

# SYSTEM OVERVIEW

## SERIES 2000 SAF WASTEWATER TREATMENT SYSTEM

The **Oasis Clearwater Series 2000** fully aerated wastewater treatment plant, including Bio-block media blocks in the aeration chamber, produced, installed and maintained by Oasis Clearwater Environmental Systems Limited, P O Box 16-276, Hornby, Christchurch, or its authorised agents.

This plant is constructed in two configurations one multi-chambered concrete tank (9,400 litres) or two multi-chambered plastic tanks and has a nominal holding capacity of 10,500 litres. The tank contains the following chambers:

### **First Primary Chamber (anaerobic and septic)**

This chamber has a capacity of 3,500 litres. 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 clarifying chamber that stimulates the bacteria and enhances the level of solids digested. It also aids denitrification.

### **Secondary Primary Chamber (anaerobic and septic)**

This chamber has a capacity of 750 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 effluent A100 (1.6mm) filter before entering the aerobic chamber.

### **Aerobic Chamber (aeration and oxygenation)**

This chamber has a capacity of 2,150 litres. The semi-treated wastewater flows from the secondary primary chamber to the aeration chamber through the effluent filter. The oxygen for this chamber is supplied via a fine air diffuser powered by an 80-watt blower.

The aeration chamber contains submerged 'Bio-block' media. The media block is a porous polyethylene cross-hatched mesh in cylindrical form; fusion welded together to produce a surface area of 80 squares metres. This block attracts and enhances the bacteria, nitrobacteria and nitrosomonas that replenish free oxygen.

In addition to the ammonium contained in many wastewaters, the Bio-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.

### **Clarifying Chamber (settling)**

This chamber contains a 900mm filter (0.4mm) / clarifier. The treated wastewater passes from the aerobic chamber to the clarifying chamber.

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.

### **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 whichever is the greater frequency.

### **INTERMITTENT USE AND SURGE LOADINGS**

The **Oasis Series 2000** aerated wastewater treatment plant is designed to cope with fluctuations that arise from intermittent use and surge loadings.

The Bio block media and the effluent 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 Series 2000** plant produces effluent for discharge through a covered surface dripper line that meets the standards required in NZS 1547:2000 and those required by the Resource Management Plans of the District Council.

Testing undertaken by the manufacturers shows that these plants are producing effluent well within the BOD<sub>5</sub> and SS limits in both the NZ Standard and the Plan.

It should be noted that if ultraviolet sterilisation is incorporated downstream of the pumping chamber, tests show that the faecal coliform count of the ultraviolet treated effluent falls below 100 faecal coliforms per 100 millilitres of effluent.

### **LAND DISPOSAL AREA LOCATION**

The location of the land disposal area is shown on an appropriate site plan(s) and may include reserve areas, if required.

### **PROXIMITY OF LAND DISPOSAL AREA TO WATER BODIES**

Should the land disposal area(s) be outside the minimum clearances from water bodies stipulated in the Resource Management Plan refer to:

Note 1 in Table 4.2B1 of AS/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 Series 2000** aerated wastewater treatment plant will be required to be maintained on a six monthly basis or as otherwise required by Council and Wastewater Services. The format of the report to Council will follow the reporting procedures already established between Council.

## **CONSTRUCTION MONITORING**

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

## **CONCLUSIONS**

This report confirms that an **Oasis Series 2000** aerated wastewater treatment plant and its covered surface dripper irrigation land disposal area will adequately service domestic dwelling(s) of up to 10 persons.

The **Oasis Series 2000** aerated wastewater treatment plant and the subterranean absorption bed described in this report will comply with the provisions of AS/NZS 1547:2000 in all respects and with the provisions of the Council Guide-lines for New On-site Wastewater Management Systems.