

# Fact Sheet 2

## Aerated Wastewater Treatment Systems

There are around 6000 properties within the Shire of Nillumbik that are not connected to mains sewerage. These properties are serviced by an onsite wastewater disposal system (septic tank system). Wastewater if not properly managed can impact on public health and the environment.

There are 10 fact sheets about onsite wastewater systems:

1. Conventional septic tanks
2. Aerated wastewater treatment plants
3. Sand filters
4. Split system
5. Common disposal methods for primary treatment
6. Common disposal methods for secondary treatment
7. Purchasing a dwelling in Nillumbik
8. Greywater reuse
9. Indigenous plants and grasses for transpiration
10. Decommissioning your domestic wastewater system

This fact sheet provides information about Aerated Wastewater Treatment Systems. These systems help to sustainably manage wastewater and reduce the risks to human health and the environment. For information about conventional septic tanks read Fact Sheet 1. To learn about the entire septic system, we suggest that this fact sheet be read in conjunction with Fact Sheet 5 (Common Disposal Methods for Secondary Treatment Systems).

### What is a treatment plant or aerated wastewater treatment system (AWTS)?

A treatment Plant or AWTS is a small-scale sewage treatment system that treats domestic wastewater to a higher quality than a traditional septic tank system. AWTS are commonly found in domestic properties where reticulated sewerage is unavailable.

AWTS's use a primary settling chamber, mechanical aeration and a final settling or clarification stage to treat domestic wastewater (see cross section diagram on page 2). Many systems also have a disinfection stage. This process is known as secondary treatment; it produces treated effluent that can be used to irrigate garden beds, lawn areas and in some cases within the dwelling to flush toilets.

### How does an AWTS work?

#### Primary chamber

The primary chamber is where wastewater from your toilet, kitchen laundry and bathroom first enter the system. Here, the solid material is able to settle and form a sludge at the bottom

of the chamber. There is no oxygen in this chamber and the solids are broken down by anaerobic bacterial digestion. The wastewater then goes through aerobic biological treatment in the aeration chamber.

#### Aeration chamber

Here the wastewater is mixed with air to oxygenate the wastewater, providing the perfect environment for aerobic bacteria to break down the organic waste. The digestion process in this chamber is much quicker than the anaerobic digestion. The wastewater then goes to the next stage - sedimentation and clarification in the sedimentation/clarification chamber.

