MOUNT BARKER
DISTRICT COUNCIL

WASTE CONTROL SYSTEMS

What type of waste control system do you have?

If you live in the Mount Barker District Council you will most likely have one of the following types of systems:

- a septic tank connected to a council drain Septic Tank Effluent Drainage Scheme.
- a septic tank connected to a subsurface effluent soakage system
- a septic tank connected to an aerobic wastewater treatment system
- a septic tank connected to a sand filter system maintenance checklist

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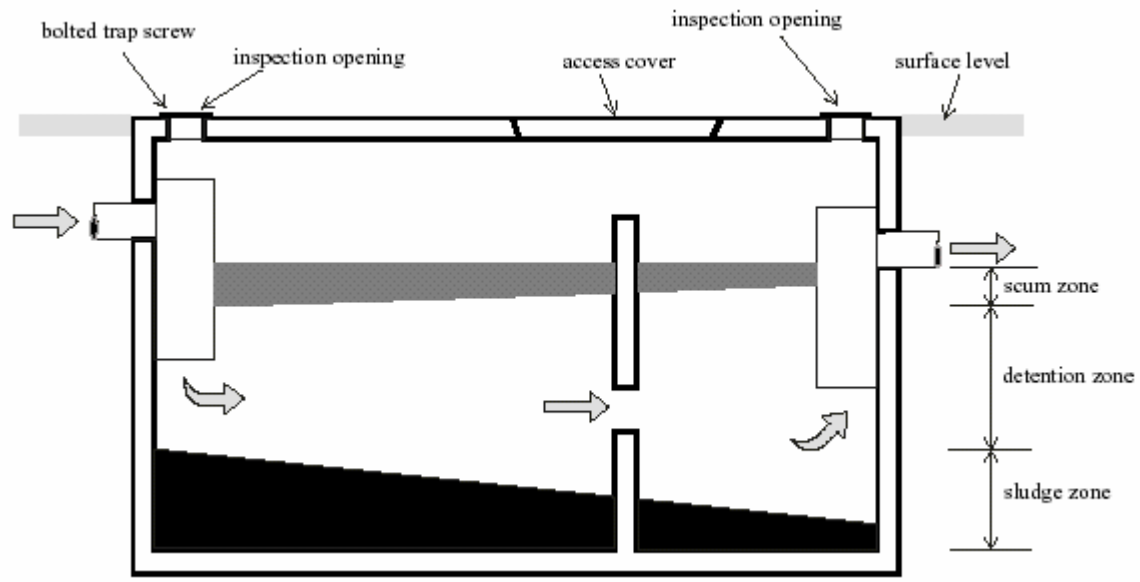
How do septic tanks work?

Septic tanks are constructed of reinforced concrete, polypropylene or fibre glass. The septic tank is divided into a two thirds / one third arrangement and provides primary treatment of wastewater.

Below is a cross sectional diagram of a septic tank:

