DECENTRALISED WASTEWATER TREATMENT SYSTEMS

COMPLETE ONSITE WASTEWATER SOLUTIONS

Oasis Clearwater
ENVIRONMENTAL SYSTEMS
WASTEWATER TREATMENT ENGINEERS

The evolution continues in decentralised wastewater technology...

The Process

Decentralised wastewater treatment systems are defined as *managed individual on site or clustered wastewater systems used to collect, treat and disperse wastewater from individual dwellings, businesses, rural subdivisions or service areas.*

A number of environmental factors such as the specific site conditions, type of habitation (holiday or permanent dwelling) or climatic conditions can have an influence on the selection of one treatment plant in preference to another.

Typically a cluster type subdivision will have a **Clearwater Z54** anaerobic treatment system as first receiver of the effluent. From the **Z54** the effluent may be either gravity fed or pumped via pressurised small diameter pipe to the final treatment plant.

The system may incorporate a **Zabel self cleaning filtering pump vault** to further filter the effluent prior to pumping via either single stage or multistage submersible pumps, (depending on head requirement) to the decentralised treatment plant.

Also available are **Pressurised sewer systems** engineered to include high head pumps to deliver macerated sewage to point of treatment.

Final Treatment System

As leaders in the field, Oasis Clearwater Environmental Systems have developed, designed and manufactured three separate systems in modular form to suit all applications:

MEMBRANE BIOREACTOR
The most advanced wastewater treatment system in the world

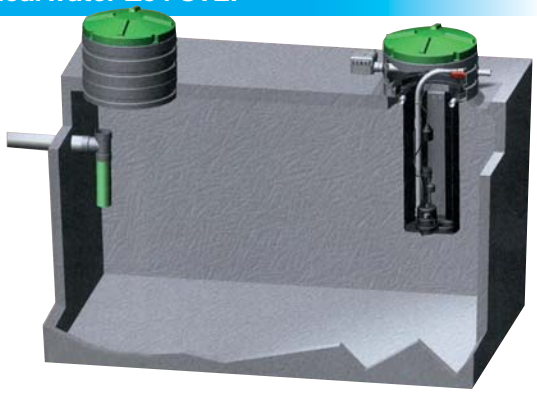
TEXASS (Textile Advanced Sewage System)
A recirculating PBR (packed bed reactor).

SAFE (Submerged Aerated Filtered Effluent) System.

Commercial Treatment Systems

Depending on performance requirements, various advanced systems are available for final treatment.

The Clearwater Z54 STEP



The Clearwater Z54 STEP (Septic Tank Effluent Pumping) is ideally suited for on site applications, either gravity fed or pumped via a Zabel Pump Vault System.

ZABEL Self-cleaning filtered pump vaults

Pressurised sewer systems

Residential, commercial, community

The concept of Decentralised Wastewater Systems are well established in the United States. The following case studies demonstrate the effectiveness of installing Decentralised Systems to handle localised wastewater requirements across a variety of needs.

Residential subdivision

This Wisconsin subdivision development installed Zabel STEP packages to lift effluent to multiple treatment and disposal systems. Final treatment and dispersal occurs through open mounded, landscaped grounds.

A second, 63 lot Tennessee subdivision, uses a Zabel Decentralised System. Each residence is served by an individual STEP System with effluent treatment handled by a cluster of Biofilters with final disposal through drip irrigation.

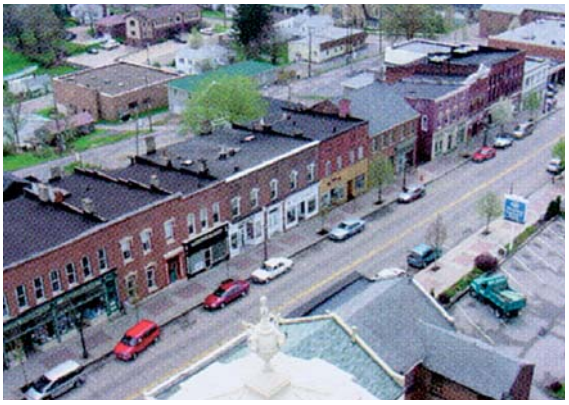
Village cafe

This small restaurant had experienced onsite system failure and was in dire need of a new solution.

A Zabel Biofilter sized to handle higher strength wastes was installed. The higher quality effluent now being produced through the unit has solved their problems and will extend the life of the new disposal filed installed at the same time.

Small town... big problem!

The small town of Exmore in Virginia decided to replace failing individual onsite systems with a Decentralised System. Individual Zabel STEP Packages now lift the residential and commercial waste from approximately 140 structures to a small treatment facility with subsurface disposal.