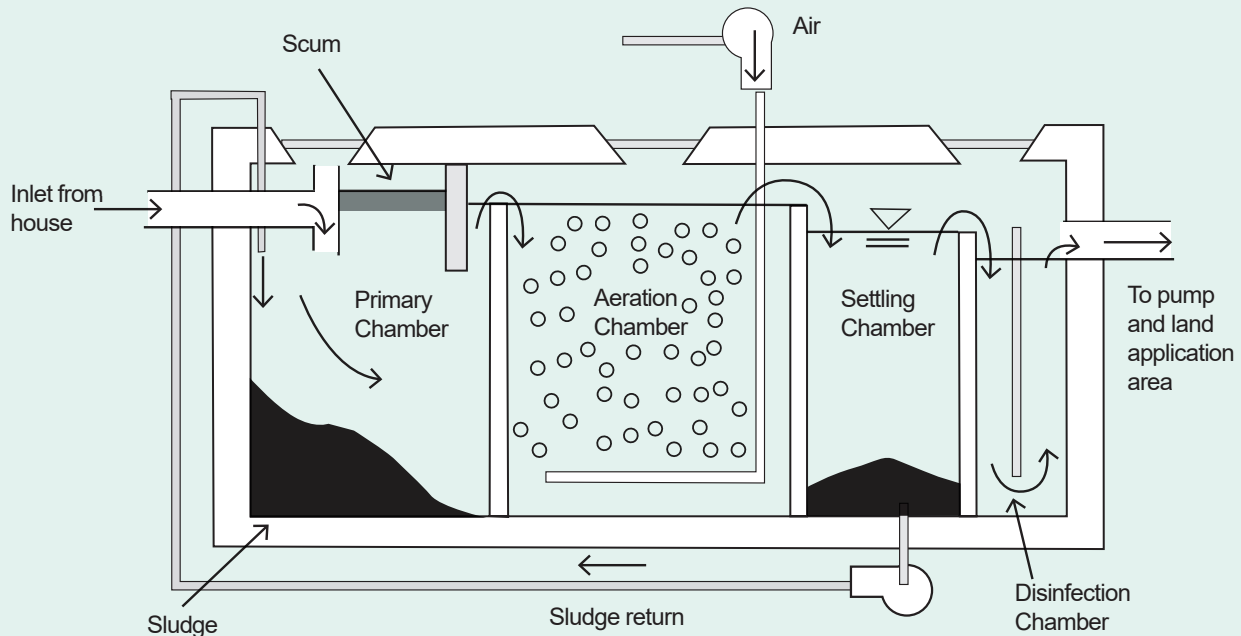
#### Clarification chamber

Here, more of the solid material is allowed to settle which makes the remaining wastewater appear quite clear. However, this water still contains high numbers of pathogens that can be harmful to the human health. Often this is the end of the treatment process and the wastewater is then disposed of through an underground disposal system such as subsurface irrigation or absorption trenches.

#### Disinfection chamber

Some AWTS include another component to the treatment process, which involves exposing the wastewater to chlorine or UV light to kill off a large number of pathogens. If the system uses chlorination, it is important that chlorine tablets are monitored and replaced as required.

Cross section of an AWTs



### Common problems associated with AWTs

AWTs's are mechanical systems made up of many moving parts which can breakdown, regular servicing is required for effective operation.

The system must be serviced by an accredited servicing agent once every three months, or as indicated within the owner's manual, or the Certificate of Conformity with the Australian Standards 1546. It is important to note that the servicing agent must provide a copy of all service reports to Council.

An electronic alarm is fitted to warn of system malfunctions, this alarm maybe an audible system, a strobe light or both. Check that the alarm has been correctly installed and is working. This must be checked when the system is being serviced. Note: most systems will not be able to trigger the alarm during power outages.

If the system includes a disinfection stage, the chlorination chamber or UV light must be checked when the system is being serviced to ensure it is working correctly.

The chlorine dispenser must have chlorine tablets properly fitted in the dispenser and the UV light bulb must be cleaned and monitored. An increased UV dose will be required if the Biochemical Oxygen Demand (BOD) and the Total Suspended Solids (TSS) are increased

above the recommended levels.

The irrigation system can be damaged in a number of ways, including by animals looking for water, solids being pushed into the irrigation pipe and driving on the effluent disposal area. If this is the case, a licensed plumber will be needed to carry out work to the irrigation system.

Too much sludge in the primary chamber can result in solids entering other chambers of the AWTs, clogging components and reducing the ability of the system to treat the wastewater adequately. Sludge levels need to be checked when the system is being serviced and the primary chamber will need de-sludging every three to five years, depending on use.

AWTs's are designed to manage a specific amount of wastewater. When this amount has been exceeded, the ability of the AWTs to adequately treat the wastewater will be compromised. If too much water is being consumed within a dwelling, an upgrade of the effluent disposal area may be required to alleviate long term damage.

Some common domestic household chemicals can kill the good bacteria in an AWTs. The anaerobic digestion process is crucial to the treatment process and it is advised that only septic tank safe chemicals be used for cleaning.

## For information

For information on onsite wastewater systems contact Environmental Health on 9433 3340.

## Common signs of a failing AWTS

- Water draining away too slowly.
- Pipes making noises or gurgling when draining.
- Sewerage smells.
- Water ponding in the irrigation system.

If any of these occur, contact a regular servicing agent or licensed plumbing practitioner.

## Service requirements for AWTS

An authorised person or servicing agent will inspect the following items:

- General condition of the system and immediate surrounding area for leakage and contamination.
- Primary chamber is checked for scum crust on the surface, odours, sludge depth, inlets and that outlets are clear for good anaerobic activity.
- Aeration chamber is checked for odour, oxygen levels, pH (acidic or alkaline), the air blower is operational, colour of the effluent and that there is adequate aerobic activity.
- The final clarification or settling chamber should contain clear effluent, and gauge how much sludge is in the chamber to clarify if the sludge return is working (if applicable).

- If the system includes disinfection, the service agent should ensure that the chlorinator or UV light is operating correctly.

## Setback distances for AWTS

AWTS's should be installed at least three metres from a house or other permanent structures. For further setback distances see the EPA Code of Practice for onsite wastewater management at [epa.vic.gov.au/your-environment/water/onsite-wastewater](http://epa.vic.gov.au/your-environment/water/onsite-wastewater)

## AWTS Certificate of Conformance

A list of onsite wastewater systems which have a Certificate of Conformity with the Australian Standards 1546 can be found on the Environment Protection Authority (EPA) website at [epa.vic.gov.au](http://epa.vic.gov.au)