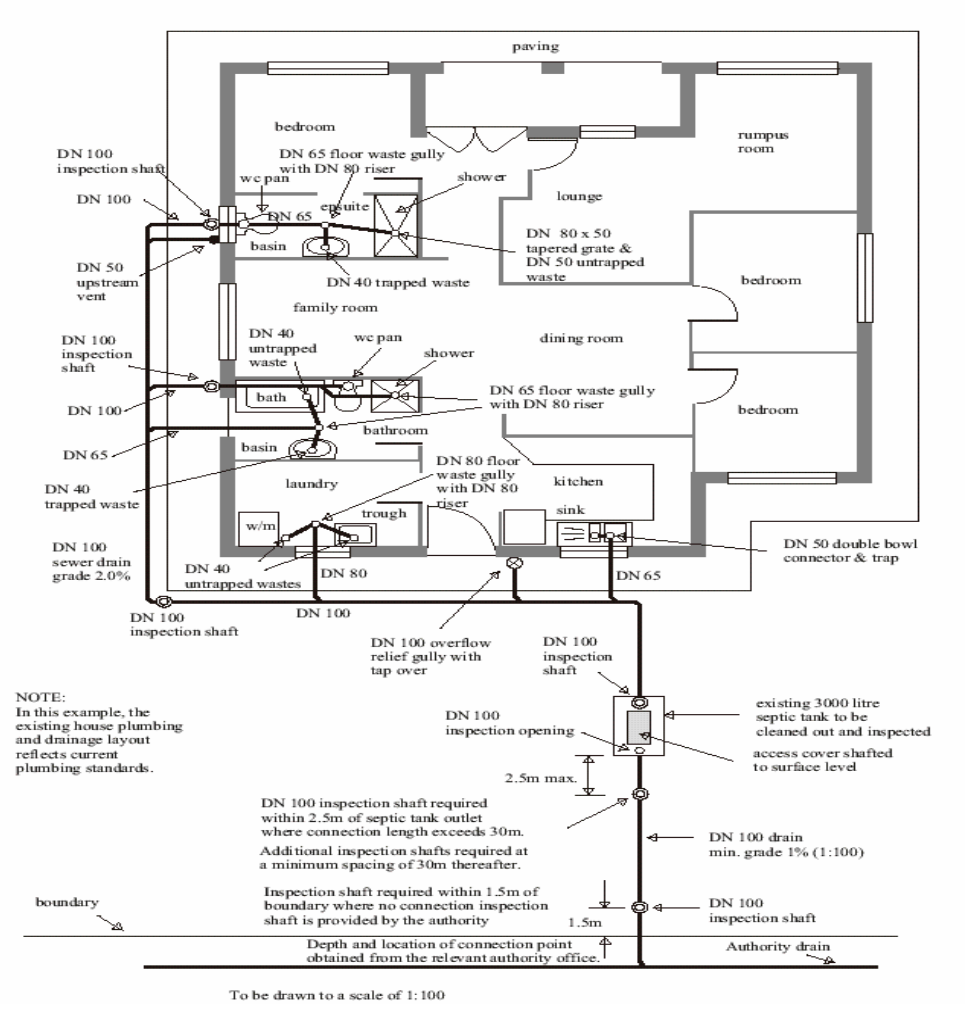


A septic tank works in two ways to retain and reduce solids by physical and biological means.
Firstly, effluent is retained within the first chamber of the tank where most of the solid material settles to the bottom. Secondly, microbial activity causes a reduction in solids. Despite this, septic tanks require periodic emptying in order to ensure they function correctly. To arrange this contact a suitably licensed contractor. If you are in a STEDS area Council will arrange this every five years.

Septic Tank Effluent Drainage Scheme (STEDS)

If STEDS is supplied to your property then you are obliged to connect to this system. Council will not allow any alternative wastewater systems to be used in STEDS areas. Most properties within Mount Barker, Littlehampton, Nairne, Meadows, Echunga and Macclesfield are connected to STEDS*. STEDS works by receiving effluent from individual septic tanks via drains which flow to Council's wastewater treatment plant. After treatment this effluent is reused in various ways by Council (for more information on Council's water reuse initiatives see the grey water policy and information sheet). An annual levy is charged for each allotment connected to STEDS. This levy contributes to upgrades and maintenance of the system, including the treatment plant, and provides for the pumping out of septic tanks connected to STEDS every five years.
**The township of Hahndorf is connected to an SA Water system. Any enquiries regarding sewer systems in Hahndorf should be directed to SA Water.*

Below is a typical layout for a septic tank system connected to STEDS:



Onsite Effluent Disposal

Where a property is not served by a Council or SA Water sewer system onsite effluent treatment and disposal is required. The most common of these systems is the subsurface effluent soakage system and the aerobic wastewater treatment system (AWTS).

