SEPTIC TANK
Options and Alternatives

Your Guide to Conventional
Natural and Eco-friendly
Methods and Technologies

Féidhlim Harty

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About the Author

Féidhlim Harty is director of FH Wetland Systems Ltd. environmental consultancy, based in Ennis, Co. Clare. FH Wetland Systems specialises in designing and planting constructed wetlands, reed beds, zero discharge willow facilities and other natural sewage treatment systems. He also designs and advises on storm water wetland design, wetland habitat creation and consultancy and other areas of environmental protection and enhancement.

He actively promotes environmentally sustainable solutions in the area of wastewater management and has contributed to the EPA *Code of Practice* document, particularly the constructed wetland design sizing and maintenance elements. He also delivers workshops and seminars on natural wastewater treatment systems for engineers, architects, local authorities and site assessors, as well as the general public.

Passionate about genuine environmental sustainability, he has also written *Get Rid of Your Bin – and Save Money*, a practical guide to household waste minimisation, which was published in 2009 by Mercier Press. He runs a community orchard start-up initiative called Garden of Eden Projects Ireland, which provides assistance to local groups wanting to create their own community orchards throughout Ireland.

See www.wetlandsystems.ie for details.

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There are a great many people without whom this book would never have been written. Although that must be the most common opening line ever, it is always true. Above all others, it is my parents Michael and Natasha to whom I owe the most in this regard. They nurtured my fascination with the natural world, an awareness of the environmental challenges we face, and an unquenchable desire to meet those challenges to the best of my ability. My mother, along with other residents in the East Cork Harbour area and constructed wetland designer and engineer Ciaran Costello, organised the 1993 Constructed Wetland Conference in Midleton to propose an affordable, sustainable answer to the on-going pollution problems there. In many ways, small and large, my father helped me to get my fledgling business off the ground and gave me the help, practical skills and confidence to embark on those first early planting jobs. My thanks to them both, and to Ciaran and the early constructed wetland pioneers.

To all at IT Sligo who fuelled my knowledge of natural water systems, wastewater treatment processes, and what happens when you mix the two together, thank you. Over the years I think I have probably used every single skill that was on offer as part of the Environmental Science and Technology degree course.

Over the past 20 years I have had many questions from clients, engineers, architects and local authorities about wetlands, reed beds, willows and dry toilet options. Without these questions I would never have seen the need for this book. I'm also grateful to all those in the EPA and Local Authorities who have responded to my emails and queries about the *Code of Practice* and the National Septic Tank Inspection guidelines. Also to all my colleagues in the industry, for letting me bounce ideas back and forth, particularly Pamela Bartley and Ollan Herr, thank you.

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In the best tradition of family businesses, I roped in my daughters to help. Kate drafted the options charts that you see in each chapter, and Susie helped with the proof-reading in the final stages of the drafting process. I'm grateful to have you both in my life. Finally, I am grateful to my wife for tolerating this temporary madness and putting up with me while I spent far too much of my time writing when I should have been getting some real work done.

So, Is this Book for Me?

Having looked at the title I pick up this book. I have a septic tank problem, or think I have.

I Want to Know

(a) Whether I have a problem or not;
(b) It's ok, I can deal with it; and
(c) How to select the right choices in moving forward.

This book is a straightforward ABC to get from where you are to where you want to be.

What's in this Book?

Step A:	How can I tell if I need a new system?
	Can I repair or improve my existing system?
	Is there a treatment option that can work for me?
Step B:	What are my site characteristics?
	What are my budget and personal preferences?
Step C:	Different options explained.
	Combining systems effectively.
	From decision to implementation.

An Unofficial Guide

This guide to sewage treatment options is not a Local Authority or EPA approved pathway towards planning permission or septic tank compliance. If you want to tick the boxes then your reference of choice should be the EPA *Code of Practice*, Wastewater Treatment and Disposal Systems Serving Single Houses (p.e.≤10) and the new EPA septic tank inspection information online.

This book refers regularly to the *Code of Practice* and septic tank inspection process, and where possible I have tried to follow the guidance in the *Code*. However the *Code of Practice* is limited to soils of good percolation and sufficient depth and to relatively conventional treatment options. Thus if you want to explore a greater selection of sustainable solutions or if you have soil that is unsuitable for percolation, then this unofficial guide may be a useful map in relatively new territory.

