

DOCUMENT TYPE: Section 86 Committee Governance Manual

DOCUMENT STATUS: Approved

POLICY OWNER POSITION: Director Corporate Services

APPROVED BY: Management Executive Group

DATE ADOPTED: 4/05/2016

VERSION NUMBER: 1

REVIEW DATE: 4/05/2019

RELATED STRATEGIC DOCUMENTS,  
POLICIES OR PROCEDURES: Section 86 Committee of Management Policy

RELATED LEGISLATION: Local Government Act 1989

EVIDENCE OF APPROVAL:



Signed by Chief Executive Officer

FILE LOCATION: K:\EXECUTIV\policies and procedures\Procedures - adopted PDF and Word\Section 86 Committees of Management Governance Manual\PRC RS04 Onsite wastewater operation and maintenance v1.docx

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**This document is available in alternative formats (e.g. larger font) if requested.**

## 1 PURPOSE

This information sheet is to provide information to members of Section 86 committees about the operation and maintenance of onsite wastewater disposal systems.

## 2 SCOPE

This information sheet provides general advice regarding the operation and maintenance of onsite wastewater disposal systems. Specific advice for an installed or proposed onsite wastewater disposal system can be obtained by contacting Council's Environmental Health Department.

## 3 WASTEWATER (SEPTIC TANK) SYSTEMS BACKGROUND

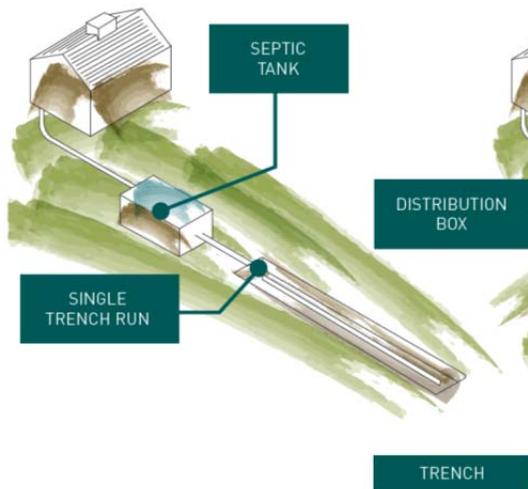
The age of onsite waste water disposal systems that are servicing community assets across the Shire varies greatly.

Most systems are in excess of 20 years old and they were installed to very basic construction standards. Over the years the design standards have been improved and a system that has been installed in recent times to modern design standards will have a life in excess of 20-30 years if care is taken to ensure that the system is maintained.

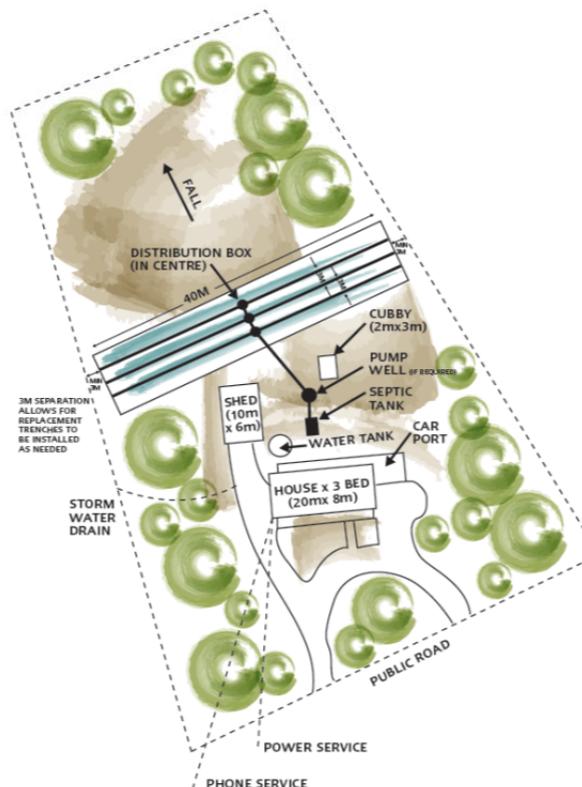
It is important that Section 86 committees that are operating buildings that have onsite wastewater disposal be it a traditional septic tank or an aerated waste water treatment system/package treatment plant understand how the system works and the monitoring and maintenance requirements for their specific system.