Subsurface Effluent Soakage System

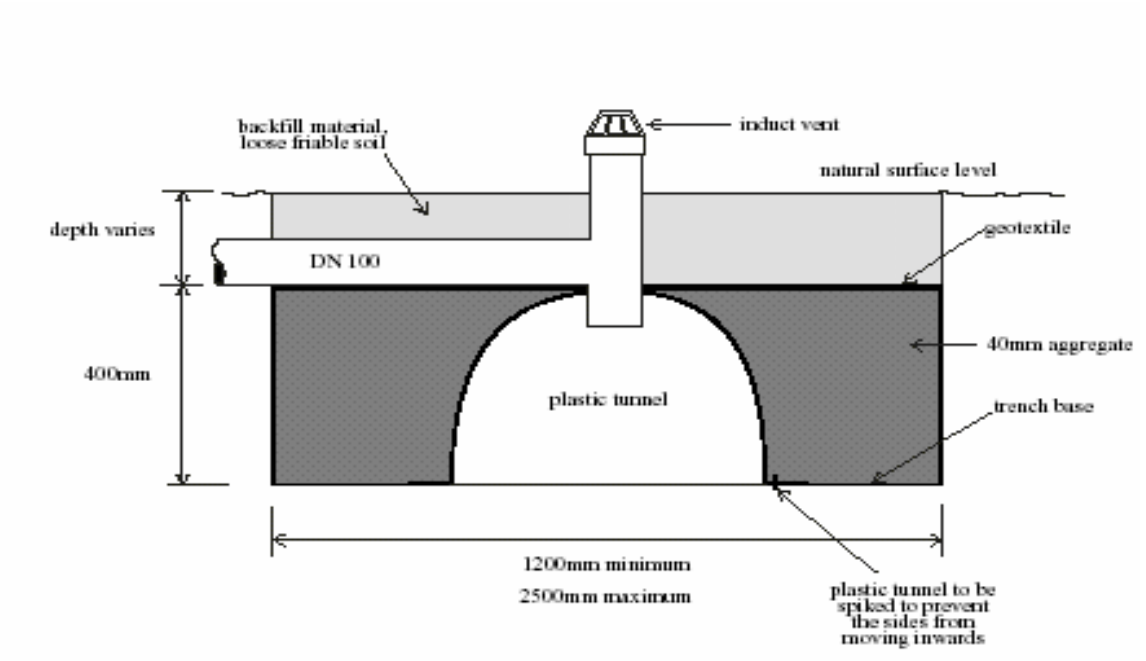
A standard subsurface effluent soakage system is usually the cheapest form of onsite effluent disposal. Effluent from the septic tank is disposed of underground via a subsurface effluent soakage trench. These systems are relatively maintenance free, however not all sites are suitable for this type of system.

This type of system should only be considered on sites where:

- ✓ The soil is readily able to absorb the effluent. An application to Council for this type of system must include an engineer's report indicating the soil type and percolation rate based on the dimension of the proposed soakage trench and typical effluent flow rates. A typical effluent soakage dimension is 45 metres x 1.2 metres at a depth of 600 – 700 mm.
- ✓ There is a gradient (land fall) of no greater than 1:5
- ✓ The effluent disposal area is at least 50m from a water source, including watercourses, bores, wells and dams

Soakage Trench

Below is a cross sectional diagram of a subsurface effluent soakage trench. An example of a typical site layout plan for a soakage trench system is also shown.