Bias Towards Natural and Sustainable Solutions

Let's face it, we all have biases. Mine is towards treatment systems that are natural, zero energy, recycle biomass or nutrients, and/or produce a firewood crop at the end of the year. So that's what this book gives more attention to. However, to give you a good selection of your options, all of the treatment system methodologies that I'm aware of at the time of writing are also included.

Introduction

After many years of being a relatively unmentionable topic, septic tanks are suddenly making the news. The dawning realisation that many of our septic tanks are actually causing water pollution seems to have been slow in coming. Now that the septic tank inspection process is being rolled out, the outcry is not so much that we should have taken better care of our drinking water supplies, of our fishing streams and our rivers and lakes, but that it might hit our pockets as we invest in repairing the damage of the past.

That said, many people have also been proactive in dealing with their wastewater; and many more are taking the septic tank inspection process as an opportunity to prioritise decisions that may have been long-fingered for want of knowing how best to tackle them. This book is written to chart a clear route forward, particularly with sustainable solutions in mind.

When I started designing and planting constructed wetland systems in the mid 1990s, septic tanks and sewage weren't exactly *de rigueur*. Although they still aren't exactly the pick-up line of the decade, they are certainly closer to the centre of conversations than they were.

Constructed wetland systems were my first love; effective wastewater treatment using no electricity, with low construction cost, eminently robust to Irish maintenance habits and providing a natural habitat to boot – what could be better? In the early stage of establishing a wastewater treatment and environmental consultancy business I viewed constructed wetlands as the one stop shop for solving all of our water pollution problems. Rivers and streams flowed fresh and clear in my daydreams, and to be fair, I have pursued the same dream even as I have divided my loyalty between other systems that have come along.

Gravel reed beds, with their more engineered look and need for additional maintenance, nonetheless offer certain advantages over constructed wetlands in certain situations. Mechanical treatment systems likewise, have certain clear advantages on some sites, despite their greater electricity usage and maintenance requirements. Most recently, zero discharge willow facilities have become an option in Ireland, offering a carbon-negative, zero discharge solution for people who want to build where there is poor percolation and no surface waters to discharge to; or those who just want the firewood and the peace of mind of having no outlet pipe anywhere.

This book should provide you with a clear overview of the different types of treatment options available and help you to choose the one most suited to your site and your needs. My bias is for natural, sustainable systems, and this is reflected in the emphasis I have placed on these systems in the book, but at the end of the day, your final choices will need to reflect your own values, priorities and site requirements, so despite my bias, this book should help to guide you towards the right system for your own particular needs.

Water Pollution in Brief

Water pollution of groundwater or surface water, such as streams and rivers, can occur whenever anything enters the water that causes a deterioration in water quality. This can

include soil, silt, petrol and diesel spillages, milk, septic tank effluent, as well as rainfall runoff from farmyards, industrial yards, roads and pavements, or any number of other potential sources.

In terms of septic tank effluent, the most common causes of water pollution are direct discharges to drains and streams beside the property or unfiltered discharges into the ground via inadequate or absent percolation systems.

The main pollutants in septic tank effluent are BOD, suspended solids, ammonia, nitrates, phosphates, bacteria and other pathogens.

- BOD is short for Biochemical Oxygen Demand – and is a measure of the food value for microorganisms in the effluent. When this food is made available to bacteria, their rapid growth consumes oxygen dissolved in the water and can lead to suffocation of fish and other aquatic life, as well as a general deterioration of water quality.
- The suspended solids in effluent are literally the cloudy bits; held in suspension due to their small size. Suspended solids are often measured as an indicator of the pollution levels in effluent and are a problem in their own right in that high quantities can cause cloudiness in streams and rivers and lead to clogging of spawning beds when they settle out.
- Ammonia (NH_3) and Nitrates (NO_3) are both compounds of nitrogen. Ammonia can be toxic to fish in relatively low concentrations. The presence of ammonia can indicate recent sewage pollution since it is the first step in the nitrogen cycle after organic nitrogen in the form of proteins. Nitrates, along with phosphates, are a ready supply of nutrients for algae, which can grow in such profusion that they clog waterways and in lower quantities cause eutrophication, an over-enrichment of rivers lakes and streams, reducing habitat value and water quality.
- Phosphate (PO_4) is the phosphorus compound that is easily taken up by plants, and hence, algae. Along with nitrates they are a contributor to overall water quality deterioration in the form of eutrophication.
- Bacteria and other pathogens from sewage are many and varied. The most commonly measured bacteria in the context of sewage treatment are faecal coliforms, *E. coli* being the most familiar. Their presence can indicate sewage or agricultural pollution. The main problem with bacteria in streams and groundwater is the potential for contamination of wells and drinking water supplies, where they can cause stomach upsets and in extreme cases, death. Other micro-organisms include some of the less pleasant fauna inhabiting the human gut; disease causing or otherwise, as well as those involved in the process of sewage treatment, that feeding frenzy that is the natural environment's response to any concentration of food. Some notable pathogens of sewage include salmonella, coliforms, parasitic worms, cryptosporidium and enteric viruses.