### 3.1 Traditional onsite wastewater (septic tank) systems

The key components of a traditional septic tank system include the septic tank and the disposal field (trenching). Some systems also include pump wells at the end of the septic tank to pump the waste water from the tank to the disposal field. Over the years the way disposal fields have been laid out/constructed has changed. The layout for a system that is in excess of 20-30 years old is shown below. The main issue associated with older systems is the lack of trench length which means that systems will flood easily during periods of high demand and in wetter months.



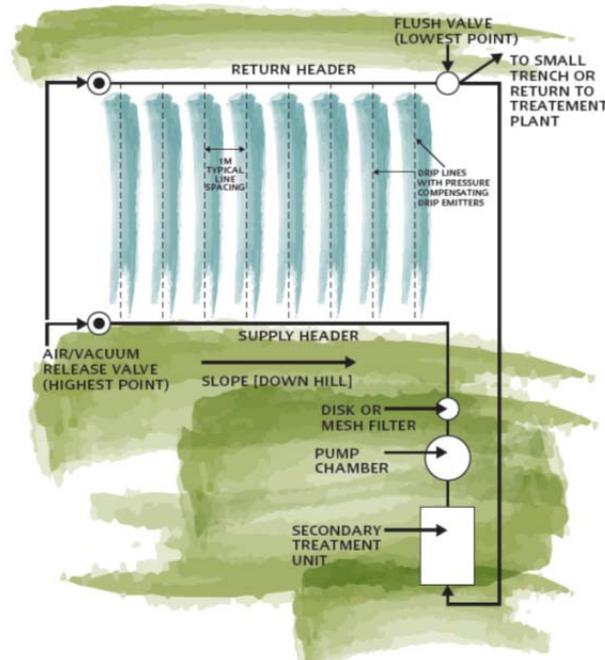
Systems that have been installed in recent times are constructed with a greater length of trenching; they have been designed not to flood in peak periods and during wetter periods. The layout of the trenches has also altered over time and is shown in the example.



## 3.2 Aerated wastewater treatment systems / Package treatment plants

Aerated wastewater treatment plants (AWTS) or package treatment plants were introduced into Australia in the mid to late 1990's. When they were first introduced the disposal fields for these systems were created on the surface with a series of drippers being used to water trees/shrubs in garden beds. Like with traditional septic systems the installation standards for AWTS's has changed over the years to reduce the associated risks with these systems that have come about due to improper servicing and maintenance.

A typical disposal field for a current AWTS is given in the example below.



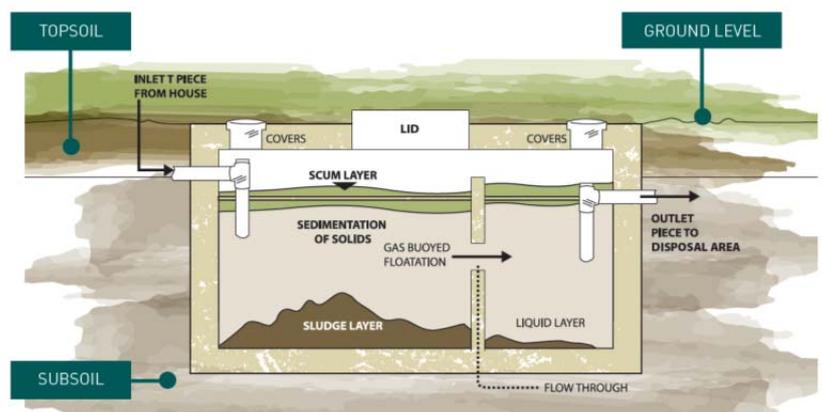
## 4 SEPTIC TANK OPERATION AND ISSUES

Understanding how a wastewater disposal system operates is the key to ensuring that the correct preventative maintenance is carried out on the system which will increase the operating life of the system.

