

# A guide to choosing a wastewater system

# Choose the right system for your property

One important decision you will need to make when building or renovating outside of urban areas is how to manage your wastewater. Most rural properties in New Zealand do not have a Council sewer to connect to and all household wastewater needs to be treated and disposed within the property boundaries. Septic tanks, which do very little to treat the wastewater, are becoming less acceptable to regulators and society generally, and more advanced wastewater treatment options need to be considered.

Choosing an advanced wastewater system can be a complex process for most consumers. Claims on company websites, brochures and quotes from companies can be confusing, misleading or unsubstantiated.

To make an informed choice for your wastewater management, we recommend the following issues are considered.

# 1 What level of treatment do you need?

There are three main levels of treatment typically offered for domestic wastewater.

## 1. Primary treatment

Primary Treatment (i.e. septic tanks) provides minimal treatment of domestic wastewater which is only suitable for ground soakage by trenches. Primary treated wastewater should not be disposed of using driplines.

## 2. Secondary treatment

Secondary Treatment is a significant reduction in organic and particulate contaminants and is the most common level of treatment offered by package treatment plants in New Zealand. Secondary treated effluent is usually suitable for land disposal via driplines.

## 3. Tertiary treatment

Tertiary Treatment usually includes some level of disinfection or nutrient removal. Tertiary treated effluent may be able to be disposed of closer to waterways than primary or secondary treatment. Some Councils have regions (e.g. around Lake Taupo and the Rotorua Lakes) where wastewater systems are required to remove a certain amount of nutrient. Tertiary treatment will usually be more expensive to install and operate than primary and secondary treatment, and

may have more maintenance requirements.

Higher levels of treatment will generally be at higher capital and operating costs and maintenance complexity – so it is important to understand what level of treatment is necessary for your property and whether the manufacturer's claims about treated effluent levels can be substantiated. In New Zealand there is the On-site Effluent Treatment National Testing Programme (OSET-NTP) which is the only independent trialling of package wastewater treatment plants in NZ. Further information about the OSET-NTP and test results for different package treatment plants can be found at [waternz.org.nz/OSET](http://waternz.org.nz/OSET)

It is important to note however the OSET-NTP trials do not take into account other key issues such as odour, noise, price, reliability, size, maintenance requirements, customer satisfaction etc.

## 2 What is the treatment capacity?

How much wastewater can be processed each day by the treatment plant you are considering? Most package treatment plants claim to be able to process a maximum volume of up to between 1000 and 2000 litres per day. If you exceed the maximum capacity of the treatment plant it may overload the process, causing reduced treatment levels, odour or more maintenance costs. Manufacturers will likely void the warranty if treatment capacity has been exceeded.

It is important to ensure the capacity of your wastewater treatment plant comfortably exceeds the maximum volume of wastewater you are likely to produce.

The following are typical levels of use in many New Zealand homes:

- 1-3 bedroom house, 2-5 occupants: 300 to 1100 litres per day
- 4-6 bedroom house, 6-10 occupants: 1000 litres to 2200 litres per day

## 3

Some Councils will only allow certain types of package wastewater treatment plant, with the most common benchmark being whether the treatment plant has a performance certificate from the OSET-NTP trial (see above). Some Councils in New Zealand, such as the Bay of Plenty Regional Council, publish a list of treatment plants that meet their criteria for installation in their regions:

[boprc.govt.nz/environment/pollution-prevention-and-compliance/on-site-effluent-systems-ose/approved-on-site-effluent-systems/](https://boprc.govt.nz/environment/pollution-prevention-and-compliance/on-site-effluent-systems-ose/approved-on-site-effluent-systems/)

## Is the system approved for use in your region?



# 4 How much does it cost to purchase & install a package wastewater system in NZ?

Installed prices of secondary package treatment plants typically range from \$12,000 + GST to \$25,000 + GST, with difficult or remote sites being potentially more expensive. We have noticed the perception of the final price paid is often lost in the customer's overall building costs for the project. It is best to obtain written quotes from suppliers and then check whether you are comparing 'apples with apples' when comparing quotes.

We suggest at least confirming the following when comparing quotes:

- Does the quote include GST?
- Does the quote include supply and installation?
- Does the quote include drainage? (This is typically excluded from an initial quote as it can be quite site-specific. Look out for quotes that require separate greywater and blackwater drainage, as this can add significant additional cost).

- Does the quote include electrical installation? If not then find out what is involved and how much it is likely to cost.
- Be wary of systems that claim to not require a pump or electricity. In most circumstances dripline disposal will require a pump to deliver the minimum operational pressure.
- Is the supply and installation of the land disposal system included? Also check whether the quote includes burial or covering of the land disposal system (which may be a Council requirement or an owner preference). This can be a significant additional cost if excluded. We certainly recommend dripline burial.
- Are there exclusions like site clearing, removal of spoil, unforeseen excavation costs, burial of disposal area etc?



