



## INTRODUCTION

*The Sustainable Wastewater Management handbook was developed for smaller New Zealand communities, but can be used by any community that face choices about the kind of wastewater (sewerage) system they will use, and how it will be managed. Coastal settlements, small towns and scattered low-density rural settlements will all face wastewater management decisions at some time. The issues are complex and challenging, and finding solutions will involve thinking about how big your community will grow, what kind of community it will be, how clean your local stream or estuary will be – even the layout and form of your settlement.*

### **What's so special about smaller communities?**

*In communities with a centralised system people can flush the toilet or turn on a tap and never worry about where the water might be coming from or going to. Living in a smaller community you may not have that choice. You may be forced to think about wastewater management. If your septic tank overflows, it's right there, in your backyard. If its wastewater plant is made bigger, your community may grow rapidly, changing the whole nature of the area.*

As a result people will want to be involved in the decision-making process, which can cause splits and ongoing tensions. A crucial aim of the handbook is to provide guidance on how to go about this process in a way that involves both the community and local authorities, minimising costs and controversy, and optimising the 'fit' of the wastewater system to your community and its particular environment.

Communities have different reasons for looking at wastewater management. You may be worried about pollution in the local river, or loss of kaimoana, or public health problems, or perhaps the current system simply won't cope with further growth.

Whatever the initial reason, you will need to explore some general ideas before getting down to the nuts and bolts of choosing a particular technology. You will need to take account of new thinking about wastewater systems, about new ways of thinking about natural systems, and about technologies that might avoid the problems you are facing now.



## INFORMATION

### **How to get more information**

If you would like a copy of the handbook please contact:

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Phone: 04 917 7400  
Fax: 04 917 7523

*The handbook comes with a CD-Rom, which provides more detailed technical information, references and links to further information. We hope these different sources of information will help your community negotiate its way through the process.*

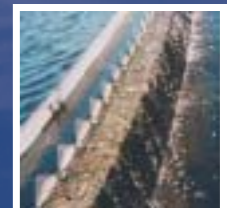
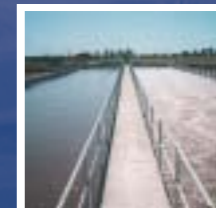
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## Summary of **Sustainable Wastewater Management**

**A handbook for smaller communities**



## What's the issue with wastewater?

*Wastewater is what goes down the pipe, so what's in the wastewater will depend on the sort of community you have. If your community is entirely residential it will include domestic waste such as toilet effluent, laundry water and shower water. If your community includes commercial properties, your wastewater will also include effluent from local businesses and factories.*

Traditionally, problems such as contamination of the local water supply by the discharge from septic tanks or sewer outlets contaminating the local estuary were solved by a 'more technology' approach. Switching from on-site disposal to a centralised system was an inevitable, natural evolution as a community grew. But this is not always appropriate.

The handbook offers a new approach. Because of an increased awareness of the effects of the waste we generate on the natural ecosystem we are all part of, the handbook takes a systems approach. This means developing wastewater solutions that work within and in harmony with the natural ecosystem, producing a *sustainable development* rather than using the environment as a dumping ground.

This applies to all four stages of any wastewater system:

- management at the source
- collection
- treatment
- re-entry or re-use.

Sometimes a community doesn't need expensive new technology if people change their behaviour and better manage what goes down the pipe. For example, household cleaners can kill the bacteria that break down organic material (such as faeces, and vegetable material) in a septic tank, which can lead to odour. Or using less water can make treatment more efficient.



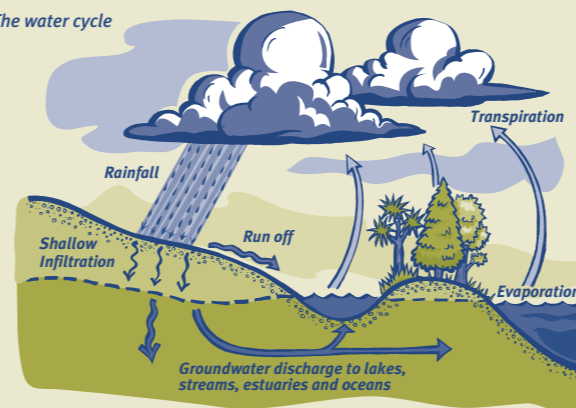
Maybe the soil in your area can't cope with the number of septic tanks and the water resource is in danger of becoming polluted. There are a variety of options available other than converting everybody to a centralised system, and these can still allow for new development but in a controlled way. Different options for treatment, such as separating the water component and leaving sludge (biosolids), provide the possibility for various kinds of recycling. In this way the natural nutrient cycle can be allowed to re-establish itself, rather than streams becoming choked and stagnant through too many nutrients, and soil becoming infertile from too few.

