



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

PERFORMANCE CERTIFICATE Biolytix MultiPod OSET NTP Trial 12, 2016/2017

System Tested

The Biolytix MultiPod Biological Trickling Filter with Vermicomposting wastewater treatment system participated in Trial 12 of the On-site Effluent Treatment National Testing Programme (OSET NTP). This commenced on 24 October 2016 and ran over nine months (39 weeks) during which the treated effluent discharge was monitored generally every six days. The Biolytix MultiPod Biological Trickling Filter with Vermicomposting wastewater treatment system tested had a rated capacity of 2000 L/day and was constructed from two 3200L Tanks with 1900L operating volume plus 450L growth media in Tank 1 and 460L operating volume plus 1300L growth media, a Schego M@K3 5W air blower plus an 80 micron geofabric between the growth media and the operating volume in Tank 2, together with 3,100L emergency storage capacity between both tanks.

Test Flow Rate

The Biolytix MultiPod wastewater treatment 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 October 2016 to June 2017 followed by a 1 month (4 week) high load effects test involving 5 days at 2,000 litres/day then 1,000 litres/day over the following 3 weeks. Note that the manufacturer's advised design capacity for this plant is 2,000 L/day (with short term peak capacity of 2,500 L/day).

Testing and Evaluation Procedures

A total of 39 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.

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 tested and the results benchmarked and rated on their median values.

General Performance

The Biolytix MultiPod plant operated unattended throughout the trial and performed consistently well with respect to BOD and TSS removal. The plant stabilised quickly with BOD and TSS achieving 7 mg/L by Week 7 and 2 - 5 mg/L from Week 15 onwards. There was a progressive increase in nitrification through to Week 11 from when NH₄-N was <10 mg/L. However, denitrification was poor throughout, with TN varying 30 - 45 mg/L. TP removal was moderate. Bacteria removal achieved 3.2 log removal which is good for a secondary treatment plant. Power usage was low for a package secondary treatment plant at 0.45 kWh/day.

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 Biolytix MultiPod plant had **100% of BOD₅** results and **100% of TSS** results within the **Secondary Effluent Quality** requirements for both the 90%ile and maximum limits above. **The Biolytix MultiPod plant thus achieved AS/NZS 1547 secondary effluent quality performance requirements** when operated at 1,000 L/day, which is only 50% of the manufacturer's advised design capacity of 2,000 L/day, although both of these parameters were hardly affected by the high flow test at 2,000L/d.



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Benchmark Ratings

The Biolytix MultiPod system achieved the following effluent quality ratings over the sixteen benchmarking results in weeks 20 to 35 (when operated at 1,000 L/day or 50% of the advised plants design capacity):

Indicator Parameters	Median	Std Dev	Rating	Rating System				
				A+	A	B	C	D
BOD (mg/L)	2	0.3	A+	<5	<10	<20	<30	≥30
TSS (mg/L)	3	1	A+	<5	<10	<20	<30	≥30
Total Nitrogen (mg/L)	38.7	3.7	D	<5	<15	<25	<30	≥30
NH ₄ - Nitrogen (mg/L)	8.9	2.7	B	<1	<5	<10	<20	≥20
Total phosphorus (mg/L)	3	0.5	B	<1	<2	<5	<7	≥7
Faecal Coliforms (cfu/100mL)	18,600	30,500	C	<10	<200	<10,000	<100,000	≥100,000
Energy (kWh/d) (mean)	0.45	0.07	A	0	<1	<2	<5	≥5

This Certificate of Performance applies to an Biolytix MultiPod Biological Tricking Filter with Vermicomposting wastewater treatment system with a rated capacity of 2000 L/day as described in the 'System Tested' above.

This certificate is valid for 5 years from the date below. For the full OSET NTP report on the performance of the Biolytix MultiPod wastewater treatment plant contact Karl Gieseler, Phone: 0800 700 818, Mobile 021 738 242 or Email: karl@biolytix.com

Authorised By:

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20 December 2017