

# TOWARDS BETTER ONSITE WASTEWATER MANAGEMENT IN VICTORIA - COMMUNITY EDUCATION SERIES

## FACT SHEET 1: Conventional Septic Tanks (Basic Design Information)

This information will be of interest if you live on a property that is not connected to a town sewerage system and you manage your own waste water. This fact sheet focuses only on conventional septic tanks (for information on aerated wastewater treatment systems refer to Fact Sheet 2: Aerated Wastewater Treatment Systems). To gain an understanding of the entire septic system, it is recommended that this fact sheet be read in conjunction with Fact Sheet 6: Common Disposal Methods (Primary Treatment Systems).

### 1.1 WHAT IS A CONVENTIONAL SEPTIC TANK?

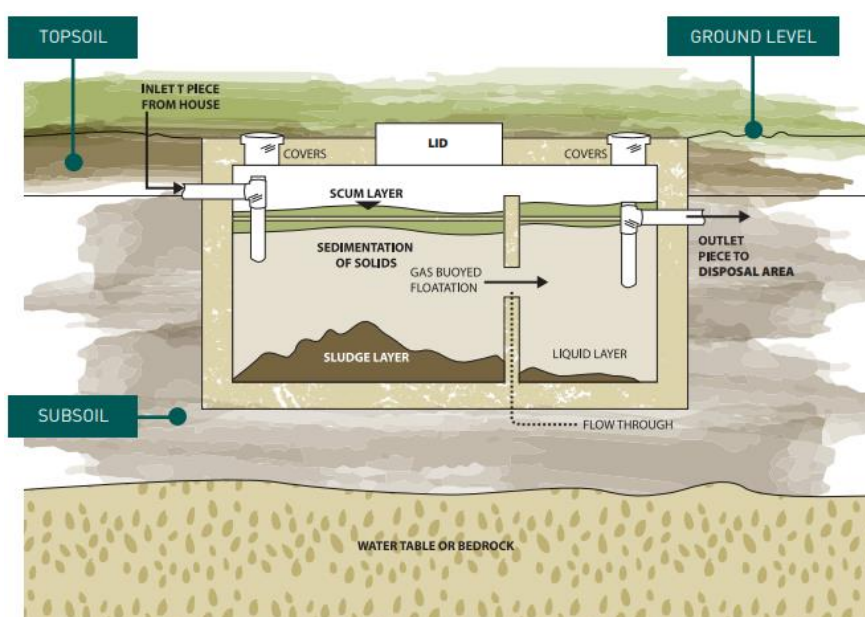
Conventional septic tanks are a living ecosystem contained within a concrete or plastic in-ground tank where good bugs live, digest and treat the wastewater from your kitchen, bathroom, laundry, and toilet. This process is known as primary treatment.

The purpose of the septic tank is to allow solid materials to settle, allow the good bugs time to breakdown the contents of the waste water, and acts as a storage chamber. The modern septic tank is divided into two chambers which helps the solids to drop out of the waste water. A healthy septic tank should have three layers – fats form a thin layer on the top (scum layer), liquids or effluent in the middle, and heavier solids on the bottom (sludge layer) (refer to diagram 1). When new waste water enters the septic tank, older effluent flows out and is discharged to trenches or other appropriate sub-surface disposal systems.

The benefits of using a conventional septic system include no mechanical parts as it is generally gravity fed and the treatment process relies on natural good bugs to work. So this system, when working well, is generally inexpensive to operate and has minimum impact on the environment.

It is very important to remember that septic tanks do not kill the bad bugs (bacteria, viruses or parasites) and the effluent must be treated with caution. Contact with people, food, clothing and pets **MUST** be avoided.

DIAGRAM 1: A CONVENTIONAL SEPTIC TANK



## 1.2 ISSUES ASSOCIATED WITH CONVENTIONAL SEPTIC TANKS:

- Too much sludge. This can result in untreated wastewater heavy with solids leaving the tank and clogging up pipes and absorption trenches.
- Too much water going into the septic tank and trenches. This can also result in solids being pushed out of the tank and clogging up the pipes and the trenches because of poor wastewater flow rate calculations or overuse of the system. This commonly occurs when the system is undersized to manage household wastes, or the system is over used.
- Toxic chemicals such as bleach or commercial cleaners going into the system. This can result in the good bugs being killed off and this will stop the digestion process.
- Common signs of a failing septic tank system include water draining away too slowly; pipes making noises or gurgling when draining; sewage smells; or water ponding in the area of the absorption trenches.

## 1.3 DEALING WITH THESE PROBLEMS:

You need to de-sludge your septic tank every 3-5 years depending on use. Newly pumped out tanks should be refilled with clean water and a handful of lime added to reduce the odours and encourage good bugs. The following are some other helpful hints to keep your septic tank healthy:

- Ensure the septic tank is inspected periodically by licensed plumbing practitioners to check the scum and sludge levels, and the presence of blockages in the outlet and inlet pipes;
- Keep a record of pump outs, inspections and other maintenance activities;
- Check the household products that you use are suitable for disposal through a septic tank - bleaches, disinfectants or nappy soakers can all affect the operation of the septic tank;
- Use biodegradable liquid detergents, i.e. concentrates with low phosphorus and salt;
- Ensure that the septic tank is mosquito proofed;
- Do not put rubbish such as sanitary napkins, condoms or disposable nappies down the toilet;
- Do not alter any part of your system without Council approval. Your septic tank system has been designed for a particular amount of wastewater. Be careful not to overload the system by increasing wastewater flow rates;
- Spread your laundry cycles throughout the week to reduce the disruption of the settling process by peak wastewater flows. Refer to Lanfax Laboratories website at <http://www.lanfaxlabs.com.au> for more information about laundry products to assist in managing your wastewater.