So this is not simply a case of thinking 'green'. All communities – but particularly smaller communities, which depend on the local environment more directly for their livelihood – must now think about the relationship between wastewater systems and natural systems.

This also means thinking about the 'three waters' – drinking (potable) water, stormwater and wastewater – and how they are linked. Stormwater, in particular, can create problems for a wastewater system. Stormwater is rain that is not absorbed by the soil and runs off the land. Ideally it should be kept separate from wastewater, but cracked pipes and people routing their down-pipes into wastewater drains can seriously affect the ability of the wastewater system to cope.

Finally, there is now a greater scientific understanding of the whole nature of wastewater and its effects on the ecosystem. It's not just a matter of managing the discharge of human wastes. Heavy metals and the impact of other organic material and chemicals must also be managed. The later sections of the handbook explain how different technical solutions can deal with particular adverse effects, and what this might mean when choosing technical options.

**Example** The water cycle



## Māori and the Treaty of Waitangi

*In the last decade or so there has been greater legal and community recognition of the significance of the Treaty of Waitangi. This has forced communities to recognise and give a place to the cultural values of Māori, including the belief in a spiritual dimension to the world. This has a direct and immediate impact on wastewater management thinking in a New Zealand context. It means a greater exploration and scrutiny of land-based wastewater treatment and re-entry systems (where the wastewater ends up), and a greater willingness to take a creative and innovative approach.*

Many small communities have a strong Māori, iwi and hapū presence. Protecting and building this wider relationship with the various groups must be a concern as you confront wastewater issues.

The increased recognition of Māori perspectives on the environment has also made it easier for the wider community to speak about and include other cultural perspectives on water and the environment. Increasingly, wastewater management must accommodate people's desire to live within natural systems and to protect the beauty and wonder of the natural world. This means the design of systems must take account of impacts on the landscape, for example, and not just the need to solve public health issues.

## Working with others

*The Local Government Act 2002 requires local authorities to take a sustainable development approach, and to regularly assess the wastewater services in their districts. This is important because most communities will need to work with their local council on wastewater issues.*

In fact there is increasing pressure on local authorities to work directly with communities and to encourage grass-roots involvement. The handbook reflects this by providing a 'how to' guide for community planning processes, and by describing how the various 'players' (including central and local government, tangata whenua, the community and developers) can work together from the start to find a solution. People need to have the tools to help them negotiate and run community-based processes, because wastewater is one of the most important development issues a community will face.



And the important thing to remember is you don't have to re-invent the wheel. Many small communities have faced similar problems and have come up with a variety of solutions – sometimes the hard way. It is crucial to learn from the experiences of others to avoid, for example, ending up with a protracted and expensive battle in the Environment Court. The handbook presents a number of case histories of wastewater management decision-making in small New Zealand communities.

All these changes have led to a greater range and choice of wastewater management systems, and the handbook aims to show the range now available. However, these all cost money, and many small communities already face financial pressures.

## How can we pay for our wastewater management system?

*When looking at the costs of a new system you will need to consider:*

- the initial capital cost
- ongoing operation and maintenance
- putting aside money to replace it (depreciation).

You will need to look at these different costs carefully. Ongoing maintenance and operation can make what initially looks like a cheap option very expensive. Depending on the type of scheme, the funding may be through the local council, or it may fall on individual householders. Either way the cost can seem insurmountable. Fortunately central government has re-introduced a subsidy for the construction of wastewater schemes, which will be available to small communities.

The Sanitary Works Subsidy Scheme is administered by the Ministry of Health and focuses on whether a community should move to community-based collection and treatment systems. The scheme is aimed at improving sewage treatment and disposal for small, largely rural communities that are unable to fund the necessary upgrades to meet public health and Resource Management Act requirements. You will need accurate information to help you weigh the choice of the best overall solution with the availability of this subsidy.