

## On-site Effluent Treatment National Testing Programme (OSET NTP)

### PERFORMANCE CERTIFICATE EXTENSION 2016 Waipapa Tanks Econo-Treat® VBB C-2200-2 On-site Domestic Wastewater Treatment System, OSET NTP Trial 4, 2008/2009

#### System Tested

**Waipapa Tanks Econo-Treat® VBB C-2200-2** submerged fixed film media treatment unit. Rated design capacity 2,200 litres/day. Total liquid volume 8,280 litres (primary treatment 4,500 litres; secondary treatment aeration 3,230 litres, clarification and recirculation 300 litres, pump chamber 250 litres). Emergency storage 2,120 litres. No tertiary treatment (such as UV disinfection) is incorporated.

#### Test Flow Rate

The **Waipapa Tanks Econo-Treat® VBB C-2200-2** was tested at 1,000 litres/day (equivalent to servicing a 3-bedroom 5 person household) over an 8 month (35 week) period November 2008 to July 2009 followed by a 1 month (4 week) high load effects test involving 5 days at 2,000 litres per day followed by 1,000 litres/day over the following 3 weeks.

#### Testing and Evaluation Procedures

A total of 37 treated effluent samples of organic matter (BOD<sub>5</sub>) and suspended solids (TSS) at generally six day intervals during weeks 9 to 35 were tested and evaluated as to meeting the secondary effluent quality requirements of the joint Australia/NZ standard AS/NZS 1547:2000.

A total of 16 treated effluent samples of organic matter (BOD<sub>5</sub>), suspended solids (TSS), total nitrogen (TN), ammonia nitrogen (NH<sub>4</sub>-N), total phosphorus (TP) and faecal coliforms (FC) at generally six day intervals during weeks 23 through 35 were benchmarked and rated on their median values. In addition, the energy used by the treatment system was assessed on the mean of consumption levels over the 16 sample days, weeks 23 to 35.

#### Meeting AS/NZS 1547:2000 Secondary Effluent Quality Requirements

The standard requires that 90% of all test samples must achieve a BOD of  $\leq 20 \text{ g/m}^3$  and TSS of  $\leq 30 \text{ g/m}^3$ . The **Waipapa Tanks Econo-Treat® VBB C-2200-2** system **achieved** a performance level of **100%** for BOD and **94%** for TSS and thus met the secondary effluent quality requirements of the Standard.

#### Benchmark Ratings

The **Waipapa Tanks Econo-Treat® VBB C-2200-2** system **achieved** the following effluent quality ratings:

Indicator Parameters	Median	Std Dev.	Rating	Rating System				
				A+	A	B	C	D
<b>BOD (g/m<sup>3</sup>)</b>	<b>3.4</b>	<b>1.5</b>	<b>A+</b>	<5	<10	<20	<30	≥30
<b>TSS (g/m<sup>3</sup>)</b>	<b>4.98</b>	<b>3.49</b>	<b>A+</b>	<5	<10	<20	<30	≥30
<b>Total nitrogen TN (g/m<sup>3</sup>)</b>	<b>13.6</b>	<b>1.3</b>	<b>A</b>	<5	<15	<25	<30	≥30
<b>Ammonia Nitrogen NH<sub>4</sub>-N (g/m<sup>3</sup>)</b>	<b>1.1</b>	<b>1.8</b>	<b>A</b>	<1	<5	<10	<20	≥20
<b>Total phosphorus TP (g/m<sup>3</sup>)</b>	<b>4.2</b>	<b>0.5</b>	<b>B</b>	<1	<2	<5	<7	≥7
<b>Faecal Coliforms FC (cfu/100mL)</b>	<b>11,200</b>	<b>50,196</b>	<b>B-</b>	<10	<200	<10,000	<100,000	≥100,000
<b>Energy (kWh/d) (mean)</b>	<b>1.8</b>	<b>-</b>	<b>B</b>	0	<1	<2	<5	≥5

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### **Performance Certificate Extension**

Waipapa Tanks have provided a signed and legally witnessed statement that there have been no changes whatsoever from the plant tested in 2009 to that manufactured and marketed in 2016, except for the final discharge pump which has been changed to a Davey D42 A/B, which has similar capacity to the previous discharge pump and will have no impact upon the plants treatment capability/performance. No changes have occurred to all tank volumes, submerged media (type and quantity), blower and aeration capacity, sludge return and all plant process timer settings. Hence the plants performance results and Benchmark Ratings above, as tested in 2009, can be expected to remain unchanged in 2016 and the previous Performance Certificate can be extended for a period of 3 years from its previous expiry date.

This Performance Certificate Extension is specific to the **Waipapa Tanks Econo-Treat® VBB C-2200-2** model as specified above when operated at a flow rate of 1,000 litres/day, and is valid to 31 August 2018. For the full OSET NTP report on the performance of the **Waipapa Tanks Econo-Treat® VBB C-2200-2** system contact Waipapa Tanks & Waste Treatment Systems Ltd of Kerikeri.

### **Authorised By:**

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