### 4.1 Traditional septic tank systems

With a traditional septic tank the solids and liquids enters through an inlet. In the first chamber of the septic tank the solids settle on the bottom to form a sludge layer whilst the fats and oils form a crust at the top of the tank.

The water will go through to the second chamber where additional settling will



occur. The relatively clear liquid will then leave the tank and enter into the disposal field. The entire process occurs in an anaerobic (no air) environment. This environment supports the growth of bacteria that assist in the breakdown of the solids within the tank.

*So what can go wrong with a traditional septic tank and disposal field?* The issues that can arise with traditional septic tanks and disposal fields that are servicing public buildings during periods of high demand will come about as a result of the system being flooded.

Flooding of the system will occur when the volume of water that is going through the tank exceeds the tank's capacity; ideally any water that enters the tank should be held within the tank for a period of 24 hours. When a large function or event takes place the volume of water entering the tank may exceed the total volume of the tank. This can result in a number of issues arising:

- a) **Solids leaving the tank:** When the volume of water entering the system is too high and/or fast solids do not have the opportunity to settle out of the wastewater as it passes through the tank. This can result in the solids leaving the tank with the wastewater and entering the disposal field. When solids enter the disposal field they quickly clog up the disposal field. In the worst case scenario the entire contents of the tank can be emptied into the disposal field. Solids leaving the tank also have the opportunity to block the tank outlet which will result in wastewater not being able to leave the tank. This will ultimately result in wastewater being unable to leave the fixtures within the building.
- b) **Smells:** When the tank is flushed through the top scum layer that is found inside the tank can be damaged / destroyed. The main job for this top layer of scum is to seal the tank and hold in any smells and gases. Depending on the use of the system it can take some time for the scum to reform within the tank.
- c) **Saturated Disposal Field:** Older disposal fields were generally smaller in area than modern fields however all disposal fields have limits. The soil within the disposal field can only absorb a limited volume of wastewater within a day. If the volume of wastewater that is being generated by an event exceeds the capacity of the disposal field the wastewater will pond on the surface thus creating a potential risk with untreated wastewater being able to be accessed by the public.
- d) **Pump failure:** Some septic tanks are connected to pump wells which are fitted with submersible pumps. This can be due to the location of the disposal field, the depth of the tank or the lack of fall between the disposal field and the tank. Any system that includes a pump must have a pump failure alarm included within the system. During periods of high demand pumps can fail resulting in pump wells that flood. Pumps can also become blocked by any solids that have left the septic tank. Pumps that have failed or become blocked with solids may require replacement.

Systems that are damaged may require costly repairs and this will be the case when solids have left the tank and entered the disposal field as the only way to repair this damage will be by the installation of new trenches. Disposal fields that have become saturated will dry up once the period of peak demand has passed and should commence operating effectively again.

## 4.2 Aerated wastewater treatment systems

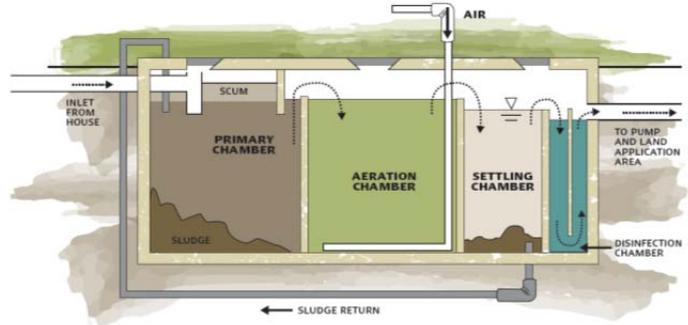
AWTS are significantly more complex in their nature and operation than a traditional tank. They have multiple chambers, pumps and filters.

The overuse of an AWTS can lead to costly repairs given the number of parts that can be damaged.

The disposal fields that are connected to AWTS are also a lot more sensitive to misuse than trenching. The disposal fields are generally small diameter pipes with drips installed in them or with pre drilled holes (this will depend on the age of the system). Prior to the pipe there should be a filter to stop fine particles from blocking the disposal field.

