

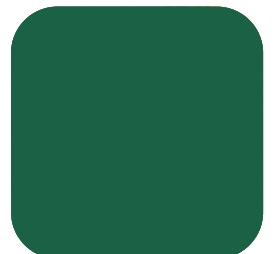


Ri-Industries

Installation and Maintenance Manual

SEPTIC AND HOLDING TANK SYSTEMS

South Australia's leading manufacturer of pre-cast concrete products, including secondary treatment systems, trade waste arrestors, septic tanks and rainwater tanks.





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How Does A Septic Tank Work?

Septic tanks are typically used in unsewered areas and are one of the most effective methods for treating domestic wastewater.

A septic tank is an underground, watertight receptacle constructed of precast concrete and divided into at least two compartments. It receives wastewater from the home and separates solids from liquids. The liquid portion (effluent) flows out of the tank after approximately 24 hours.

A septic tank has three main functions:

1. It serves as a settlement chamber for solids.
2. It allows bacterial breakdown of organic solids to occur through anaerobic digestion.
3. It stores undigested solids, which must be periodically removed, typically every three to five years.

Healthy Septic Tanks

A healthy septic tank has three distinct layers:

1. A layer of fats, called **scum**, which floats to the surface.
2. A clear layer, called **effluent**.
3. A layer of solids, called **sludge** or **bio-solids**, which settles at the bottom.

In most septic systems, treated effluent flows out of the tank through an outlet pipe as new wastewater enters. The scum layer helps prevent odours from escaping and air from entering.

The effluent is discharged from the septic tank into the soil through pipes and trenches, forming an absorption field. In areas where soil is shallow or unsuitable for trenches, specially designed absorption fields may be used, such as raised earth mounds, evapotranspiration beds, or modified earth absorption fields.

Your Responsibilities

As the owner of a septic system, you are responsible for ensuring it is safe and in good working order. A failing septic system is not only a health risk but can also harm the environment.

Your responsibilities include:

- Complying with all council requirements and paying any associated fees for installation, maintenance, and operation.
- Keeping your system well maintained and having it checked regularly.
- Maintaining and protecting the absorption field.
- Ensuring house drains and the tank do not leak.
- Getting the tank pumped (de-sludged) when it becomes too full to process incoming wastewater, typically every three to five years.
- Arranging repairs by a licensed plumber if the system is not functioning properly.

Please note that the installation of a septic tank or any alterations to an existing system must be carried out by a licensed plumbing contractor.



Maintaining Your Septic System

Your septic system must be installed according to SA Health Onsite Wastewater Systems Code regulations. This includes any alterations or changes to an existing system.

Proper planning can help reduce maintenance costs. The following tips will help conserve resources, lower expenses, and limit pollution.

1. Plan landscaping and irrigation carefully

- Only plant grass near the absorption field, as roots from larger plants such as trees and shrubs may damage the trench. Mow the area regularly.
- Choose nutrient-tolerant plants for drain fields and irrigation areas.
- Contact your council's environmental health officer before installing an irrigation system or landscaping around your trench area.

2. Use household detergents and bleaches sensibly

- Where possible, use low-phosphorus or phosphorus-free detergents. Baking soda, vinegar, mild soap solutions, or septic-safe cleaning products are good alternatives. If unsure, check with the product manufacturer.
- Install a lint filter on your washing machine, such as a stocking over the outlet hose, to extend the life of your trench and prevent blockages.

3. Do not dispose of chemicals, oils, fats, or other harmful substances in your system

- Do not put chemicals such as pesticides, paints, or medicines into your septic system, as they can cause malfunctions and pollute groundwater.
- Avoid pouring fats or oils down the sink, as they can solidify, block the system, and build up in the tank. Instead, dispose of small amounts in the compost or rubbish.
- Use a sink strainer to prevent food particles from entering the septic system, as they can slow digestion and increase solid buildup, requiring more frequent pump-outs.
- Instead of caustic soda or drain cleaners, use boiling water or a drain eel to clear blocked pipes.
- Do not flush items that could clog the system, such as tampons, condoms, paper towels, grease, plastics, or cat litter.

4. Remove accumulated sludge from the tank

- Built-up solids can affect system performance, causing household pipes to back up with sewage and clogging subsoil trenches, leading to surface pooling and odours.
- Accumulated solids should be cleaned or pumped out approximately every three to five years.