# 5

## How much does it cost to operate a wastewater system?

The initial capital cost is one issue but the long term operating costs are just as important. Try to get some confirmation of what the following annual costs will be:

- Servicing costs (frequency and the cost per visit)
- Electricity consumption (ask for evidence, as some types of treatment technology use 20 to 30 times more electricity than others)
- Sludge removal
- Component failure and replacement.

Keep in mind a house in Auckland connected to the Council sewer and producing 1,000 litres per day in wastewater will incur well over \$1000 per year in wastewater charges.

It would not be unreasonable to budget a similar amount per year for an onsite wastewater plant (which should cover all operating costs, including an allowance for occasional component replacements).

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## Does it smell or make lots of noise?

Wastewater treatment plants have potential to create unpleasant odours and noise – especially if they are not operating properly. Most brochures will claim ‘no odour’ but it is worth talking to existing owners of treatment plants you are considering to get some confirmation of whether the no ‘odour claims’ are true.

The same applies for noise. The *Australian New Zealand Standard 1546.3* recommends treatment plant noise should be less than 40dB, but some treatment plants make a lot more noise. Ask the supplier to provide certification of compliance with this Standard recommendation.

# 7 How reliable and reputable are the manufacturer & installer?



Product and installation quality are critical issues to ensure satisfactory long term operation of your wastewater system. Both the installer and manufacturer should be reputable, reliable and well organised companies. We suggest you check the following:

- Do the manufacturer and installer carry adequate insurances?
- Does the manufacturer or installer have any Quality Assurance accreditations?
- Does the manufacturer have any independent review of their technology available?
- Is the wastewater treatment technology developed in New Zealand for New Zealand conditions or was it imported from overseas?
- Is the manufacturer or installer able to provide you with quality documentation such as Owner Manuals, installer manuals, specifications etc

- Have the manufacturer and installer been in business for a sufficient length of time?
- Do the installer and manufacturer have satisfied customer testimonials?
- Are the installers 'registered drainlayers'? Both the tank and disposal field should be installed by a Registered Drainlayer. You can check current registration status for New Zealand registered here: <https://www2.pgdb.co.nz/PGDB/PublicRegister.aspx>
- How punctual was the installer or manufacturer when making their site visit, sending a quote, responding to emails/phone calls etc? This may give you some confidence in their ability to supply, install and service the system within the promised timeframes. You don't want an unnecessary delay to hold up other project works.

# 8 Wastewater reports

Installation of a wastewater system will require a Building Consent from your local council, and the consent application will require an engineer's wastewater report on site-specific issues such as:

- the size and likely occupancy of the house
- the likely volume of wastewater generated each day
- the level of treatment required
- the options for package wastewater treatment plants
- the type of soils present and suitable loading rates for those soils
- the size and location of the disposal area.

In New Zealand, a wastewater report is likely to cost between \$500 and \$2,000 + GST if it is provided by an independent engineer, however some manufacturers/installers may

have an engineer in their company able to provide a report as a part of their total price, or at a reduced rate. Often companies will request a deposit before this report is provided. If you do get a manufacturer/installer to provide a wastewater report you should check their credentials:

- Are they sufficiently qualified and experienced (e.g. an engineer, geologist or similar)?
- Are they approved by Council to author wastewater reports in the region?
- Are they sufficiently covered by a Professional Indemnity insurance policy?
- Will they visit your property to assess soils and site conditions, and is this included in the cost?
- Will they provide a 'Producer Statement' after the installation to allow you to get Council Completion Certification?

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Councils and other regulators often do not allow the use of insinkers in houses with onsite wastewater systems installed. However, many manufacturers claim their wastewater system is suitable for use with insinkers. Use of an insinkerator at a house will significantly increase both the organic loading and the hydraulic loading, and we therefore recommend against one. Even if the wastewater system manufacturer claims their system is suitable for use with an insinkerator, there will likely be increased energy use, maintenance cost and sludge pump outs. Where possible, it is better for a household with an onsite wastewater system to separately compost or bury their food scraps.

## In-sink waste disposal units (insinkers)



## What waste does an onsite wastewater system treat?

Most package wastewater systems are designed to treat all domestic household wastewater originating from toilets, showers, hand basins, the laundry and the kitchen etc. They are not normally designed to treat:

- Stormwater or surface water (e.g. rainwater tank overflows)
- Process waste (e.g. home hairdressing salons, home brew waste)
- Commercial laundry or commercial food preparation
- Swimming pool or spa pool backwash.

The onus will be on you as the property owner to ensure only biodegradable, non-toxic items enter the wastewater treatment plant. Your manufacturer will probably have a list of what can and cannot be treated. Non-biodegradable or toxic items entering the wastewater system will likely result in additional often significant maintenance costs. If there is likely to be anything unusual about your wastewater, make sure you discuss this with the manufacturer.