When septic tank effluent flows untreated into rivers, lakes or streams, it can cause contamination of drinking water supplies, nutrient enrichment and eutrophication and general overall water quality degradation and habitat damage.

Untreated discharges to groundwater also risks contaminating drinking water supplies. Also, groundwater will inevitably end up somewhere else in the course of time, as a spring or source of supply for rivers and lakes. While groundwater contamination is less easily identifiable, it can last for a long time beneath the ground and cause problems on into the future.

Why a Septic Tank Inspection Process?

The combination of a septic tank and a percolation area can be surprisingly effective at dealing with sewage IF the tank is installed in such a way as to provide adequate settlement and IF the percolation area has a sufficient surface area, an even distribution of effluent and a sufficiently deep layer of unsaturated subsoil of suitable percolation characteristics; i.e. percolation that is not too rapid and not too sluggish. If any element of the above is missing or inadequate, the whole system can fail and either clogs up visibly, causing problems for surface water, or can bypass the treatment process causing problems for groundwater.

The septic tank inspection process is an attempt to deal retrospectively with the fact that much of the soil in the country is simply not suitable for treatment by percolation and that despite guidelines and regulations to the contrary, a great many systems have not been installed correctly, even in the very recent past.

The septic tank inspection process is currently being driven by EU rulings, which endeavour to bring about a greater degree of surface water and groundwater protection within Ireland. However unpalatable the process may be, the philosophy of safeguarding our water resources is a sound one. Interestingly Cavan County Council already had a septic tank inspection process in place, and thus didn't come in for the same criticism under the EU ruling. Now that the national septic tank inspection process has started, we will hopefully see a gradual improvement in our overall environmental performance as problem sites are dealt with and a greater awareness of maintenance develops.

The opening sections in this book provide straightforward guidance on how to carry out your own inspection of your septic tank and to move if necessary towards repair or towards upgrading to a system that will work well for your site and personal preferences.

This won't replace the need for a formal inspection process, or the associated fees, but it will help you to select the system that reflects your own needs rather than just signing up to standard recommendations.

How To Use This Book

This book offers a three-step process to get from where you are to where you want to be:

Step A is an assessment of your current system.
Step B takes stock of your site characteristics and personal preferences.
Step C examines the options available and looks at how to move forward.

Pick and Mix

For any treatment system you will need a number of different components. How you achieve these is up to you. Treat this book as a guide to what's on offer, and pick the systems that will work best for you. The different stages of treatment are:

- Primary (or preliminary) treatment; the solids separation stage – usually the septic tank itself, or a settlement component in a packaged treatment system.
- Secondary treatment; the oxygenation stage for reducing BOD and suspended

solids – usually provided by the percolation area, or by the air blowers in a packaged treatment system.

- Tertiary treatment; an optional extra for nutrient reduction and further 'polishing' of the effluent. This is usually an extended version of the secondary treatment stage for additional nitrogen removal, or the use of additives for phosphate removal. Sterilisation of bacteria is sometimes employed as a tertiary treatment measure where needed.
- Disposal; usually to groundwater from the percolation area, but sometimes to surface water such as a river or stream or even evapotranspiration by willow trees into the air.

There are a lot of options to choose from, many overlapping the categories above. Some systems work in complement to others, while some are mutually exclusive selections. By treating the book as a guide, you can piece together the most appropriate system for dealing with the wastewater from your home and protect your local environment.

Bon journée.