5. Reduce and monitor water entering the system

- Divert roof water away from the effluent disposal area and ensure roof downpipes do not enter the septic system.
- Regularly check plumbing fixtures for leaks and repair any issues immediately.
- Avoid large water discharges into the system. Operate the dishwasher and washing machine at different times and spread large washing loads over multiple days.
- Install water-saving devices such as low-flow showerheads and dual-flush toilet cisterns.
- Do not leave taps running unnecessarily, such as when brushing teeth.
- If the terrain slopes down to your absorption trench, install a stormwater diversion trench to prevent surface water from saturating the soakage area.

6. Protect your septic tank and disposal area from damage

- Prevent vehicles from driving over the tank and soakage area, as this can cause damage and lead to costly repairs.

7. Prevent mosquito breeding

- Fit all system vents with mosquito-proof mesh and ensure all access openings are properly sealed.

8. Ensure easy access for maintenance

- If your tank is difficult to access, install an approved access shaft to simplify future maintenance.
- Do not build driveways, buildings, or paved areas over the septic system or soakage area, as this can cause damage and obstruct access when the tank needs to be pumped.



Checking Your Septic System

Septic tanks use bacteria to help digest waste, making them a living ecosystem. Excess water, chemicals, or a lack of care can quickly make your septic tank unhealthy and smelly.

If you notice any of the following signs, your septic system may need attention:

- The toilet or household drains are slow or backing up.
- There is a rotten egg smell around the tank.
- Dark green grass is growing on or around the absorption area.
- An increase in weeds downhill from the absorption area, in nearby drainage channels, or alongside a nearby waterway.
- The ground around the tank is soggy, or small pools of water have formed downhill.
- The tank has not been checked in over 12 months.

What to do

The most common cause of septic system issues is not de-sludging the tank regularly. Be sure to have it pumped out every three to five years.

If you are concerned, act quickly to prevent further damage or costly repairs. Contact a plumber or septic system specialist immediately for advice.

There are also steps you can take yourself to prevent septic problems from getting worse. Perform the following checks at least once a year:

1. Check the fluid level near the outlet

- Carefully open the inspection cover and stand clear.
- Use a torch if necessary to check the fluid level near the outlet. The fluid should not be higher than the outlet pipe at the wall of the tank - there should only be floating scum above this level.
- Wear protective gloves and wash your hands afterward.
- Keep any open flames well away from the tank.

2. Make sure the effluent filter is working (if installed)

- If the filter is clogged, rinse it with a hose so the drainage goes back into the septic tank.
- If rinsing does not remove the clog, replace the filter cartridge.
- Wear protective gloves and wash your hands afterward.

3. Check the absorption trenches

- If your system has absorption trenches, inspect the area carefully.
- The area should not be soaked or smelly, and grass growth should be normal.
- Mow grass regularly and remove cuttings.
- If the area is soggy, smelly, or overgrown, too much water may be entering the septic system, or the trenches may be exhausted. Contact a plumber or septic system specialist.

4. Ensure all drains and toilets are working properly

- If drains and toilets are slow to empty, the system may be full, pipes may be blocked, or the trenches may be clogged or exhausted.
- Contact a plumber or septic system specialist.

Safety Precautions

When performing any work on your septic system, keep the following safety measures in mind:

- Septic tanks can be hazardous, so plan carefully and take proper precautions.
- Leave the lid open for a short time before approaching the opening.
- Wear gloves and wash your hands immediately after checking the system.
- Beware of flammable and toxic gases, and ensure the area is well-ventilated.
- Never smoke or use an open flame near a septic tank.
- Have a second person nearby to assist or call for help if needed.
- Seek medical attention if you suffer any injuries while checking the system.

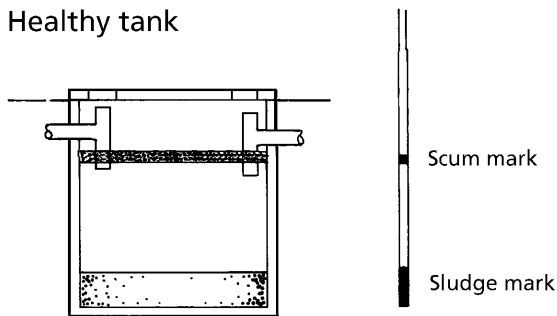
If you have any concerns or doubts, contact a plumber or septic system specialist in your area.



