

ON-SITE WASTEWATER SYSTEMS

Maintenance Guidelines For Homeowners



PROTECTING YOUR HEALTH, YOUR ENVIRONMENT, YOUR INVESTMENT

PRODUCED BY: SWANS-SIG
The Small Wastewater And Natural Systems Special Interest Group of Water
New Zealand

Contact Details:	SWANS-SIG Water NZ PO Box 1316 WELLINGTON 6140	Telephone: Fax:	64-4-472 8925 64-4-472 8926
		Web-site:	www.waternz.org.nz/swans.html

WHY MAINTENANCE OF YOUR ON-SITE WASTEWATER SYSTEM IS IMPORTANT

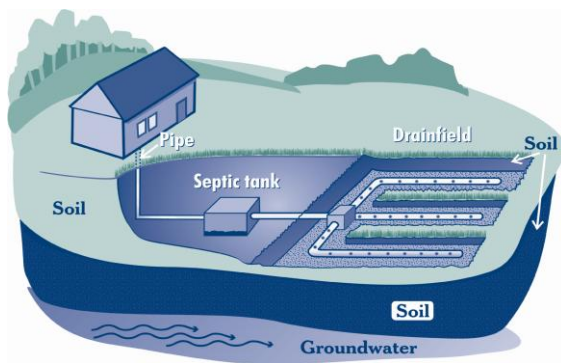
Whether you have a new “high-tech” treatment unit and drip irrigation system or an older “low-tech” septic tank and soakage trench system, regular attention to system inspection and maintenance is important. Effective regular maintenance of the wastewater servicing system on your property is essential for:

- (a) protecting family health by ensuring a high level of sanitary performance;
- (b) maintaining environmental values both within and beyond your property
- (c) protecting the investment in your wastewater system; and
- (d) enhancing amenity values in your neighbourhood through contributing to a high level of environmental performance for local on-site wastewater systems.

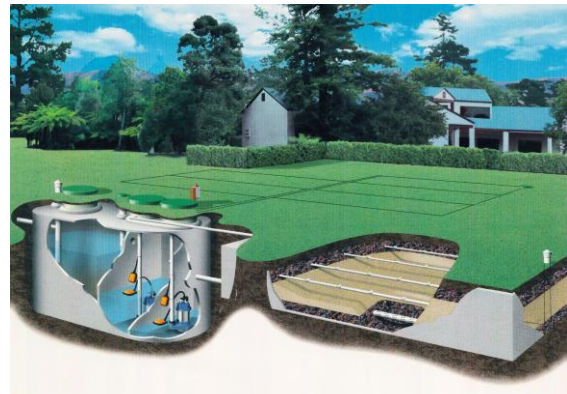
WHAT TYPE OF SYSTEM IS INSTALLED ON YOUR PROPERTY?

You are likely to have one of four types of system on your property:

- an old unknown system about which you have no information;
- an older style septic tank and soakage trench or soak hole system;
- a new modern septic tank and land application system (such as dosed trenches, or shallow planted evapo-transpiration beds, or a mound, or a low pressure dosed irrigation area);
- a new advanced treatment unit (such as an aerobic treatment plant, sand filter, or packed bed reactor) plus drip irrigation land application system.



Older style septic tank and soakage trench system



Modern septic tank, sand filter and drip irrigation field

Before you can attend to the maintenance requirements for your system you will have to establish the system type and capacity. This will require a detailed site inspection and/or a check of building records held by council. You may be able to do some of this yourself, but if a site investigation is needed, it is best to engage a drainage contractor or on-site wastewater servicing professional to investigate as follows:

- (a) For an older unknown system
 - Carry out a field inspection to locate and identify the treatment unit and soakage field area.
 - Excavate or probe as appropriate to identify system components, their size and condition.
 - Prepare a loading certificate based on an assessment of system capacity and its performance potential.
 - Identify a suitable reserve area for extending the system if need be.