STEP A

Assessing The Current Situation

CHAPTER 1

Initial System Check

1.1 Do I Need a New System?

This section deals with septic tanks; how they work; and how you can get yours to work better if you find that it isn't performing well. If you are building on a Greenfield site then this section won't be relevant, so you can skip ahead to the next part of the book.

In terms of answering the question of whether or not you need a new system, there are a number of initial indicators, which can provide a quick diagnosis. If you answer yes to any of the following, then you most likely need to address some shortcoming in your current system:

1. Is there effluent ponding on your lawn (or neighbour's lawn or field)?
2. Is there an overground flow directly into a field drain, stream or neighbouring property?
3. Do the sewer pipes block regularly, or is the toilet slow to flush away?
4. Do you notice obvious smells around the septic tank?
5. Does your septic tank leak?
6. Is your well, or are neighbouring wells, contaminated?

While this initial list of questions is a good beginning, answering no to each doesn't necessarily guarantee that your system works (nor indeed does answering yes mean that the situation is irreparable). Read on...

While indicators such as the age of the system, the soil type of your site and the underlying rock type all have a bearing on how your system may be performing, a thorough inspection is actually needed to fully assess it's overall health. Conversely if you are connected to a sewer and find that this option suits you well, then you can put down this book now and find something a bit more compelling to do with your time. That said there are links to eco-friendly tips at the end of the book even for people in sewered areas, so if you'd like to reduce your environmental impact, just skip to Appendix 3 now.

(See Appendix 7.1)

1.2 How Can I Tell if My Septic Tank is Working?

There are a number of standard checks that you can carry out to assess the effectiveness of your septic tank and percolation system. For many people, if the toilet flushes and the lawn isn't ponding, then the septic tank is considered fine. However it isn't always that straightforward.

Basically a septic tank should provide adequate settlement for faecal solids, toilet paper and the food bits and sludges from grey water (i.e. the water from sinks, wash hand basins, baths, showers and washing machines). After that, the percolation area should provide adequate filtration and treatment of the liquid from the septic tank through the soil, before reaching the groundwater. If either the septic tank or percolation area aren't functioning properly, then you run the risk of causing pollution, surface ponding or blocking of your system. Clearly none of these are desirable.

Before even stepping out into your garden to look at the septic tank and percolation area, two items on the list should be easy to record:

- Your toilet should flush freely. If it is slow to flush or blocks regularly, then this may indicate a problem with your septic tank or percolation area.
- If your own or neighbouring wells are known to be contaminated with sewage bacteria, then this may indicate an inadequate level of treatment, and hence a failure or inadequacy in your septic tank or percolation area performance.

Moving outdoors, the first check on the system itself is at the percolation area:

- If you don't know where your septic tank or percolation area are located, now is a good time to begin looking. If you happen to get an inspection notice, the Local Authority inspector will need to know exactly where your treatment system is located.
- The ground at and near the percolation area should be free of surface ponding.
- There should be no signs of water pollution in adjacent streams or drains. Water quality in adjacent watercourses can be analysed for chemical and microbiological contamination, but an easy visual inspection will tell a lot. For this, simply disturb the sediment in the bottom of the drain or stream with a shovel and check the colour of the mud. Dark black sediment is an indication of probable pollution by sewage or grey water. Other indicators include obvious signs of faecal material and toilet paper – but if it is that clear then you don't really need to be reading this to know you have a situation that needs attention. If there is a discharge directly into a field drain or a stream this is often indicated by green algal growth, grey 'sewage fungus' or black anaerobic mud (blacker than peaty soil, with a smell of rotten eggs or sewage).
- According to the EPA *Code of Practice*, "the percolation area should be kept free from disturbance from vehicles, heavy animals, sports activities or other activities likely to break the sod on the surface," including the use of garden tools. Note on your inspection sheet whether or not there has been surface damage, and change access or garden use if necessary.
- According to standard guidelines, percolation areas should have a distribution box to split the flow from the septic tank, as well as vent pipes rising from the end of each horizontal percolation pipe. Check that the distribution box is delivering an equal flow to each pipe, and that each vent pipe is present, intact and dry inside.

- The EPA recommendation is that the entire system be checked at least twice a year, so record the inspection date and file for safekeeping.