In New Zealand, Oasis Clearwater Environment Systems offer Decentralised Systems that will effectively handle a variety residential, commercial and community needs.

These installations not only deal effectively with waste water from all aspects of our life, but in doing so are protecting wildlife, waterways, families and communities across New Zealand.

MBR - Membrane Bioreactor Plant

Since producing their first pilot plant in 1989 and then the first commercial plant in 1991, Kubota have installed over 1500 plants, covering a wide range of effluents including sewage, sludge liquors, industrial and food processing waste and greywaters, treating the liquid ready for recycling and reuse.

Compact plant

Membrane Bioreators have a number of inherent advantages. The system does not require flocs to be formed to remove the solids by sedimentation and therefore the biomass can operate at very high levels of Mixed Liquor Suspended Solids (MLSS), generally in order of 10,000-18,000 mg/L. This high concentration of MLSS allows for a small tank volume and the generation of a long sludge age. This reduces sludge volume, which allows for a small plant footprint and a 50% reduction in aeration tank volume.

Easy maintenance control

The process is designed to run without supervision and by using high quality plastics and stainless steel, the membrane panels and cases have long life expectancies. By minimizing the effect of fouling through controlled cross flow velocities over the membrane surface, insitu, membrane cleaning is normally restricted to twice a year.

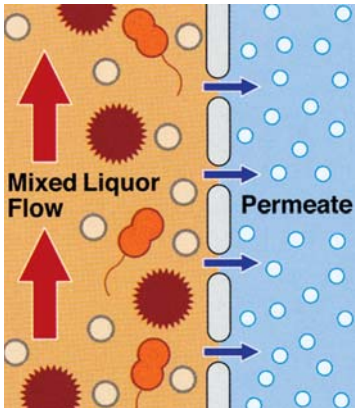
Less excess sludge production

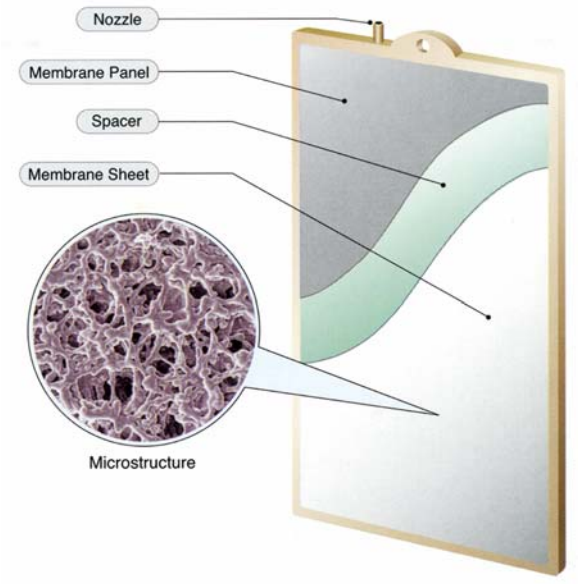
The long sludge age process produces less surplus sludge than conventional treatment processes. Hence, sludge handling and disposal costs are reduced and the sludge is highly stabilized.

Reliable quality of treated water

Because of the small pore size of the membrane (0.1-micron effective pore size) **bacteria and most viruses are removed by the process**. High quality of treated water is reliably achieved.

Turbidity of the effluent is less than 0.2 NTU and suspended solids are less than 3mg/l.





Typical Performance Data for a Membrane Bioreactor plant

Parameter	*Units*	*Average test figures*
BOD5	*mg/L*	*< 5*
Suspended solids	*mg/L*	*< 5*
Faecal coliforms	*No/100ml*	*Typically zero*
PH		*< 7.4 - 8 range*
Total Nitrogen	*mg/L*	*< 5*
Total Phosphorus	*mg/L*	*< 5*

TEXASS - Textile Advanced Sewage System

Developed in the USA and perfected in New Zealand, Texass (Textile Advanced Sewage System) utilises a textile media to efficiently filter the effluent over multiple passes, finally producing a very high quality end product.

Textile filters polish the waste water clean

Oasis Clearwater has perfected Texass, a textile filtering system that efficiently cleans the effluent through recirculation. After passing through solids settling and small particle filtering compartments, the effluent is pumped and sprayed several times through the unique textile filter.

Each pass cleans the liquid further until it is at the appropriate quality for ground dispersal. The resulting water easily exceeds both New Zealand's and Australia's stringent standards for the disposal of wastewater.

Texass
TEXTILE ADVANCED SEWAGE SYSTEM

The Texass unit is manufactured as a complete unit in our plant and apart from installation, there is no onsite construction needed and the small footprint, below-ground-tank ensures there is a minimal impact on the landscape.