- | | |
|---|--|
| (b) For an older style septic tank and soakage trench or soak hole system | <ul style="list-style-type: none"> • If necessary, carry out a field inspection to locate the septic tank and soakage field area. • Check the maintenance record for the tank, and/or pumpout and inspect tank condition. • Evaluate the capacity and current performance of the soakage system. • Prepare a loading certificate based on an assessment of system capacity and its performance potential. • Identify a suitable reserve area for extending the system if need be. |
| (c) For a new modern septic tank and land application system | <ul style="list-style-type: none"> • Check council building consent records. • Check designer/installer reports and as-built records. • Obtain the designer's loading certificate (see box below). • Check availability of operation and maintenance instructions as provided by the designer. • Confirm the availability of a suitable reserve area for extending the system if need be. |
| (d) For a new advanced treatment unit and land application system | <ul style="list-style-type: none"> • Check council building consent records. • Check designer/installer reports and as-built records. • Obtain the designer's loading certificate. • Check availability of operation and maintenance instructions as provided by the designer. • Check if a maintenance contract is in place, and if not investigate options for and commission such a contract. • Ensure the maintenance contract is renewed annually. |



Checking scum and sludge levels in a septic tank



Servicing an advanced wastewater treatment unit

Whatever system is installed on your property, it is important that you understand the capabilities of the system. These are best identified and summarised in the preparation of a loading certificate. The loading certificate will enable you to understand the limitations or constraints of your system; however, the most important thing is to know your system type so that the right sort and frequency of maintenance can be carried out. This can simply be done through an inspection by a wastewater servicing specialist who will prepare the loading certificate.

LOADING CERTIFICATE

This should set out the following information:

- (a) System type (obtained from the as-built details provided by the designer/installer);
- (b) System capacity (number of persons and daily flow volume);
- (c) Summary of design criteria;
- (d) The location of and use of the 'reserve area';
- (e) Use of water efficient fittings, fixtures and appliances;
- (f) Allowable variation from design flows (peak loading events);
- (g) Consequences of changes in loading (due to varying wastewater characteristics);
- (h) Consequences of overloading the system;
- (i) Consequences of underloading the system;
- (j) Consequences of lack of operation, maintenance and monitoring attention; and
- (k) Any other relevant considerations related to use of the system.

It is also essential that if you have an advanced treatment and land application system subject to a maintenance contract, this contract is renewed annually.

DO YOU HAVE A SET OF USER GUIDELINES?

Your Regional, City or District Council is likely to have available a set of user guidelines for owner/occupiers of dwellings serviced by on-site wastewater systems. Such guidelines may be based on the provisions of the joint Australia New Zealand Standard AS/NZS 1547:2012 "On-site Domestic Wastewater Management", and will typically set out 'dos' and 'don'ts' related to household activities which generate wastewater flows (see box below).

USER ADVICE for a PROPERTY OWNER/OCCUPIER (from AS/NZS 1547:2012)

For the on-site system to work well, there are some good habits to encourage and some bad habits to avoid:

- (a) To reduce sludge building up in the tank:
 - (i) Scrape all dishes to remove fats, grease, and so on before washing
 - (ii) Keep all possible solids out of the system
 - (iii) Don't use a food waste disposal unit unless the wastewater system has been specifically designed to carry the extra load, and
 - (iv) Don't put sanitary napkins and other hygiene products into the system;
- (b) To keep the bacteria working in the tank and to maintain soil condition in the land application area:
 - (i) Use biodegradable soaps
 - (ii) Use a low-phosphorus detergent (less than 1 gram per wash – very good; "no phosphorus" labelled product – best)
 - (iii) Use a low-sodium detergent in erosive or clayey soil areas (less than 20 grams per wash – OK; less than 10 grams per wash – best)
 - (iv) Use detergents in the recommended quantities
 - (v) Don't use powerful bleaches, whiteners, nappy soakers, spot removers and disinfectants
 - (vi) Don't put chemicals or paint down the drain, and
 - (vii) Check potential for effects from antibiotic and other medication use.
- (c) Conservation of water will reduce the volume of effluent requiring disposal to the land application area, make it last longer and improve its performance. Conservation measures include:
 - (i) Installation of water conservation fittings
 - (ii) Taking showers instead of baths
 - (iii) Washing clothes only when there is a full load, and
 - (iv) Using the dishwasher only when there is a full load;
- (d) Avoid overloading the system by spacing out water use as evenly as possible. For example:
 - (i) Do not do all the washing on one day, and
 - (ii) Do not run the washing machine and dishwasher at the same time.

MAINTENANCE INSPECTION REQUIREMENTS

Once you know the details and operating capacity of your on-site wastewater system then you can check out the maintenance inspection and servicing requirements from the table below. Note that your system will include a distribution device to convey the treated effluent to each element of your land application system so as to provide uniform use of the soil in further treating the wastewater flow.