## 1.4 PUMP WELLS

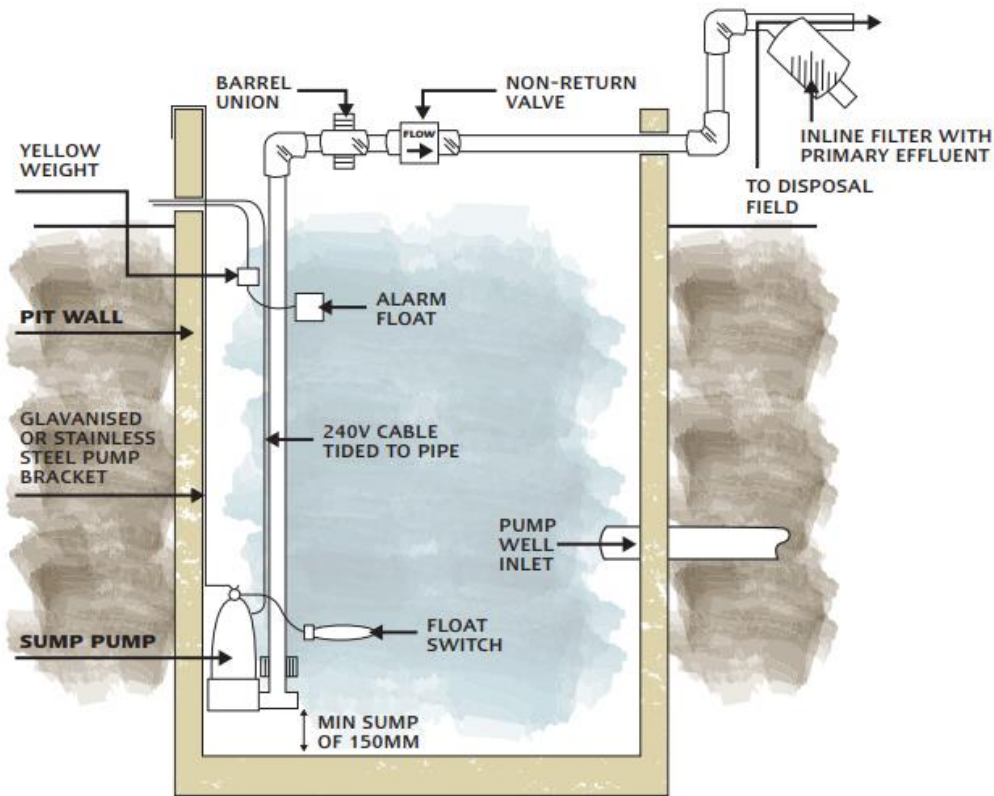
Very flat sites where septic systems are installed will need the effluent to be pumped from the septic tank to the disposal area. This involves the use of a pump well.

A pump well should have manufacturer's endorsement to validate it has been constructed to avoid leaking and contaminating the surrounding environment, to avoid penetration by roots, groundwater or stormwater, to be able to resist surrounding hydrostatic pressure, and resist or be impervious to both the waste water contained within the tank and groundwater. In order to avoid the likelihood of creating odour nuisances, pump wells need to have tight fitting lids and inspection covers.

The pump within the pump well needs to be fitted with a float valve set lower in the tank. There needs to be a suitable and permanently installed visual/ audible warning device with a mute facility. This device will warn you if the pump brakes down.

It is also recommended that the pump well be de-sludged at the same time as the septic tank.

DIAGRAM 2: PUMP WELL



1.5 PROBLEMS AND SOLUTIONS FOR PUMP WELLS

- The use of improperly constructed or damaged pump wells can result in contamination of the surrounding environment and odours being generated. For new systems, check that your plumber is using a manufactured pump well approved by your local EHO. For existing systems, if the pump well is leaking then call your plumber and have it repaired or replaced as quickly as possible.
- The pump well may be undersized for the system and not coping with the wastewater load. This would mean the pump is working continuously and there is inadequate emergency storage capacity within the tank. Call your plumber and have the pump checked and any works required to be undertaken.
- Solids from the septic tank entering the pump well. If this occurs then your septic tank needs to be pumped out. Septic tanks should be pumped out every 3-5 years depending on use.
- Systems being installed without an alarm to indicate a fault with the electric pump. For new systems, the EHO will not give final approval (issue a Certificate to Use the system) until the alarm has been fitted. For existing systems you should contact your licensed plumbing practitioner and arrange for an alarm to be retro-fitted.
- Pumps failing or power being disconnected. The electric pump installed in a pump well needs to have power at all times in order to work effectively. Any issues with the pump or the power supply need to be remedied as soon as possible.

1.6 COMPARISONS BETWEEN CONVENTIONAL SEPTIC TANKS AND SECONDARY TREATMENT SYSTEMS

CONVENTIOANL SEPTIC SYSTEMS	SECONDARY TREATMENT SYSTEMS
Generally do not require power, unless the effluent needs to be pumped.	Requires a continual supply of power.
Limited maintenance – de-sludging is required every 3-5 years, depending on use.	Requires regular maintenance – must be serviced once every 3 months, an annual water sample test is required and de-sludging every 3-5 years depending on use.
A full list of approved conventional septic and secondary treatment systems can be found on the Environment Protection Authority website at <a href="http://www.epa.vic.gov.au/your-environment/water/onsite-wastewater">http://www.epa.vic.gov.au/your-environment/water/onsite-wastewater</a>	
It is important to note that secondary treatment systems are likely to be the best option on properties with environmentally sensitive features such as creeks and dams or where there is limited area available for disposal areas.	

1.7 WHO TO CONTACT:

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