



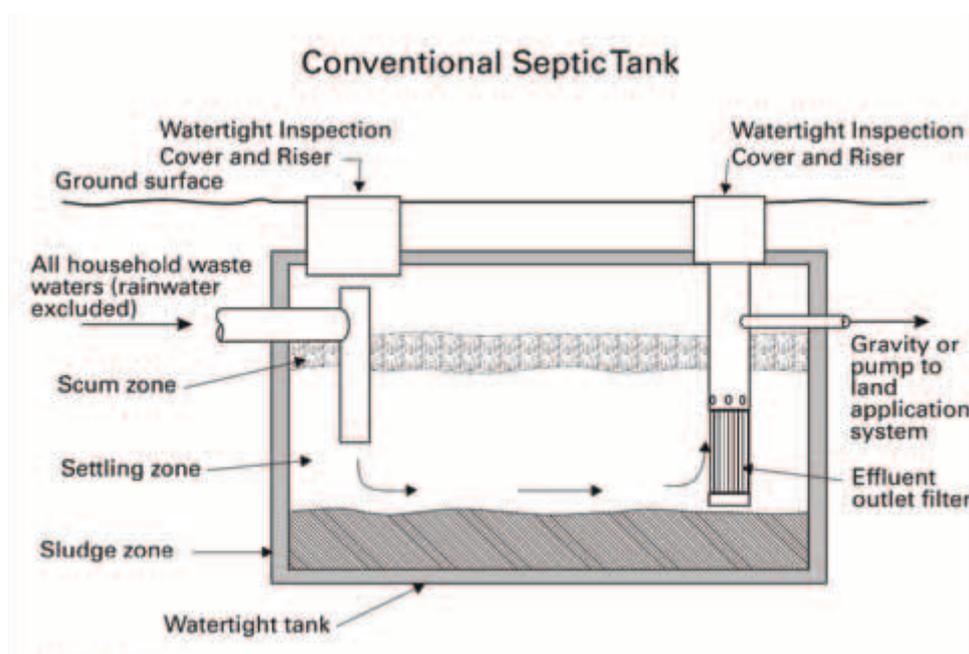
On-site wastewater management systems – septic tanks

Introduction

This fact sheet provides information for homeowners about the function and maintenance of septic tanks.

Function

Septic tanks are the first stage of the on-site wastewater treatment process. They provide primary treatment by allowing for the settlement of solids to the bottom of the tank, and separation of floating scum and grease to the top of the tank. Wastewater flows from the 'clear zone' between these layers through to the wastewater disposal system (e.g. trenches) or to the next part of the treatment process. Bacterial breakdown of the solids occurs within the sludge zone at the bottom of the septic tank.



The septic tank is a passive treatment system that works by allowing the floatation of oil and grease and the settlement of solids from the wastewater. Some septic tanks have internal baffles or are separated into multiple chambers to reduce the velocity of wastewater flows and further encourage settlement of solids.

All new septic tanks in the Auckland region must be fitted with an effluent outlet filter. This helps retain suspended solids within the tank and, in turn, prevents the potential clogging of wastewater disposal system.



Picture: Effluent outlet filters come in various models and forms, but all should ensure that solids which are greater than 3mm in diameter remain within the septic tank.

The Auckland Regional Council (ARC) recommends that septic tanks servicing domestic dwellings have a minimum volume of 4500 litres to allow sufficient wastewater retention time to allow for the settlement of solids and scum. Septic tanks servicing larger dwellings or commercial facilities will need a larger capacity, and may require a specialist design from a wastewater engineer.

Pre-treatment devices, such as grease traps, may be necessary in situations where the wastewater is likely to have a high fat or grease component, such as from restaurants and cafes or other types of commercial kitchens (TP58 2004)¹.

■ Maintenance

Septic tanks will slowly accumulate solids over time and will eventually need to be pumped out. The pump-out frequency depends on the facility that the tank is servicing and the solids load into the tank. For example, a septic tank servicing a restaurant is likely to require more frequent pumping compared to a septic tank servicing an intermittently used holiday home. However, city or district council bylaws commonly require that septic tanks are pumped out at a prescribed frequency.

Septic tanks should always be pumped out by a suitably qualified maintenance contractor. Contractors should pump all sludge from the bottom of the tank and dispose of it at an appropriate treatment facility.

The ARC requires that all wastewater treatment systems be subject to a formal maintenance agreement, with servicing generally occurring on a six-monthly basis. As part of maintenance servicing, the contractor should inspect septic tank effluent outlet filters, which should be cleaned to prevent clogging. Filters require cleaning on a one to six-monthly basis, depending on type and wastewater characteristics.

