurface drip irrigation systems are preferred.

The extra treatment provided by an aerated septic tank reduces pathogen levels, (and can sometimes reduce nutrients) as long as the system is kept well maintained, and the disinfection unit is functioning properly. People using aerated septic systems are required to enter into a regular maintenance contract for quarterly servicing, which is randomly audited by Moyne Shire Council. Aerated septic systems may also be used to treat greywater to a standard suitable for garden watering of non-food plants.





## Other systems

### Composting toilets

These are becoming more popular. There are two kinds – the waterless system, which requires a separate greywater tank, and the wet composting system, where all wastes go in together.

#### Waterless composting system

Dry composting toilets are good for houses on tank water, or on a restricted water supply. They use very little energy and are the most water efficient type of 'septic system'.

##### PROS

- saves water – no toilet flush
- reduces volume of solids
- reuses resource use
- no sludge removal necessary
- source of humus for non-food plants
- can cope with short term high use
- cheap to run

##### CONS

- a separate greywater system is required
- can be smelly
- require additional carbon sources (old sawdust, leaf litter, food scraps)
- compost must be removed (once a year) and buried below ground

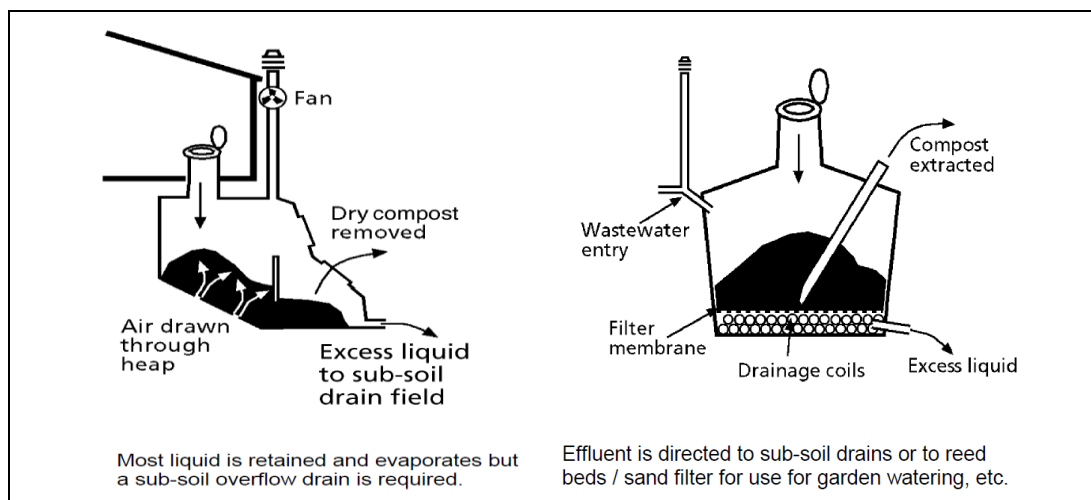
#### Wet system

##### PROS

- no need for separate greywater tank
- can accept kitchen and food wastes
- option for flush or no flush toilets

##### CONS

- compost must be removed and buried below ground
- can be smelly



Waterless and wet composting toilets

Information Guide adapted from existing EHPA, Dept. of Local Government NSW, Golden Plains Shire Council resources. Moyne Shire Council acknowledges these sources.