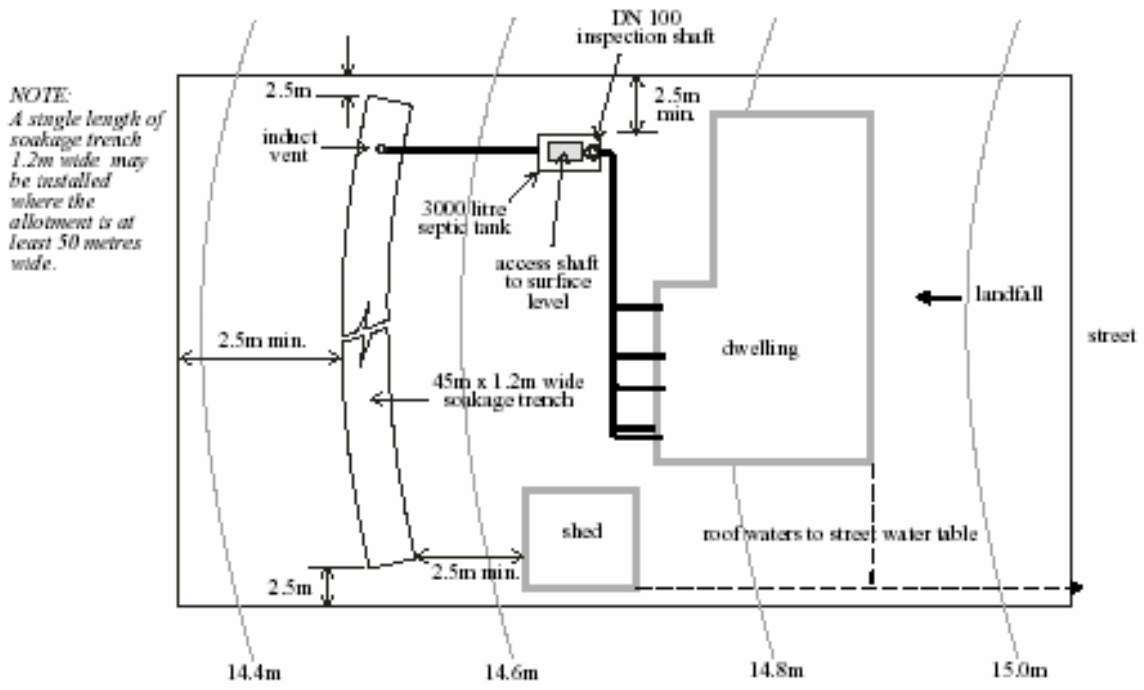


FIGURE 7: SYSTEM LAYOUT

The direction of the soakage trench must follow a level contour of the land as the base of the trench must be flat to allow even distribution of the effluent.

Where gravity flow from the tank to the soakage trench is not adequate it is necessary to install a pump and sump after the tank to carry the effluent to the soakage trench.

Aerobic Wastewater Treatment Systems

Aerobic wastewater treatment systems are required where conventional subsurface effluent soakage systems are not suitable. Possible reasons for this include:

- Poor draining soils;
- Excessively steep sites; and
- Insufficient area for subsurface soakage

Aerobic systems allow the reuse of treated effluent on trees and shrubs within designated irrigation areas.

Operation and maintenance costs must be taken into consideration as servicing by a suitably qualified person is required on a quarterly basis, and electricity is required to run these systems.

Aerobic systems are to be constructed, installed and maintained according to prescribed standards outlined in the *Standard for the Construction, Installation and Operation of Septic Tank Systems in South Australia: Supplement B - Aerobic Wastewater Treatment Systems* (SAHC 1995).

Effluent treatment

Aerobic systems treat effluent by both primary and secondary treatment. The difference between these and subsurface soakage systems is that the effluent is subject to a period of aeration, followed by disinfection and disposal via an irrigation system. Aerobic systems can be a two tank system or an all in one system with a built in septic tank (see figures 1 & 2 below).

Primary treatment is the same as in conventional systems. Effluent is retained within the septic tank where most of the solid material settles to the bottom. Microbial activity then reduces the solids. Despite this, septic tanks require periodic emptying in order to ensure they function correctly. To arrange this contact a suitably licensed contractor.

Secondary treatment occurs through aeration and chlorination, reducing nutrient levels and harmful organisms.