Be sure to wash your hands thoroughly after working on or near your septic tank.

¹ Auckland Regional Council Technical Publication No. 58: "On-Site Wastewater Systems: Design and Management Manual", August 2004, (TP58) 3rd Edition, by A W Ormiston and R E Floyd.

Septic tanks should be watertight, and must also be fitted with childproof vents and lids. Caution should be used when opening a septic tank as a build up of toxic gases can occur inside. Never enter a septic tank.

Remember

A poorly maintained septic tank can eventually fail, leading to blockages and overflows. Overflows will consist of wastewater that has had little or no treatment, posing a significant health risk. It may also adversely affect the quality of ground water, streams, rivers and coastal ecosystems.

The ARC is responsible for protecting the water quality of surface water and groundwater resources and will take action using its powers under the Resource Management Act (1991) (RMA 1991) to prevent pollution.

Septic tanks do's and don'ts

Below is a table of how to best operate your septic tank and things to avoid.



Picture: Septic tanks should be installed level with the ground surface and should have watertight lids and vents. This septic tank has over flowed, indicating that it may be blocked and needs to be pumped out immediately.

	Do	Don't
<p>Minimise Water Use Surges of wastewater should be avoided as they can stir up settled solids within the septic tank, reduce the quality of treated wastewater flowing to the disposal field and lead to the overloading of the disposal field – which can result in wastewater breakout at the ground surface and increased potential for adverse health and environmental effects.</p>	<ul style="list-style-type: none"> • Install water savings fixtures • Use showers instead of baths • Spread laundry activities across the whole week • Fix any leaking taps/running toilets immediately 	<ul style="list-style-type: none"> • Install high wastewater production fixtures such as garbage grinders, spa baths and multi-head showers • Allow for the inflow of roof water or stormwater into gully traps.
<p>Use bio-degradable soaps and cleaners Some soaps and cleaners contain harsh chemicals which can kill the bacteria within the septic tank, greatly impairing treatment quality.</p>	<ul style="list-style-type: none"> • Minimise use of strong toilet cleaners and bleach • Use phosphate free/ low -phosphorus based laundry detergents • Use liquid based organic washing liquids in preference to sodium based washing powder 	<ul style="list-style-type: none"> • Pour toxic/strong chemicals down any drains e.g. paint, oil, grease, pesticides and bleach • Tip chlorine or disinfectant products into wastewater system • Discard pharmaceuticals down sink or toilet • Use washing powder concentrates which can cause failure of septic tank biological processes

	Do	Don't
<p>Reduce Fats/Grease Inputs Excess fats and grease in the septic tank can lead to filter blockages or impairment of the disposal field function.</p>	<ul style="list-style-type: none"> Scrape all plates and dishes to remove as much fat and grease as possible. 	<ul style="list-style-type: none"> Discharge oils/fats down the kitchen sink
<p>Avoid discharging unnecessary solids to the septic tank The addition of unnecessary solids to the septic tank will result in the faster build up of sludge levels and the need for more frequent pump out. If not pumped out frequently enough the septic tank may overflow or block.</p>	<ul style="list-style-type: none"> Regularly check effluent outlet filter and septic tank scum and sludge levels Have your septic tank pumped out every three to five years Compost any food scraps for use on the garden 	<ul style="list-style-type: none"> Flush any products down the toilet except toilet paper Put coffee grinds down the sink –they add to solids levels and may affect the bacterial colonies living in the septic tank Install a garbage grinder or put food scraps down the kitchen sink
<p>Keep the septic tank and disposal field well maintained Maintenance is a crucial factor in ensuring the efficient on-going function of your septic tank and disposal fields.</p>	<ul style="list-style-type: none"> Ensure the system installer has fully explained and demonstrated all the maintenance requirements of the septic tank and disposal field Enter formal maintenance contract with a wastewater maintenance contractor which includes six- monthly services. 	<ul style="list-style-type: none"> Allow the system to become run down Ignore any potential indicators of performance problems such as odour, overflow and wet patches on the disposal field. By contacting your maintenance contractor early you might avoid more costly repairs or avoid causing adverse effect to the environment.

■ For more information

The ARC has a range of fact sheets about on-site waste management. Copies are available online at www.arc.govt.nz or upon request. Topics include:

- A Guide for Homeowners
- Treatment and Disposal Systems – Maintenance and Trouble Shooting
- Post Construction Information Requirements
- Consent Compliance

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