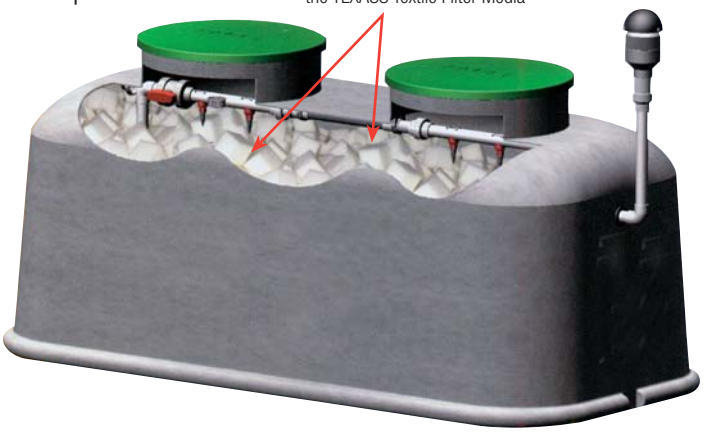
High performance

The textile filtering media is manufactured to a consistent quality - essential for a high performance sewerage treatment plant. All the system components are of the highest standard for years of worry free operation.

Size does matter

Because the Texass system is so efficient, the overall size is more compact. This reduces excavation and disruption at the time of installation.

Effluent is polished as it is sprayed over the TEXASS Textile Filter Media



Economical low maintenance operation

The Texass system is cost effective to run.

The textile filtering media is manufactured to a consistent quality and unlike sand (used in some systems to filter effluent) its superior efficiency means performance can be assured from day one.

The recirculation system does not have to run constantly and the pump is activated intermittently, spraying the effluent over the textile filter several times before it is passed on for ground dispersal

The Texass system incorporates leading edge technology to make routine maintenance procedures straightforward and substantially easier than other systems. The Texass system has been designed and engineered to avoid any need to enter the unit, with all critical components accessible from the access lid on top of the tank.

Typical Performance Data for a Texaas plant

Parameter	*Units*	*Average test figures*
BOD5	*mg/L*	*< 20*
Suspended solids	*mg/L*	*< 20*
Total Nitrogen	*mg/L*	*< 20*

Commercial systems are available for up to 200m3 per day in modular installations. Refer to Oasis Clearwater Head Office for further information.

SAFE - Submerged Aerated Filtered Effluent

The principles of this process were established over 25 years ago. These plants are widely used in USA and variations of the process have been developed by other proprietors. The system has been proven in New Zealand and has been the popular choice for many local systems.

The SAFE Technology

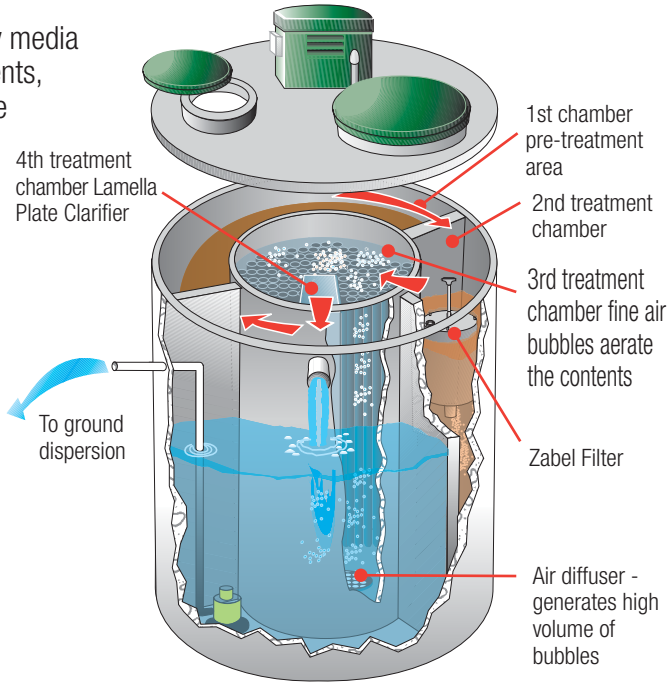
The Oasis Clearwater SAFE plant is designed as a continuous flow, secondary treatment process - that is, it is designed to follow primary treatment such as provided by an appropriately proportioned septic tank fitted with an in-tank filter. Oasis Clearwater is the New Zealand Master Agents for the Zabel (USA) range of in-tank filters as incorporated in this system.