Things that can go wrong with an AWTS include:

- a) **Breakdowns of any mechanical parts:** i.e. pumps and blowers. This can result in two possible outcomes. The plant simply stops working and the wastewater that is entering the system will result in the tanks flooding and wastewater lying on the ground. Alternatively the system will continue to work however the wastewater that is being generated will not be treated to the highest level possible resulting in poor quality effluent which may affect your disposal field.
- b) **Flooding:** if the volume of water being generated exceeds the daily design capacity of the AWTS the quality of wastewater that is being produced will be poor as the solids move through the system. This may result in issues with the filter and the disposal field.
- c) **Filter blocking:** Filters installed on the outlet for AWTS are fine to ensure that the pipework in the disposal field is not blocked by particulates entering the field. As a result of this the filters have a tendency to block when poor quality effluent enters the system. When the filters block the alarm within the AWTS will be triggered. Should filters that continually block up be removed to stop the alarm being triggered the particulates will enter into the disposal field which will block the pipework in the disposal field. Replacement of the pipework is the only way to repair the disposal field if this occurs.



## 5 LARGE FUNCTIONS

When planning a large function you need to determine the volume of wastewater that will be generated. The main generator of wastewater in community buildings at community functions is generally the toilets. When planning an event you will have in mind an ideal attendance figure. Once you have this figure speak with Council's Building Surveyor to determine the total number of public toilets that you will need to provide.

Systems that have been installed in recent times will have been designed and constructed to operate with a known maximum number of users. For committees managing newer buildings this can make planning of your function easier. If the expected number of attendees will exceed the design capacity of your wastewater system you will need to hire in additional facilities.

For committees that are operating an older facility the volume of water or number of patrons that the system was designed to cope with will be unknown. You will need to rely on a common sense approach

to planning a large function. Once you know the number of toilets that you need look at how many you have this will give you a good idea of how many additional toilets you will need.

However before arranging the extra toilets you also need to consider the capacity of your existing system:

- a) Will it really cope with the anticipated number of patrons using them?
- b) Has it done it in the past?
- c) Did it work okay in the past?
- d) Did the disposal field become saturated?

If the answer to these questions indicates that the system didn't work okay you should look at hiring more toilets rather than relying on the toilets that are already on site and hoping that the wastewater system lasts the required length of time.

Kitchens in community facilities will also generate wastewater during functions. The volume of wastewater generated will vary depending on how you are using the kitchen. If you are preparing a three course meal and everyone is using cutlery and crockery that will need to be washed the amount of wastewater that you will generate will be significant in comparison to using the kitchen to make coffee and tea in disposable cups and serving cakes and slices that were prepared elsewhere.

New wastewater systems take the use of the kitchen into account when determining the operation of the system, however, older systems will again face the question of *will the system cope with the wastewater we are going to generate?* This is where the hiring of additional toilets and closing existing onsite toilets for the period of the event can help in ensuring that the wastewater system can cope with the anticipated usage. Whilst this may seem inconvenient and costly to hire more toilets than you require in the end it may be a lot cheaper than installing a new wastewater system that is built to current standards.

## 6 GENERAL INFORMATION AND MAINTENANCE REQUIREMENTS

If you take out the running of a large event and just focus on the day to day use of an onsite wastewater system, all systems require attention and care. The frequency of the attention comes back to the usage of the system and the type of system that is installed.

### 6.1 Traditional septic tank systems

Traditional septic tank systems require less maintenance and servicing than an AWTs. The things that you need to know and should check regularly include:

- a) **Desludging:** You need to check the level of sludge and scum within the septic tank. Take care to protect your personal safety if you are undertaking this check yourself. Alternately you can have a plumber check this for you. If the level of sludge and scum within the tank is too high you should arrange for the tank to be desludged (pumped out). This will protect the disposal field as it will reduce the risk of the solids entering the field. If you don't want to check the tank every 12 months you can simply arrange for the tank to be desludged every three years which is recommended frequency for households. If the system is connected to a high use public building it may require more frequent desludging.