(See Appendix 7.2)

The next step is to examine the septic tank itself, as follows:

- Note the sludge depth and surface scum thickness. Sludge depth can be checked using the method outlined in the EPA *Code of Practice* (2009) as follows:

  1. *Use a 2m pole and wrap the bottom 1.2m with a white rag*
  2. *Lower the pole to the bottom of the tank and hold there for several minutes to allow the sludge layer to penetrate the rag, and*
  3. *Remove the pole and note the sludge line, which will be darker than the colouration caused by the liquid portion of the tank contents.*

  The dark marking at the base of the pole should indicate that sludge depth is not less than 30cm from the outlet pipe T-piece. Similarly the dark brown scum layer at the tank surface should be at least 10cm above the bottom of the outlet pipe T-piece. If either of these are less than the specified distances then the tank should be desludged to prevent solids entering the percolation area. Even if the sludge and scum are not in immediate danger of being drawn directly into the percolation area, there will be a reduced retention time in the tank caused by reduced liquid volume. This will increase the volume of suspended solids entering the percolation area, leading to premature clogging. If you find that the dark mark is indistinct, then use the physical resistance of the pole to estimate the sludge depth and surface scum depth and record your findings that way.

  The EPA *Code of Practice* recommends annual desludging, along with tank and percolation area inspection by the homeowner every six months. Note however that if the tank is small or the number of people using it is large, then more frequent emptying may be necessary. Conversely where only one or two people are using a large tank, then in practical terms desludging may be much less frequent than every year (see table on page 110). The EPA inspection form used by the Council inspectors checks the septic tank size and population size, so a rigid 1-year maintenance programme may not necessarily be imposed if you have a large tank to population ratio.

  (See Appendix 8.3)

- Note the structural soundness and water-tightness of the tank. The best time to check for structural soundness and sewer water-tightness is when the tank is empty – however never enter a septic tank as the gasses can be extremely hazardous and lead to serious illness or death. Also avoid using electric lighting or other mains appliances to carry out checks, lest these lead to explosion of methane.

  Check the empty tank for obvious signs of cracks or leaks. Listen and look for signs of groundwater seeping in through the walls or flowing in from the inlet or outlet pipes. If there is any water entering the empty tank while nobody is using the appliances in the house, it is possible that groundwater is leaking into the sewer pipe network and causing undue dilution and overall system failure or suboptimal

performance. If your tank water level is below the level of the outlet pipe, this can indicate that the tank is leaking.

- Note the condition of inlet and outlet piping and of the central baffle wall. Pipes should be T-piece fittings, protruding down below the surface scum. Otherwise the scum can become disturbed and drawn through the outlet pipe where it can clog the percolation area. Check that T-piece fittings are firmly in place. A septic tank filter may be present, but is not a necessary prerequisite. If such a filter is in place, this should be removed, washed back into the tank, and replaced during each inspection. Check that the dividing wall between the two septic tank chambers is present and that the baffle is clear of debris.

In summary, if the tank needs desludging, then typically you need to engage a licensed contractor. Keep a certificate of service on file so that you can verify the date of your last desludging date. If there is relatively minor work that needs attention, carry it out as a matter of importance. If the system requires a major overhaul then read on. You may also want to contact a site assessor or environmental consultant for advice on how best to proceed. Means tested grants are also available for tanks that have been registered on time and inspected by the Local Authority and found to be in need of an upgrade.

A record sheet is included in the appendices (see Appendix 4) for recording your six-monthly septic tank system inspections. This is based on the EPA *Code of Practice* recommendations, and may be helpful during a formal septic tank inspection process, but does not replace it. The EPA inspection form used by the Local Authority tank inspectors can be found online, check Appendix 3 for the URL.

1.3 If It Looks OK, Do I Need To Do Anything At All?

If your septic tank is in place, working effectively and ticks all the boxes in Appendix 4 then it is probably working fine and providing suitable environmental protection before discharge.

Usually however, particularly if you have an older system, not all the system components are present or up to scratch. These can include T-pieces, a proper distribution box or vent pipes on the percolation area (or the percolation area itself). In such cases you may not necessarily be causing water pollution, but it is more difficult to verify compliance. In this case a detailed assessment of the site may be helpful in determining whether or not your septic tank may be causing pollution.