Treatment System Type	Inspection and Maintenance Requirements
Older style septic tank	<ul style="list-style-type: none"> • Pumpout at 3-year intervals • Alternatively, check scum and sludge levels and pumpout on demand (around half full of scum and sludge)
Modern septic tank with effluent outlet filter	<ul style="list-style-type: none"> • Check scum and sludge levels (2-yearly) and pumpout on demand (around 6 to 8 years) • Check and hose down effluent outlet filter during pumpout
Aerobic treatment unit (aerated system)	<ul style="list-style-type: none"> • Periodic effluent quality “sniff and look” inspection (6-months) • Check power consumption (3-months) • Carryout equipment service check at 6-months (as specified in the supplier/installer maintenance contract)
Septic tank/sand filter system	<ul style="list-style-type: none"> • Periodic effluent quality “sniff and look” inspection (6-months) • Confirm sand is draining satisfactorily and not clogging (12-months) • Replace upper sand layer if draining slowly (as required) • Carryout equipment service check at 6-months (as specified in the supplier/installer maintenance contract)
Packed bed reactor unit	<ul style="list-style-type: none"> • Periodic effluent quality “sniff and look” inspection (6-months) • Carryout equipment service check at 6-months (as specified in the supplier/installer maintenance contract)

Distribution System	Inspection and Maintenance Requirements
Gravity distribution box	<ul style="list-style-type: none"> • Check distribution evenly balanced to all outlets (12-months) • Remove any accumulated solids in base of box (12-months)
Flood load gravity dosing system	<ul style="list-style-type: none"> • Check distribution is evenly balanced to all outlets (12-months) • Remove any accumulated solids in base of dose chamber (12-months)
Siphon dosing system	<ul style="list-style-type: none"> • Check siphon operation (ensure system not dribbling following ‘shut-off’) (6-months) • Remove any accumulated solids in base of siphon chamber (6-months)
Pump chamber and manifold distribution to dosing lines	<ul style="list-style-type: none"> • Check pump start and stop level controllers (clean off grease and solids) (6-months) • Check pump power use (6-months) • Carryout equipment service check at 6-months (as specified in the supplier/installer maintenance contract)
Pump chamber and automatic sequencing valve distribution to dosing lines	<ul style="list-style-type: none"> • Check pump start and stop level controllers (clean off grease and solids) (6-months) • Check pump power use (6-months) • Check sequencing valve operation (6-months) • Carryout equipment service check at 6-months (as specified in the supplier/installer maintenance contract)

Land Application System Type	Inspection and Maintenance Requirements
Soakage trenches (or beds)	<ul style="list-style-type: none"> • Inspect soakage field area for signs of wetness, surface seepage and/or excess grass growth (6-months) • Check level of standing effluent in trenches using vent pipes for liquid depth observation (6-months) • Add extra trenches in reserve area if overload (wetness or flooded system) becomes apparent
ETS (evapo-transpiration seepage) beds (or trenches)	<ul style="list-style-type: none"> • Inspect space between ETS beds/trenches for signs of wetness, surface seepage and/or excess grass growth (12-months) • Trim grass and/or ET plantings to avoid rank overgrowth • Check level of standing effluent in beds/trenches using vent pipes for liquid depth observation (12-months) • Add extra beds/trenches in reserve area if overload (wetness or flooded system) becomes apparent
Mounds (for septic tank effluent)	<ul style="list-style-type: none"> • Inspect edges (toe) of mound for signs of wetness, surface seepage and/or excess grass growth (6-months) • Install and plant a 1 metre wide by 400mm deep topsoil layer around mound perimeter if toe seepage becomes apparent • Install extra mound in reserve area if toe seepage not managed by supplementary soil and ET plantings.
LPED (low pressure effluent distribution) irrigation field	<ul style="list-style-type: none"> • Inspect soakage field area for signs of wetness, surface seepage and/or excess grass growth (6-months) • Trim grass and/or ET plantings to avoid rank overgrowth • Check level of standing effluent in LPED trenches using vent pipes (6-months) • Add extra LPED trenches in reserve area if overload (wetness or flooded system) becomes apparent
Drip irrigation field	<ul style="list-style-type: none"> • Inspect irrigation field area for signs of wetness, surface seepage and/or excess grass growth (6-months) • Trim grass and/or ET plantings to avoid rank overgrowth • Check air release valves are operating effectively (6-months) • Operate irrigation line flush valves (6-months) • Add extra drip lines in reserve area if overload (wetness or flooded system) becomes apparent • Carryout service check at 6-months (as specified in the supplier/installer maintenance contract)
<p>NOTE: Where your wastewater system is subject to a resource consent from your Regional Council, you should note and follow the maintenance conditions imposed by the consent.</p>	

DIY MAINTENANCE TASKS

As homeowner (or occupier) there are several inspection and maintenance tasks which you can carry out yourself. However, you must remember at all times that you are dealing with unsanitary waste material which may potentially be infectious, and hence in handling equipment and effluent samples you must take adequate precautions to prevent contamination of yourself and your equipment.