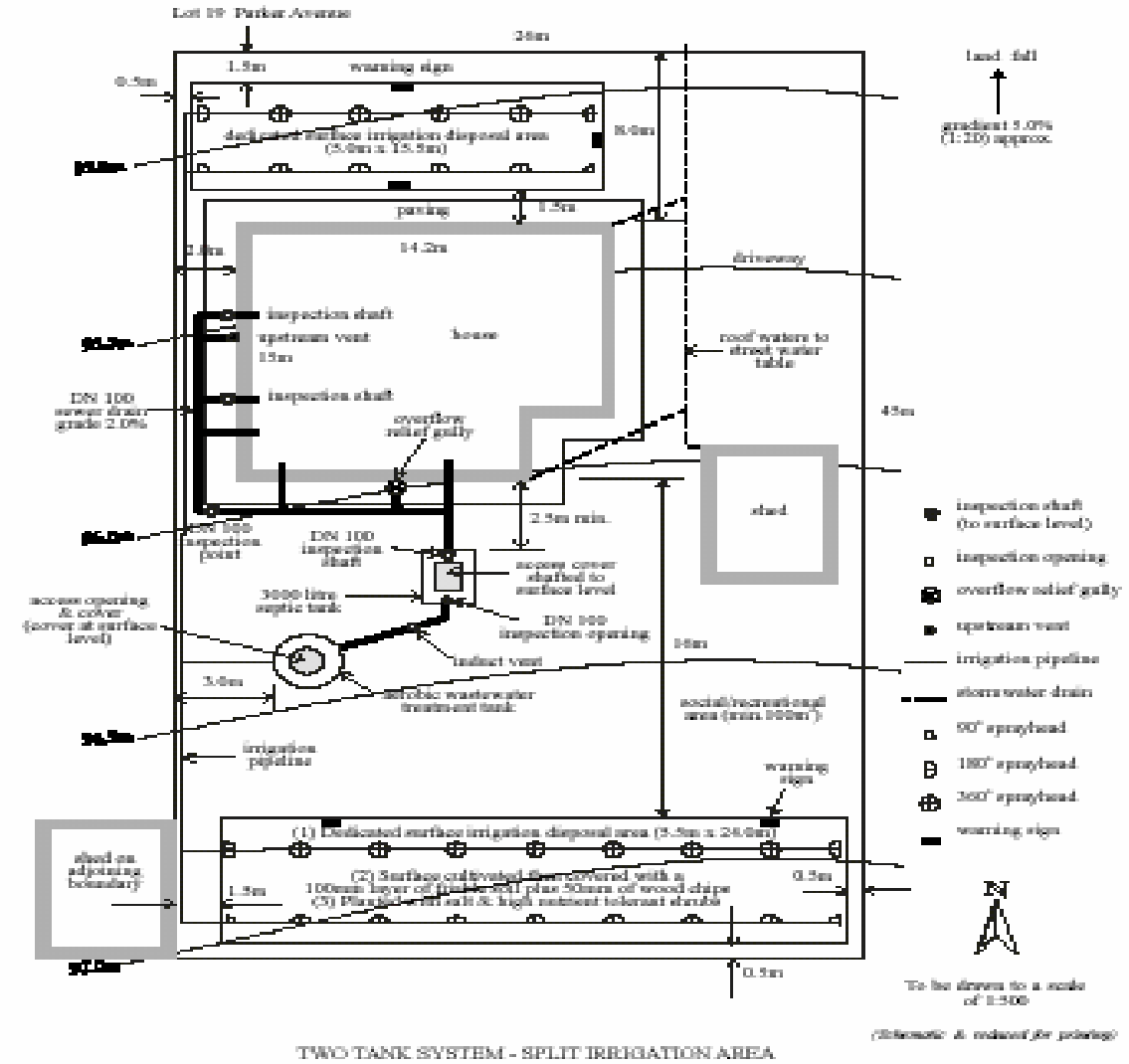


Figure 1: Two tank system

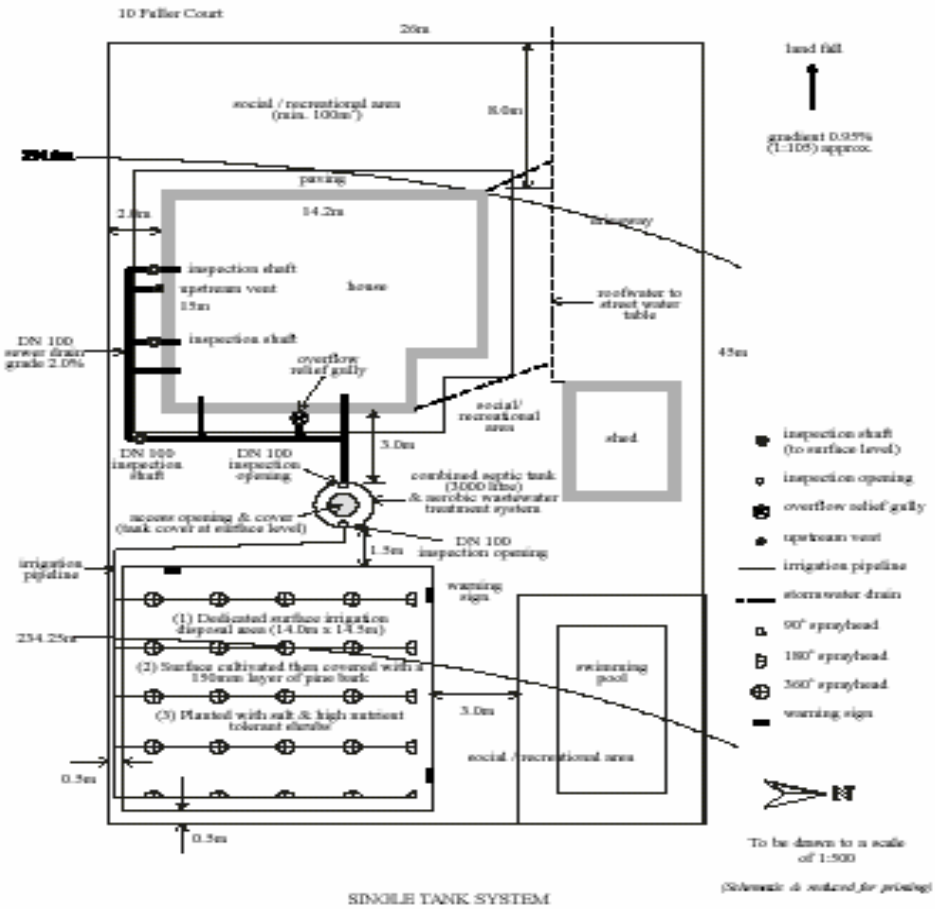


Figure 2: Single tank system

Surface Irrigation Disposal Area

Treated effluent is disposed of via an irrigation system, which is set up in a designated effluent irrigation area which must be landscaped, mulched and planted with suitable nutrient tolerant plants. The plants facilitate the uptake of nutrients and absorption of the wastewater. Moderately salt tolerant non food plants should be selected for planting within the area. It must be ensured that the area is dedicated to the sole use of receiving reclaimed effluent and should be designed to discourage pedestrian and vehicle access.

Sizing of the disposal area

The disposal area for a residential dwelling for up to 6 persons[1] is calculated using a maximum hydraulic loading of 4.5 litres per square metre over a 24 hour period. This typically equates to a minimum of **200 m2** to be set aside as designated effluent disposal area. Homes that have non standard sanitary fixtures (i.e. spa baths) may require a larger area.

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[1] Note: for assessment purposes 6 persons is deemed as **minimum** household use even if there are typically less household occupants.

Aerobic Sand Filters – Maintenance Checklist

The following actions should be undertaken every **3 months** in order to ensure proper care and maintenance of your sand filter system. Please note that neglect of maintenance may lead to failure of the system, subsequently leading to replacement of the system being required.

1. The *Standard for the Construction, Installation and Operation of Septic Tank Systems in South Australia* requires septic tanks to be desludged every 4 years. However, Council recommends that septic tanks connected to sand filter systems should be desludged every 3 years for 3 or more persons in the dwelling, and every 4 years for less than 3. Check the septic tank every 6 months and if there are excessive solids present in the second chamber it may be time to organise a pump out of the tank.

2. Lift the lid of the distribution sump and check for solids. If solids are present this may indicate that the septic tank requires pumping out.

3. Inspect the area around, and the surface of the sand filter for signs of storm water runoff. If evidence exists take immediate action to prevent storm water from entering the area of the sand filter.