## How often does a wastewater system need servicing?

Servicing frequencies and costs can vary significantly between manufacturers, service technicians and in different parts of the country. The Council will usually require a service contract to be in place between the property owner and a service technician. The service technician could be a part of the manufacturing company, the installation company or a third party provider. Servicing is something that is required at least annually and sometimes 3 to 4 times per year, depending on the type of technology. Cost of a service is usually in the range of \$100 to \$400 per service.

- Ask your manufacturer/installer/service technician to confirm service costs and frequencies
- Ask to see a Service Contract and Service check sheet so you can understand what service is being provided
- Ask how long a service technician is typically onsite for a standard service
- Ask what the expected response time is in the event of an alarm or other malfunction?

## What size and weight are the tanks?

Some wastewater systems require a number of large and heavy tanks which need to be transported to your property. The more big tanks required, the higher the freight and installation costs will be. Large, heavy tanks may also require more expensive machinery to lift and install them. Larger tanks will also take up more space on your property and require more spoil to be removed from site. We therefore recommend you check:

- The size, weight and quantity of tanks required
- Whether any special machinery will be required to deliver or install the tanks on your property and what the costs will be
- The total area required for the tanks to be installed and where this will be on your property
- The total volume of soil that will need to be removed from site and whether the costs of removal are included in the quote.

The size of the disposal area is a function of the local Council rules, the amount of treated wastewater being disposed of, the type of disposal and the type of soil at your property. The type of wastewater treatment plant you choose will generally not affect the size of the disposal area required. An average size house on poor soils will usually require around 300m<sup>2</sup> of disposal area if using pressure compensating dripline disposal.

## How much disposal area is required?



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## Does the waste-water treatment plant need regular desludging?

All wastewater systems will need occasional solids removal. Solids in all types of wastewater treatment are consolidated and decomposed, but they do not disappear and will eventually need removal before accumulation begins to affect the treatment plant operation. Check with the manufacturer what the expected frequency and costs of solids removal is.



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Ask to see a warranty from the supplier. Parts should be covered for at least 2 years. Performance guarantees are rare because performance depends largely on the quantity of wastewater being treated and whether any toxic compounds enter the treatment plant, both of which are outside the manufacturer's control.

## What are the guarantees?

# Thank you

We hope these *Guidelines for Choosing a Wastewater System* have been useful, and we wish you every success for your project.

We've tried to cover off the most important and most commonly asked questions. However, if there is other information you would like to know about purchasing, installing or operating an on land domestic wastewater treatment systems, then please contact us or any of our approved installers at one of the addresses below.

Associated Wastewater Management Ltd  
Northland  
09 437 2712

Owen Bennett Drainage Ltd  
Northland & Kaipara  
021 203 3808

Laser Plumbing Warkworth  
Rodney & Kaipara  
09 422 9051

Water FX Limited  
West Auckland, Rodney  
09 412 6322

WB Civil Limited  
West Auckland, Kaipara  
027 273 2311

Plumbcraft  
South & East Auckland  
09 2967070

Drainage Systems Ltd  
South Auckland, Waikato  
07 850 4370

Cooks Beach Plumbing & Drainage  
Coromandel  
07 866 3189

Thames Drainage  
Coromandel, Hauraki, East Auckland  
07 868 7004

WH Kelly Ltd  
Bay of Plenty  
07 543 5296

Opotiki Drainlayers  
Opotiki & Whakatane  
07 315 6367

Donaldson Plumbing  
Gisborne  
06 863 3688

Lifestyle Plumbing & Drainage  
Hawkes Bay  
06 836 5100

Turfrey  
Hawkes Bay  
0800 182 182

Laser Plumbing Wairarapa  
Wairarapa, Masterton  
06 370 2259

Clark Plumbing & Gas Ltd  
Whanganui, Taranaki, Manawatu, Ruapehu  
06 343 8953

Turfrey  
Manawatu  
0800 182 182

Mana Plumbing  
Wellington, Kapiti  
04 233 8350

Davies Plumbing & Drainlaying Ltd  
Nelson, Tasman  
03 544 2101

Morgan Plumbing  
Marlborough, Kaikoura  
03 578 0060

Foley Plumbers - Christchurch  
Canterbury  
03 343 0763

Kere Marshall Drainage  
Canterbury  
0274 359 005

Peter Hansen Drainage  
Canterbury  
027 536 9331

Menzies Group  
Timaru, South Canterbury  
03 684 8440

Foley Plumbers - Oamaru  
Oamaru  
0800 303 530

All Septic & Drainage Ltd  
Otago - Dunedin  
03 489 4828

Optum Plumbing & Energy Solutions  
Queenstown Lakes, Central Otago  
03 443 5718

Laser Plumbing  
Invercargill  
Southland  
027 530 4199

Tomasi Plumbing & Drainlaying  
West Coast  
03 736 9715

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