INNOFLOW TECHNOLOGIES
INNOVATIVE WASTEWATER MANAGEMENT

WASTEWATER MANAGEMENT - CASE STUDY

Momorangi Bay Camping Ground – Queen Charlotte Sound

Momorangi Bay is a sheltered bay located at the top of Grove Arm in picturesque Queen Charlotte Sound. The area is renowned for its natural beauty and clean, clear waters. It was therefore imperative that the camping ground and its related activities did not impact on the environment.

Being a popular camping ground, area available for camp sites needed to be maximised, meaning a wastewater treatment plant with the smallest possible footprint was required.

The owners recognised this and also the fact that the operations of this facility were highly seasonal. Therefore, the Advantex™ Recirculating Textile Packed Bed Reactor was identified as the method most suited to achieve the goals of this project.

Figure 1. Momorangi Bay – Aerial view of the bay and camping ground.

Using this set of criteria Innoflow Technologies NZ Ltd. (ITNZL) designed, produced and installed a wastewater management solution that met with the owner's high requirements, the council's strict resource consent conditions and the customer's high expectations from this facility.

The solution in this case was the use of Septic Tanks fitted with a Biotube® Effluent Filter feeding to a Recirculating Textile Packed Bed Reactor (rtPBR) discharging to a UniRam® pressure compensating drip irrigation disposal field.

The following pages detail the system components and technical specifications. Also shown are the expected and required performance figures for this wastewater management system.

Table 1. Design Constraints

Constraint	Solution	Comment
Limited area for treatment plant	Utilise very small footprint of the Textile rPBR	The Textile Pods were configured specifically to meet site requirements
Remote location, limited transport options	Advantex™ Textile Pods did not present a problem to transport	The rtPBR process also has very low biosolids production meaning reduced costs for removal off site
Highly seasonal usage	Use rtPBR process designed for peak loading	The rtPBR process has a 100% turn-down ratio providing consistent performance under fluctuating loads
No space in camp for disposal field	Disposal field installed in existing bush	A very high level of treatment was required to allow this option. The rtPBR process is proven under these conditions
Remote location, limited onsite technical support	Use PBR process with programmable control system	Low operation and maintenance requirements for this process assist simple management of the system

Figure 2. A low visual impact was important in this remote location.

Table 2. Treatment System Performance

Parameter	Required Value*	Expected Performance
BOD_5	20 mg/ltr	<15 mg/ltr
Suspended Solids	30 mg/ltr	< 15 mg/ltr
Total Nitrates	300 kgN/ha/yr (~=40 mg/ltr)	25-40 mg/ltr

** These figures are the set values in the Resource Consent for this project issued by the Marlborough District Council*

Figure 3. Installing the dripline.

The drip line was installed within existing native bush, meaning that the large area needed for the disposal field would not use camp ground area.

Over time, undergrowth reduces the visual impact of the drip line, with the treated effluent providing valuable water and nutrients to the plant life.

A lot of care was taken not to impact on the surrounding environment or the facility itself.

It was also important to achieve the installation within a specific time frame and ensure that the finished product did not detract from the surroundings.

The low footprint of the Advantex™ rtPBR pods ensures a low visual impact.

No noise and no odours are produced from the pods, so it was not a problem to install the units along the rear of the cabins.

Figure 4. The rtPBR pods.

Table 3. System Summary

System Component	Specification	Comment
Design Flow (Peak)	77 m^3/day	Only reached ~ once a year
Primary and Transfer Tanks	Existing	By others
Centralised Septic Tanks	2 x 36 m^3, 3 x 5 m^3	
Recirculation Tank Size	2 x 36 m^3	2 x 36 m^3 tanks in series
Recirculation Pump	3 x High Head Turbine (5")	At peak – 13.7 hours run time per day @ 0.56 kW per pump
Packed Bed Reactor Area	36m^2	Installed along a directly behind the cabins
Treated Effluent Tank Size	23 m^3	
Discharge Pump	2 x Grundfos SP5A-25 submersible borehole pumps	At peak – 14.5 hours run time per day @ 3 kW per pump
Disposal	38,500 m² Land Application Area	Testing is done around the application area to ensure that there are no effects on the environment

Due to the close proximity to accomodation cabins, size and layout of the treatment system were important. The small footprint of the rtPBR meant installation within the available area was not a problem and the finished plant is all flush at ground level to eliminate any visual impacts.

Maintenance

An annual maintenance contract was commissioned, consisting of monitoring and 3 site visits per year.

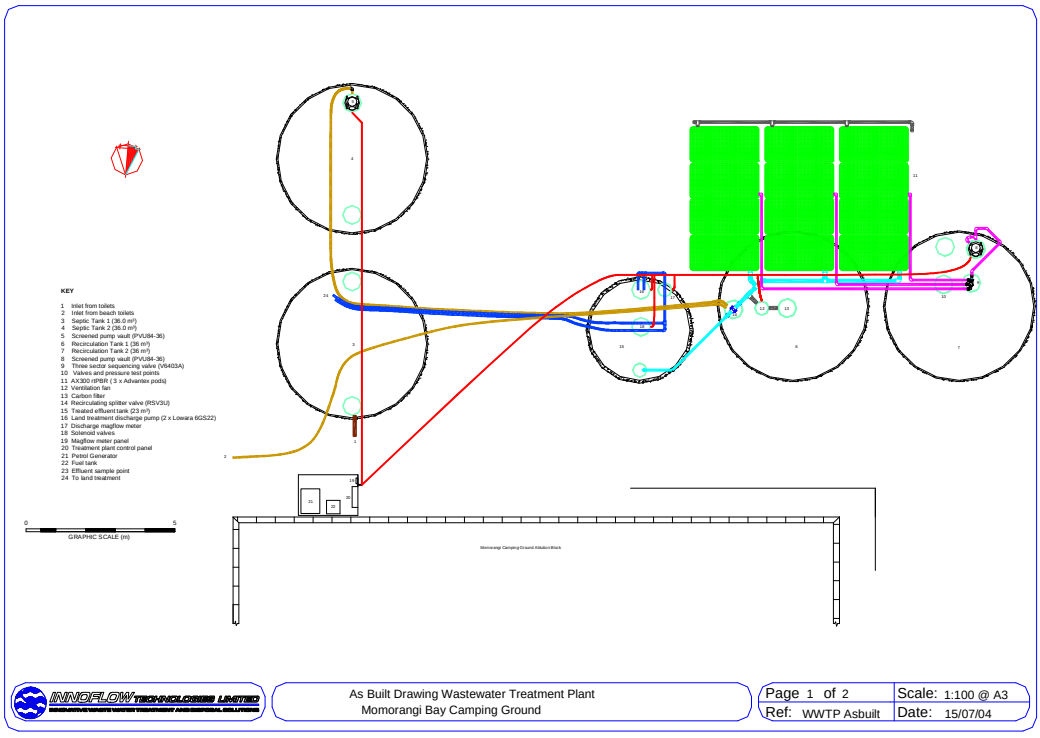

Figure 5. Schematic as built of the wastewater treatment system.