How to Check the Sludge and Scum Depth of Your Tank

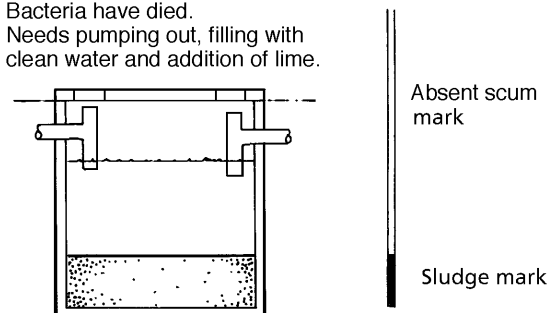
1. Take a metal or plastic stick (such as an electrical conduit) about 4 metres long and wrap it tightly from end to end with a towel or cloth to create a dipstick.
2. Put on rubber gloves, remove the inspection cover (at the inlet end), and insert the dipstick all the way to the bottom of the tank.
3. Withdraw the stick completely and observe the size and position of the scum mark (bottom) and sludge mark (top).
4. Compare the marks on the dipstick with the diagnostic illustration below.

Healthy tank



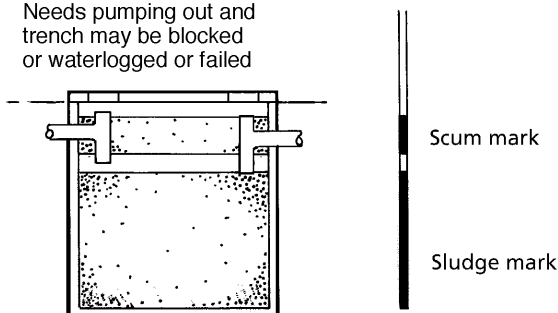
Sick tank

Bacteria have died.
Needs pumping out, filling with clean water and addition of lime.



Sick tank

Needs pumping out and trench may be blocked or waterlogged or failed



Cleaning up

- While still wearing gloves, place the used cloth strip in a waste bag and either burn it or dispose of it in your outdoor rubbish bin.
- Wash the stick thoroughly and leave it in the sunlight, out of reach, for a few days.
- Dispose of the gloves or soak them in a mild bleach solution.
- Wash your hands and arms thoroughly.

Safety reminders

- Always wear gloves.
- Never smoke near the septic system.
- Keep all flames away.

How to Install a Septic System

1. Assemble all tools and equipment for excavation

The tools required include a backhoe/excavator, shovel, laser level, PVC glue, PVC fittings, hand saw, and coarse file.

2. Ensure compliance with local council and SA Health regulations

Before installation, obtain all necessary permits. The approval process may include soil testing to determine the type and size of the drainage field required for your system. Once approved, installation can begin.

3. Plan for gravity-fed flow

A gravity-fed system relies solely on gravity to discharge waste from the tank, eliminating the need for mechanical pumps. Ensure the system is positioned to allow proper downhill flow.

4. Excavate a hole large enough to accommodate the septic tank

The tank should be installed below ground and divided into at least two compartments. It receives wastewater in the inlet area, where solids are separated from liquids. The liquid effluent will flow out of the tank into the soakage area after approximately 24 hours.

5. Place the tank into the hole on top of 75mm of 10–12mm screenings

- Use a spirit level to ensure the tank is facing the correct direction and is level.
- Ensure there are no sharp rocks beneath the tank.
- Backfill around the tank with clean soil, filling evenly on all sides to prevent shifting or rolling.
- If required, install a saddle riser and increments at this stage.
- Start filling the tank with water to prevent it from floating - this occurs when groundwater causes the tank to lift out of the ground.

Installation tips to keep your absorption trench in good working order

- Consider installing a dual trench system to allow alternating use, ensuring trenches and soil areas have time to rest. Dual disposal areas should be switched every 12 months for optimal performance and longevity.
- Conduct proper soil tests to determine the most suitable absorption system. It is also recommended to identify a reserve effluent application area in case a new trench system is needed in the future.
- Build a small earthen wall (about 15 cm high) uphill from the trench area to help divert surface runoff and reduce excess water entering the trench during wet weather.
- Plant small trees or shrubs downhill and away from the trench system to help absorb effluent. Suitable water-loving, shallow-rooted plants include tropical palms, banana palms, poplars, paperbark trees, and wetland plants.

If your trench system fails, contact a local plumber or septic system specialist.

Glossary

Absorption field

A designated area where effluent is released into the soil. Natural soil processes, organisms, and plants in the absorption field help further purify the effluent before it enters the surrounding environment.