- b) **Distribution boxes:** These boxes control the flow of water into the disposal field.
1. **Broken Lids** - If any lids to the boxes are damaged additional water (surface waters) can be added to the system. This can impact on the operation of your disposal field. You should ensure that any broken lids are replaced immediately.
  2. **Weeds/rubbish in distribution boxes** – Distribution boxes that are full of weeds or rubbish will result in water flow throughout the disposal field being impacted. A blocked distribution box can eliminate the use of an entire trench or more. You should lift the lids of distribution boxes every six months or so and check that they are empty of all unwanted weeds and rubbish.
- c) **Protection of tanks and disposal fields:** Both tanks and disposal fields need to be protected from livestock and vehicles. Tanks that are driven over can become damaged and depending on the material that the tank is made from can become quite dangerous. You should regularly:
1. **Inspect the lid of the septic tank:** Septic tanks should not be buried; you should be able to access the lids of the tanks at all times. If the lid to the tank is damaged in any way it should be replaced. A broken lid is a hazard but also impacts on the operation of the tank as the contents of the tank are no longer operating under anaerobic conditions.
  2. **Ensure that the disposal field is protected** from vehicles and livestock by erecting fences or bollards to stop the use of the area as a car park or driveway. Heavy vehicles driving over the disposal field will damage the pipework within the field. The only way to replace damaged pipework is to replace the disposal field.
  3. **Grass:** The operation of disposal fields relies on a mix of ground absorption and evaporation. Disposal fields must have grass coverage. The grass assists in the transpiration and evaporation of the water and takes up the nutrients within the wastewater. Do not spray the disposal field with weed killer; any weeds should be removed by hand and grass growth should be encouraged.
  4. **Watering of disposal Fields:** For disposal fields that are associated with high use buildings/facilities do not add additional water to the field by watering it, as this will impact on the ability of the soil to take up the wastewater that is being generated. In buildings that have a low usage you should limit the watering of disposal fields to the bare minimum to provide you with the green grass that you may desire but do not over water the grass.

## 6.2 Aerated wastewater treatment systems

AWTS require regular maintenance and servicing. The things that you need to know and should check regularly include:

1. **Quarterly Servicing:** Due to their mechanical nature AWTS's require regular servicing by an authorised service agent; they cannot be serviced by a member of the committee or a plumber that is not an authorised service agent. They must be serviced in accordance with their EPA approval, the permit to install, and certificate to use that were issued by Council. Servicing must be carried out every 3 months and the service reports must be submitted to Council immediately.

2. **AWTS cannot be turned off.** If the system is not being used for an extended period of time the unit should be switched to holiday mode if the installed unit has this option. If this option is not available it must be left to operate as normal. It should be noted that AWTS ideally shouldn't be installed on buildings that have intermittent use.
3. **Desludging:** just like traditional septic tanks AWTS require desludging or pumping out. The recommended frequency for AWTS is the same as for traditional septic tanks which is every three years. Your service agent should be able to advise you if the tank needs desludging more frequently.
4. **Filters:** most AWTS have filters fitted between the unit and the disposal field. Depending on the use of the system the filter may require cleaning more frequently than the unit is serviced. Your service agent will be able to show you how to check and clean the filter.
5. **Disposal field** - just like disposal fields that are servicing traditional septic tanks the disposal field for an AWTS must be protected from damage. It should not be used as a car park or driveway. Heavy vehicles driving over the disposal field will damage the pipework within the field. The only way to replace damaged pipework is to replace the disposal field. If the system has above ground disposal the disposal area should not be publicly accessible as the risk of someone becoming ill from contaminated water is always present. If the disposal field is in a garden bed, you should ensure that anyone that is gardening in the bed is wearing appropriate protective equipment such as gloves. Additionally the disposal field must have warning signs erected within it.
6. **Watering of disposal fields** - for disposal fields that are associated with high use buildings/facilities do not add additional water to the field by watering it, as this will impact on the ability of the soil to take up the wastewater that is being generated. In buildings that have a low usage you should limit the watering of disposal fields to the bare minimum to provide you with the green grass that you may desire but do not over water the grass.

## 7 REVIEW

The Public Health Officer will review this procedure for any necessary amendments no later than 3 years after adoption of this current version.