Sometimes you may tick all the boxes, but still be causing groundwater or surface water pollution. On sites where the initial percolation estimates were ‘somewhat optimistic’ and where little or no percolation actually occurs, all the component parts may be in place but a direct overflow to an adjacent drain or watercourse may also be present. In cases where you suspect poor percolation in an otherwise new site, look at any adjacent watercourses carefully to see if there are signs of sewage pollution. These are clearly identifiable by a grey scum on plants or on stones in the water or by a dark black sludge on the drain bed, noticeable when you drag a stick or spade across the bed surface. In such cases you will need to reassess your treatment options in light of these new findings. The rest of the book is designed to help you to choose a suitable system.

Where percolation areas have been installed on ground with excessive percolation, the risk of groundwater pollution is high. In this event, hope that your installer did a good job and put in the percolation area correctly to provide adequate filtration prior to reaching the water table. If you have a certificate from your engineer to sign off on the completed percolation area, or photographs of the system during construction, keep these carefully with your inspection records so that they can be used for verification if needed during the Local Authority septic tank inspection process.

If you or your neighbours have contaminated well water or suspect groundwater pollution, you may wish to examine the options available for improving the discharge quality prior to your percolation area.

CHAPTER 2

Making Good – Repairs and Improvements

2.1 If My System Doesn't Work, Can It Be Repaired or Improved?

Where a problem is encountered with any element of the septic tank self-inspection, you may be able to remedy the shortcoming yourself. Note that this does not necessarily constitute compliance with the Local Authority septic tank inspection process, but is designed to guide you towards a well functioning system that protects your local groundwater and surface water. If the list of repair work is too long, or if your site is simply unsuitable for the system you have, then you may need to choose a new system.

2.2 How Do I Go About Repairs and Improvements?

When confronted by septic tank problems, many people just don't know where to start. Some of the more common septic tank and percolation area ailments and a proposed solution to each are outlined below. The list is by no means exhaustive, but is a necessary beginning into investigating the health of your system and whether repair is a viable alternative to a full upgrade.

Background Information

Contamination of wells
Firstly consider an alternative water supply or filtration of the well water so that you have clean water while you consider your next step. Then investigate the possible sources of contamination. If your septic tank is a likely cause then investigate a new treatment system and/or percolation option. If neighbouring wells or farms are the potential source then discuss the issue with your neighbour and work towards finding a solution together. (This can sometimes be easier to put in writing than into action.)

Toilet slow to flush, or blocked
Check sewer network at manholes and tank to assess location of congestion. Rod pipes if needed. If septic tank water levels are the problem, then a deeper investigation is needed to assess the cause. For example, is the tank backing up due to a clogged percolation area or high water table etc. A new system may be required, but only after ruling out the potential for repair.

Distribution Device

Distribution box absent between septic tank and percolation area
Common in older systems, not necessarily indicative of problems, but may signify poorly constructed or absent percolation area. No immediate remedy necessarily needed.

Leaking or providing unequal outlet flow
Repair leak. Adjust outlets to achieve equal outlet flow if possible.

Percolation Area

Percolation area location unknown
Common in older systems, not necessarily a problem, but may signify poorly constructed or absent percolation area. Location may be indicated by particularly good tree growth. Protect from vehicles and heavy use.

Surface ponding present
Indicative of poor percolation. Investigate whether storm drains allow roof water to enter sewers, and remove them if they do. Investigate a new treatment system and/or percolation option.

Vent pipes absent or damaged
If vent pipes are missing it may signify a poorly constructed or absent percolation area. If pipes are broken, repair or replace.

Vent pipes obstructed or water-logged
If pipes are clogged, free the obstruction. If they are waterlogged it is an indication of poor drainage and a new percolation option may be required.

Ground shows surface damage by vehicular activity, heavy animals, sports or other activities
Establish an exclusion area, fenced if necessary. Avoid gardening that disturbs the soil surface by using a lawn, soft fruit or no-dig techniques.

Adjacent drains and streams show signs of sewage fungus, algal growth and/or black anaerobic sludge
Establish the most likely source of pollution. If it is an upstream source then check chapter 7 on buffer zones at the end of the book. If it is your own property, then investigate repair, or replacement of your existing system.

Septic Tank

Sludge ≥30% of tank depth
Desludge the tank to avoid sludge loadings to the percolation area and consequent clogging there.

Scum layer ≤10cm from outlet pipe level
Desludge the tank to avoid solids loadings to the percolation area and consequent clogging there.

Inlet or outlet T-piece pipe absent, damaged or blocked
Repair, replace or install.