Effluent

The liquid discharged from a septic system or sewage treatment facility.

Greywater (also known as sullage)

Wastewater from domestic laundry and other washing areas (and sometimes kitchen sinks), but not from toilets or bidets. Wastewater from toilets or bidets is known as blackwater.

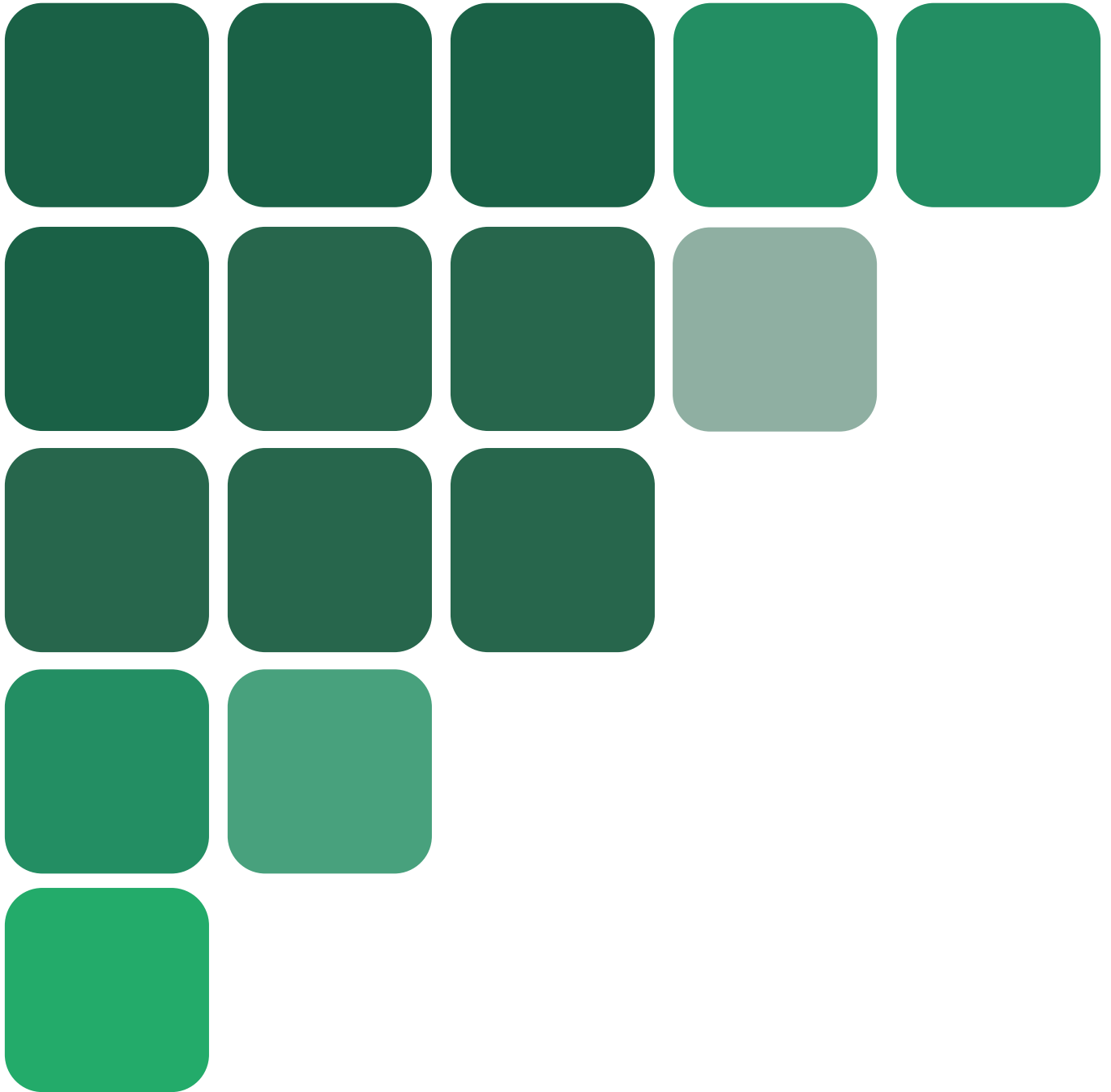
Septic system

A sewage management system that stores, treats, and/or discharges sewage on or near the premises where it was generated.

Sewage

Waste matter from a premises that is typically discharged into a sewer system.





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