

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

PERFORMANCE CERTIFICATE TechTreat SS10 On-site Domestic Wastewater Treatment System, OSET NTP Trial 8, 2012/2013

System Tested

The **TechTreat SS10** on-site wastewater treatment system is a submerged aerated filter treatment unit. Rated design capacity is 2,000 litres/day. Total liquid volume is 6,420 litres (primary treatment 3,200 litres; secondary treatment aeration chamber 2,700 litres; recirculation chamber 160 litres; clarification: 200 litres; pump chamber 160 litres) with aeration blower airflow 80 litres/minute 18 hours/day). Emergency storage is 1,000 litres. No tertiary treatment (such as UV disinfection) is incorporated. It is a two tank system with primary treatment in the first tank and secondary treatment in the second tank, incorporating a submerged aerated filter media (90 sheets) with clarifier and recirculation.

Test Flow Rate

The **TechTreat SS10** system was tested at 1,000 litres/day (equivalent to servicing a 3-bedroom 5 to 6 person household) over an 8 month (35 week) period November 2012 to June 2013 followed by a 1 month (4 week) high load effects test in July 2013 involving 5 days at 2,000 litres per day then 1,000 litres/day over the following 3 weeks.

Testing and Evaluation Procedures

A total of 37 treated effluent samples of organic matter (BOD₅) and suspended solids (TSS) at generally six day intervals during weeks 9 to 35 were tested and evaluated against the secondary effluent quality requirements of the joint Australia/NZ standard AS/NZS 1547:2012. During this period an internal airline came loose and impacted performance until repaired, compromising three sets of results in weeks 14-16. With SWANS-MAG approval these three sets of results were excluded and the evaluation undertaken using 34 results.

A total of 16 treated effluent samples of organic matter (BOD₅), total suspended solids (TSS), total nitrogen (TN), ammonia nitrogen (NH₄-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.

AS/NZS 1547:2012 Secondary Effluent Quality Requirements

These requirements are that 90% of all test samples must achieve a BOD₅ of $\leq 20 \text{ g/m}^3$ and TSS of $\leq 30 \text{ g/m}^3$ with no one result for BOD₅ being $>30 \text{ g/m}^3$ and no one result for TSS being $>45 \text{ g/m}^3$. The **TechTreat SS10 system** achieved a performance level of **100%** for BOD₅ and **91%** for TSS based on the full set of 37 test results in weeks 9 to 35, with no results exceeding the maximums. The **TechTreat SS10 system** thus **meets** the secondary effluent quality requirements of AS/NZS 1547:2012.

Benchmark Ratings

The **TechTreat SS10 system** achieved the following effluent quality ratings for the sixteen benchmarking results in weeks 23 to 35.

Indicator Parameters	Median	Std Dev	Rating	Rating System				
				A+	A	B	C	D
BOD ₅ (mg/L)	5.5	3.5	A	<5	<10	<20	<30	≥30
TSS (mg/L)	12.5	11	B	<5	<10	<20	<30	≥30
Total nitrogen (mg/L)	23.5	5.8	B	<5	<15	<25	<30	≥30
NH ₄ - Nitrogen (mg/L)	11.2	5.9	C	<1	<5	<10	<20	≥20
Total phosphorus (mg/L)	3.6	0.6	B	<1	<2	<5	<7	≥7
Faecal Coliforms (cfu/100mL)	63,000	67,000	C	<10	<200	<10,000	<100,000	≥100,000
Energy (kWh/d) (mean)**	2.0	0.1	C	0	<1	<2	<5	≥5

**** Note:** Overall energy rating reflects conditions at the test facility – power consumption for effluent pumping under field conditions will be specific to the distribution system as installed.

This Performance Certificate is specific to the **TechTreat SS10 system** model as specified above when operated at a flow rate of 1,000 litres/day, and is valid for 5 years from the date below. For the full OSET NTP report on the performance of the **TechTreat SS10 system** contact TechTreat Ltd, KeriKeri, Northland. Phone: (09) 407 1967 Mob: 027 447 2322

Authorised By:

Ray Hedgland, Technical Manager, OSET NTP
23 March 2014