The SAFE fixed-film reactor contains submerged proprietary media and air diffusers for aeration and mixing of the reactor contents, Compressed air is supplied by conventional blowers. The aerobic biomass grows on the media as fixed growth colonies which utilise oxygen from the aeration system to degrade pollutants within the wastewater.

The flow from the reactor which contains biomass sloughed from the media, passes to the clarifier for solids separation by gravity. Waste activated sludge (WAS) is periodically pumped from the base of the clarifier to the nearest septic tank which will be proportioned for this small, additional solids loading.

The process is very robust and requires minimal operational intervention, but as with all systems, must have a regular maintenance programme.

A single tank SAFE system



Typical Performance Data for a SAFE plant

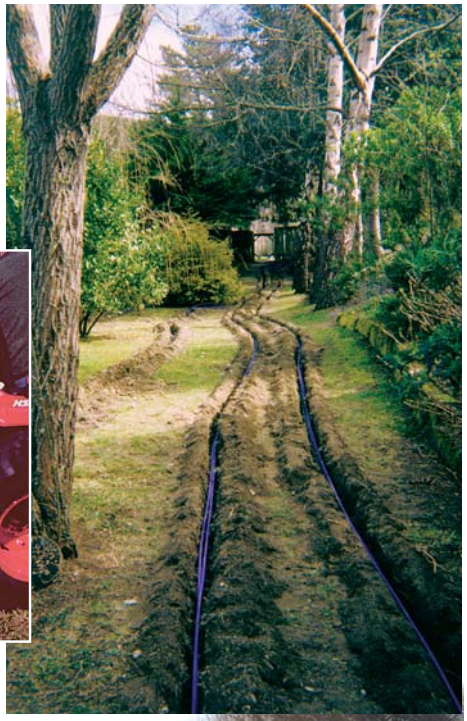
Parameter	*Units*	*Average test figures*
BOD5	*mg/L*	*< 25*
Suspended solids	*mg/L*	*< 25*
Total Nitrogen	*mg/L*	*< 25*

SAFE
SUBMERGED AERATED FILTERED EFFLUENT

Drip irrigation disposal system

Drip irrigation is the ideal method for disposing of treated waste water. The Drip irrigation system is installed as an extension of the chosen waste water treatment system using small diameter, pressure and flow compensating tubing. Site disturbance is minimal, with the tubes laid approximately 150mm below the soil surface and with no additional soil needed for cover.

Sites with shallow soil, shallow water tables and limited space can benefit from this technology and grass lands, gardens and tree lots are ideal recipients of the waste water plant production.



Design, development, planning, installation and servicing

Oasis Clearwater Environment Systems offer design, development, planning, installation and servicing for all installations.

Every installation is different with new variations to be accommodated.

Our head office team work closely with specifiers, councils and developers to produce the ideal system... and our nation wide team of expert installers are backed by head office with technical support and on-going training.

Our services include

Design and construction.

Liaison with local and regional councils.

Upgrading of existing systems.

Maintenance programmes.

Domestic and commercial applications.

Our company and our capabilities

Oasis Clearwater Environmental Systems has been pioneering onsite wastewater treatment since 1990. Our team of qualified professionals have many years of combined experience designing and developing innovative technology and systems to meet demanding standards for waste water treatment.

We have also established close working relationships with several leading international authorities and manufacturers of similar equipment to complement our range of product.

Committed to quality

To ensure constant quality, our products are manufactured, assembled and fitted out at our own concrete product manufacturing plant.

Certifications

N.Z TP 58 APPROVAL - 3rd Edition
AUS/NZS 1547.2000 - On Site Domestic Waste Water
AUS/NZS 1546 s 1: 1998 - Septic Tank Manufacture

The advantages of dealing with Oasis Clearwater Environment Systems

For the home owner

- *Our systems are all designed to protects the country's natural water quality and enhances owners' quality of life.*
- *Our systems save water, money and protect our environment.*
- *Our systems offer low operating and maintenance costs.*
- *We offer durable precast concrete structures. Polyethylene systems are also available.*

For Councils and Developers

- *Oasis systems are highly reliability, low maintenance systems.*
- *They deliver reduced operating costs.*
- *They offer increased public health protection.*

For Engineers

- *Ours systems offer proven designs and engineering.*
- *They offer reliable performance and reduced costs.*
- *Systems for both domestic and commercial applications.*
- *Ideal for failed system renovation.*

Contractors and Installers

- *Full design service, from single to multiple tank systems.*
- *Low maintenance, full range of spares available*
- *On going manufacturer backup.*

Oasis Clearwater Environmental Systems manufacturing plant,
we design, build, assemble, install and service.

Oasis Clearwater
ENVIRONMENTAL SYSTEMS
WASTEWATER TREATMENT ENGINEERS

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