The following simple tasks involve a commonsense approach to on-site wastewater system homeowner/occupier DIY inspection and maintenance requirements (see tables above).

- Check septic tank scum and sludge levels (organise pumpout if required).
- Check drainage lines for evidence of 'backup' (slow draining).
- If backup due to outlet filter blockage, lift and hose down filter into septic tank.
- Check distribution box for even distribution of flow to trenches.

- Inspect land application system (trenches, beds, mounds, LPED and drip irrigation fields) for signs of wetness, seepage, excess grass growth.
- Carry out “sniff and look” assessment of advanced treatment plant effluent quality (if a glass container full of effluent does not appear cloudy, and smells only slightly musty and not offensive, effluent quality is good).
- Check treatment unit and pumping system power consumption (if increases over time, need system check by servicing personnel).
- Check operation of irrigation line flush valves.
- If need be, call in drainage contractor, servicing specialist or maintenance contract service provider to undertake servicing and/or remedial works.



Healthy worm activity in septic tank scum layer



Septic tank pumpout



Backup to gully trap from clogged tank



Lifting and hosing down effluent outlet filter



Distribution box



Automatic sequencing valve

SERVICING AGENT MAINTENANCE TASKS

If you as owner/occupier wish to have no role in maintaining your system, this is fine, but you will need to engage a drainage contractor, servicing specialist or maintenance contract service provider to undertake servicing and/or remedial works.

Even if you do carry out DIY maintenance tasks as outlined above engaging servicing personnel will be essential to carrying out mechanical and electrical servicing as well as specialist servicing tasks such as effluent quality sampling and testing. In addition, servicing specialists are best fitted to undertake tasks such as:

- Checking scum and sludge levels in tanks.
- Lifting and hosing down effluent outlet filters.
- Checking distribution effectiveness from distribution boxes and automatic sequencing valves.
- Checking power consumption and adjusting treatment plant controls and pumping cycles to achieve better efficiency.
- Checking distribution effectiveness and flushing drip irrigation lines.
- Undertaking remedial works and system extensions.

MAINTENANCE CERTIFICATE

Where a specialist servicing check is undertaken, including servicing under a maintenance contract, you should be provided with a maintenance certificate (see box below). This certificate should be filed away and provided as required to your District or Regional Council as proof of maintenance. This requirement may be a consent condition.

A maintenance certificate shall include (from AS/NZS 1547:2012)

(a) Certification by a qualified and experienced person that the on-site system is operating and performing effectively;

(b) A note of any specific operation and maintenance attention which is due;

(c) Identification of any operation and maintenance problems, their likely cause and recommended remedial action;

(d) Any evidence of system capacity being exceeded or likely to be exceeded (for example, by extra residents, or by holiday period occupiers);

(e) Results of effluent quality testing where advanced or disinfection treatment is being used;

(f) Note of actions taken and results achieved following recommendations for remedial work after the previous routine inspection;

(g) A recommendation on when next desludge/pumpout should be undertaken; and

(h) Any other relevant matters.

CONTACT DETAILS FOR ADVICE AND SERVICE

To find a wastewater servicing specialist, contact your local council, septic tank pumpout contractor, treatment plant supplier or plumbing/drainlaying company. Enter contact details/phone numbers in the boxes below of those persons whom you may need to call on at some stage to gain advice on issues related to operation, inspection and maintenance of your on-site wastewater system

System Designer

Council On-site Wastewater Officer

Maintenance Contract Servicing Agent

Local Drainage Contractor

Acknowledgements – Illustrations:

- | | |
|------------------------------------|---------------------------------|
| • Marlborough District Council | • On-Site NewZ |
| • US EPA Educational Materials | • North Dakota State University |
| • Reflection Treatment Systems Ltd | • InspectAPedia |
| • Ministry for the Environment | • Southeast Septic, USA |
| • Super-Treat NZ Ltd | • Dola Transport, USA |