4. Ensure the surface of the sand filter is free from decaying vegetation or debris. Lawn is the best cover for a sand filter.

5. Lift the lid of the irrigation chamber and check the level of the chlorine tablets. If the chlorine canister is empty it indicates that there wasn't enough replaced during the last service. **IT IS IMPORTANT THAT CHLORINE IS PRESENT AT ALL TIMES.**

6. Check that the level of water in the irrigation chamber is below the high level alarm float. This will indicate that the irrigation pump is operating correctly.

7. Lift the alarm float to verify the activation of the alarm for high level.

8. Check the irrigation line for damage and the irrigation area for dead plants and mulch levels. Repair and replace as required.

9. Take care when selecting cleaning products for use in the home as products that contain chlorine, bleach, anti-bacterials etc will shorten the life of the sand filter.

For more information please contact Council on 8391 7200

Handy hints to help you care for your septic tank system

- Household detergents and bathroom products should be biodegradable. Try to find products labelled 'septic tank safe' and use only as recommended
- Thoroughly scrape all food scraps, oil and fat residue from plates, dishes, saucepans etc before washing
- Use toilet paper that readily breaks down and do not flush sanitary napkins, tampons, disposable nappies etc into the septic tank - these items do not break down and will cause the septic tank to block
- Avoid fitting food waste disposal units. Instead compost raw vegetable materials in a compost bin or worm farm
- All vents and inspection openings into the drain and septic tank should be properly sealed to prevent access of mosquitoes
- Your septic tank should be pumped out every five years. If you are connected to STEDS Council's contractor will advise you when this free service is next due. In the case of some multiple units and commercial situations more frequent pump outs may be required. If your septic tank is not connected to Council's STEDS you should organise regular pump outs through a suitably licensed contractor

Odour problems: Common causes and solutions

It is normal for septic tank systems to give off some odours. Whether these odours become a nuisance will depend on several factors. Most odours originate from the septic tank and discharge through the head vent. Factors affecting whether odours become a nuisance include:

Vents

- People may or may not notice odours from their septic tank depending on the location of vents on the house and whether they are in a regular 'traffic' area
- Calm weather conditions can emphasise odour problems for a longer period of time
- Verandas, pergolas, high fences etc in the vicinity of the head vent can trap any unpleasant odours, particularly on calm days
- Sometimes odours may come from a neighbour's vent if dwellings are within close proximity
- Odours may be escaping from a septic tank lid or inspection point situated at ground level rather than from a vent

Other

- Heavy water usage (e.g. when clothes washing) may agitate the septic tank contents causing a surge in odours
- constant sour odours may indicate a low pH level in the tank

NB: Unpleasant odours are not a health risk and do not necessarily mean that the septic tank needs pumping out

Solving some of these nasty odour problems

In most cases steps can be taken to stop or reduce odour problems.

- The vertical height of the head vent can be extended by a metre or so to allow odours to discharge at a higher level
- If more than one vent exists on a house an ‘air admittance valve’ can be fitted. These devices allow air into the system but do not allow air to escape. They are available from plumbing suppliers
- Vents of 75mm to 100mm diameter can be reduced to 50mm to reduce the amount of odours being discharged
- Sometimes a ‘sour’ odour may indicate a low pH in the tank. To fix this, 500g of hydrated lime can be flushed into the septic tank 3-4 times a year via the toilet pan, which will raise the pH of the septic tank contents.
- Commercial products which balance the microbial activity in the tank and reduce odours are available
- Ensure all inspection points and septic tank lids are adequately sealed to prevent odours from escaping
- If odours are noticed inside the house it is most likely due to a loss of the water seal in the toilet or floor traps. Flushing the toilet or running water into a basin will replace the seal, ceasing the odours. Unfortunately there is no simple solution to prevent the loss of the water seal in toilets and floor traps.

What to do if your septic tank system is blocked

- The most common reason for a blockage is the collection of material at the inlet point of the tank. In older tanks there is a cleaning point at the inlet of the tank. More recently made tanks have an inspection point over the inlet point. Plunging either of these points will release the built up material and clear the blockage
- If your house has old style earthenware drains there is a higher possibility of blockages due to intrusion of tree roots. Houses with PVC drains are less likely to suffer from this sort of problem. An older septic tank may also become blocked due to root intrusion
- Experience has shown that a septic tank can comfortably survive five years between pump outs. If a blockage occurs in between pump outs it is likely to be a blockage at the inlet point of the tank. Plunging of the inlet point as described above will clear the blockage in most cases

It is not always possible to clear a blockage yourself and so in many cases the assistance of a plumber will be necessary.

Reducing water use

- Fit water saving showerheads to showers and dual flushes to toilets
- Replace top loading washing machines with front loading machines as this will significantly reduce water use

Things you should & should not do!

The following points will help to ensure correct operation of your septic tank system and help extend the life of the system.

- Ensure stormwater, including rainwater tank overflows and surface run off, does not enter the septic tank system
- Relief valves on mains pressure hot water services should be activated every 2-3 months to prevent valve failure and the constant dripping of water into the septic tank system
- Disposal of cooking oils and fats down the drain may cause blockages in the system. Dispose of these by placing them in a sealed container and putting them in the general rubbish bin
- Unused medicines and pharmaceutical products should be correctly disposed of and not allowed to enter the septic tank system
- *Backwash water from swimming pools and spas* must not be discharged into the septic tank. In STEDS areas the discharge is to be connected after the septic tank via a gully trap. Where STEDS is not available, the discharge is to be directed to a below ground agricultural drain or subsurface soakage trench. Contact Council for more details.
- Do not discharge commercial or industrial waste such as paints and petrol products into a septic tank system

Lodging an application

Approval from Council must be gained prior to installing a new septic tank system or altering an existing system. Due to the degree of technical information and plans required for an application it is strongly recommended that property owners consult a qualified person to assist in lodging an application.

The relevant application forms and information on applicable fees are available on the website or by contacting the Mount Barker District Council's Customer Service on 8391 7200.

All plumbing work must be undertaken by a suitably licensed person. For further information about trade licensing requirements contact the Office of Consumer and Business Affairs on 8204 9696.

FOR MORE INFORMATION PLEASE CONTACT COUNCIL'S ENVIRONMENTAL HEALTH DEPARTMENT

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Acknowledgements and References:

"Standard for the Construction, Installation and Operation of Septic Tank Systems in South Australia" South Australian Health Commission, March 1995.