

WALTER PEAK CASE STUDY HYNDS MBR WASTEWATER TREATMENT SYSTEM



One of the most scenic locations in the world deserves only the highest level of wastewater treatment.

Hynds Environmental designed and built an MBR Wastewater Treatment Plant for the new Walter Peak Estate on the shores of Lake Wakatipu.

The Site

Walter Peak Estate is a new resort development situated on 38.16 hectares freehold land on the north facing shores of Lake Wakatipu, Queenstown.

After four years of consultation and planning, construction of two development areas began in earnest. A lodge comprising six guest suites, eight cottages and a separate manager's residence are being completed in the Mick O'Day Creek Basin, while eight homestead sites are being built along the lakefront terrace face.

The Challenge

Walter Peak Estate's location necessitated a wastewater treatment system that would not detract from the pristine surroundings of the resort or negatively impact on the environment.

The resort's proximity to Lake Wakatipu necessitated a very high level of wastewater treatment.

The developer also needed to optimise the useable land and minimise the area required for the wastewater treatment system and its effluent disposal fields.

From a logistics standpoint, Walters Peak is only accessible from Queenstown either by ferry or a three hour drive over gravel roads. The wastewater system had to be compact and easy to install.

The Solution

Hynds Environmental designed and built an advanced MBR System to treat all wastewater from Walter Peak Resort's facilities.

Membrane bioreactor technology is utilised to treat the wastewater at an ultra filtration level, rendering it free from all pathogens.

Otago Regional Council normally requires effluent to be discharged at least 50m away from any water source. The Hynds MBR System at Walter Peak Resort produces a tertiary level effluent quality which has been approved for disposal within 20m of Lake Wakatipu. The effluent is discharged through 4700m pressure compensating dripline irrigation with no further disinfection required.

Project Summary

- Total design flow –24,000 litres/day
- Very high effluent quality is achieved, typically better than 5:5:5 mg/l BOD₅ : Suspended Solids : Ammonia
- Faecal Coliform levels < 5 / 100ml
- Disposal system – 4700m dripline irrigation
- Emergency storage capacity – 24 hours
- Fully automatic electronic alarm system with remote monitoring capability

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Another innovative device is a telemetry system that allows remote monitoring and management of the wastewater plant via mobile phones or the Internet. This system monitors the daily flow of the system along with the water levels in the tanks, the status of the pumps and blowers.

Performance

The Hynds MBR wastewater treatment system produces effluent quality typically better than 5:5:5 mg/l BOD₅ : Suspended Solids : Ammonia.

Faecal coliforms are typically less than 5 / 100ml and the effluent is rendered free of pathogens, viruses and bacteria. No additional tertiary treatment or UV stages are required.

System Maintenance

Hynds Environmental offers a servicing contract with all its wastewater systems. An MBR system requires three maintenance visits per year to check the filters, electronics, disposal field, performance and general condition of the system.



Installation of the precast tanks



The membrane panels

How They Work

The Hynds MBR Wastewater Treatment System initially pre-treats the wastewater through settling, screening and de-gritting. No primary or secondary settlement stages are required.

The MBR tank houses flat sheet membrane panels in stainless steel units, aerated by a coarse bubble system below each unit. A series of these membranes are submerged within an activated sludge treatment tank.

The membrane panels are manufactured with a pore size in the range of 0.1 to 0.4 microns. In operation these panels become covered by a dynamic layer of protein and cellular material, providing an effective pore size of less than 0.01 microns. This is within the ultra filtration range.

The treated permeate is then stored in a pump chamber where it is discharged through a drip irrigation network.

Further Information

For further information on Hynds Environmental's wastewater treatment systems, please call them on 0800 425 433 or visit their website at www.hynds.co.nz

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