

SYSTEM OVERVIEW

TEXASS 2000 TO 3000 EFFLUENT TREATMENT SYSTEM

The Oasis Clearwater TEXASS (**TEX**tile **A**dvanced **S**ewage **S**ystem) wastewater treatment plant, including textile foam-block media in the rPBR (recirculating packed bed reactor) chambers, supplied, installed and maintained by Oasis Clearwater Environmental Systems Limited, P O Box 16-276, Hornby, Christchurch, and/or its authorised agents.

This treatment plant is constructed in a multi-tanked, multi-chambered configuration consisting of the following:

PRIMARY INFLUENT CHAMBER (Anaerobic and Septic)

This chamber has a capacity of 1,800 litres, (a TEXASS 3000 has an additional 10,000 litre primary tank and a fibreglass system a 4,500 litres primary tank). All domestic wastewater from the dwelling is piped to this chamber. Here, anaerobic and other oxidising bacteria break down suspended solid material.

The anaerobic digestion achieves a reduction in biochemical oxygen demand (BOD) in this chamber by up to 40%. This chamber also receives activated aerated sludge from the recirculation chamber that stimulates the bacteria and enhances the level of solids digested. It also aids de-nitrification.

SECONDARY PRIMARY FILTRATION CHAMBER (Anaerobic and Septic)

This chamber has a capacity of 1,800 litres. The domestic wastewater is able to flow freely from the first primary chamber into this chamber. This allows for mixing of the partially treated wastewater and prepares it for the processes that follow. This wastewater passes through a proprietary Zabel A100 filter before entering the aerobic spray chamber.

RECIRCULATION CHAMBER

This chamber has a capacity of 800 litres and contains the recirculation pump and head works. The treated water from the PBR and aeration chamber is split to allow further passes across the PBR with a proportion split to the irrigation chamber all controlled by PLC.

Most of the remaining particles of suspended solids settle to the bottom of the chamber allowing largely clean odourless wastewater to pass to the pumping chamber. The suspended solids that sink to the bottom of the chamber are drawn back to the first primary chamber for further processing.

AEROBIC CHAMBER (Anaerobic and Oxygenation)

This chamber has a capacity of 1,300 litres. The semi-treated wastewater is pumped from the recirculation chamber to the PBR chamber through a spray nozzle. The oxygen for this chamber is supplied via the nozzle and the trickling filtration process.

The PBR chamber contains close cell foam-block media. The media block is a porous mesh in square block form; packed together to produce a large surface area. These blocks attract and enhance the bacteria, nitrobacteria and nitrosomonas that replenish free oxygen. In addition to the ammonium contained in many wastewaters, the foam-block media concentrates other compounds and metals contained in the wastewater during the ion exchange processes. The enhanced aerobic bacterial action results in a high level of aerobic treatment and a reduction in the accumulation of biological sludge.

PUMPING CHAMBER

This chamber has a capacity of 1,000 litres. The fully treated wastewater flows into the pumping chamber where it is pumped out at pre-set rates for dose loading onto irrigated gardens, landscaped, or other suitable areas. The pumping chamber of the plant will be set up to dose load the subterranean land disposal area upon the accumulation of 200 to 400 litres between each dose loading or once daily which ever is the greater frequency

INTERMITTENT USE AND SURGE LOADINGS

The Oasis TEXASS wastewater treatment plant is designed to cope with fluctuations that arise from intermittent use and surge loadings.

The Bio-pore media and the Zabel filters are also installed in the treatment system to assist its ability to cope with intermittent use and surge loadings.

Where there may be extended periods of no use of the plant, in excess of 6 months, re-seeding of bacteria is recommended to assist in the recovery of the system. It should be noted that where the system is used intermittently the effluent quality leaving the system would remain of sufficient quality to allow it to be discharged through a dripper line.

EFFLUENT QUALITY

A properly installed and maintained Oasis TEXASS plant produces effluent for discharge through a covered surface dripper line that meets the standards required in NZS 1547:20xx and those required by the Resource Management Plans of the District Council.

Testing undertaken by the manufacturer shows that these plants are producing effluent well within the BOD5 and SS limits, as outlined in the NZ Standard. Faecal coliforms will be less than 1000cfu/100ml @ 300mm below the point of discharge to land.

It should be noted that when ultraviolet sterilisation is incorporated downstream of the pump out chamber, tests show that the faecal coliform count of the ultraviolet treated effluent falls below 100 faecal coliforms per 100ml of effluent.

Councils are familiar with this Oasis TEXASS treatment system and the quality of the effluent it produces for discharge to land.

LAND DISPOSAL AREA LOCATION

The location of the land disposal area is shown on the attached site plan which shows the position of the existing septic system and all buildings, waterways, dimensioning, etc

PROXIMITY OF LAND DISPOSAL AREA TO WATER BODIES

The land disposal areas are outside the minimum clearance from water bodies stipulated in the Resource Management Plan.

This report also relies upon Note 1 in Table 4.2B1 of NZS 1547:2000 in which it is acknowledged that the number of faecal coliforms reduces by an order of magnitude for every 50 millimetres that effluent travels through soils. Thus a path length of 300 to 400 millimetres is sufficient to reduce coliform numbers to insignificant levels in normal soils.

MAINTENANCE SCHEDULE

The Oasis TEXASS wastewater treatment plant will be required to be maintained on an up to four monthly basis or as otherwise required by Councils and/or Wastewater Services. The format of the report to Council will follow the reporting procedures already established between Oasis Clearwater Environmental Systems and the local authorities.

CONSTRUCTION MONITORING

The undersigned or his authorised representative will monitor the installation of the TEXASS wastewater treatment system and the construction of the covered surface dripper irrigation system.

CONCLUSIONS

This report confirms that an Oasis TEXASS wastewater treatment plant and its covered surface dripline irrigation land disposal area will adequately service the dwelling on this property.

The Oasis TEXASS wastewater treatment plant and the subterranean absorption bed described in this report will comply with the provisions of NZS 1547:20xx in all respects and with the provisions of local council Guide-lines for New On-site Wastewater Management Systems.