

# TREATMENT PLANT APPROVAL 03/2021 Amendment 1

*Plumbing and Drainage Act 2018*



## Approval

1. The **M800s Greywater System** (“the system”) described in the Specifications and Drawings in the attached Schedule and manufactured by **Aqua Clarus Holdings Pty Ltd** (“the manufacturer”) (ABN 810 942 428 14) has been assessed in accordance with the Queensland Plumbing and Wastewater Code (QPW Code) dated 26 October 2017.
2. Approval is granted for an advanced secondary greywater treatment system, subject to compliance by the manufacturer with the requirements of the *Plumbing and Drainage Regulation 2019* and the conditions of approval detailed below.
3. This approval, the conditions of approval and the Schedule comprise the entire Treatment Plant Approval document.
4. Any modification by the manufacturer to the design, drawings or specifications scheduled to this approval must be approved by the Chief Executive.

## Conditions of approval

5. The manufacture, installation, operation, service and maintenance of the systems must be in conformity with the conditions of this Treatment Plant Approval.
6. The advanced secondary greywater treatment system may only be used on premises that generate per day:
  - (a) a maximum hydraulic loading of 720 litres/day; and
  - (b) a maximum organic loading of 400 grams/day BOD<sub>5</sub>
7. For the system to meet the requirements of an advanced secondary greywater treatment system, the system must produce the following effluent quality —
  - (a) 90% of the samples taken must have a BOD<sub>5</sub> less than or equal 10g/m<sup>3</sup> with no sample greater than 20g/m<sup>3</sup>; and
  - (b) 90% of the samples taken must have total suspended solids less than or equal 10g/m<sup>3</sup> with no sample greater than 20g/m<sup>3</sup>; and
  - (c) 90% of the samples taken must have thermotolerant coliform count not exceeding 10 organisms per 100 mL with no sample exceeding 200 organisms per 100mL.
8. Each system must be serviced in accordance with the manufacturers details supplied in the owner’s service and maintenance manuals.
9. Each system must be supplied with —
  - (a) a copy of this Treatment Plant Approval document;
  - (b) details of the system and ancillary equipment;
  - (c) instructions for authorised persons for its installation;
  - (d) a copy of the owner’s manual to be given to the owner at the time of installation; and
  - (e) detailed instructions for authorised service personal for its operation and maintenance.

10. This approval does not extend, apply to, or include the land application system used in conjunction with an approved system installed on premises.
11. At each anniversary of the Treatment Plant Approval date, the manufacturer must submit to the Chief Executive a list of all systems installed in Queensland that they have received an installation and commissioning certificate for during the previous 12 months.
12. Where the Chief Executive is notified of any system failures that they believe are a result of poor design or faulty manufacture, the Chief Executive may randomly select a number of installed systems for audit. The Chief Executive will notify the National Association of Testing Agencies (NATA) accredited laboratory nominated by the manufacturer, which systems are to be audited for Biochemical Oxygen Demand (BOD<sub>5</sub>) and Total Suspended Solids (TSS). The sampling and testing of the selected systems, if required, is to be done at the manufacturer's expense. The following results must be reported to the Chief Executive;
  - (a) Address of premises.
  - (b) Date inspected and sampled.
  - (c) Sample identification number.
  - (d) Biochemical Oxygen Demand (BOD<sub>5</sub>).
  - (e) Total Suspended Solids (TSS).
13. The Chief Executive may, by written notice, cancel this approval if the manufacturer fails — to comply with one or more of the conditions of approval; or within 30 days, to remedy a breach, for which a written notice been given by the Chief Executive.
14. This approval may only be assigned with the prior written consent of the Chief Executive.
15. This approval expires on 30 April 2024 unless cancelled earlier in accordance with paragraph 13 above.
16. The amendment to the approval 03/2021 is made on 22 December 2023.



**Anne Neuendorf**  
**Acting Assistant Director-General**  
**Building Policy**  
**Department of Housing, Local Government, Planning and Public Works**

Date approved: 22 December 2023

**TREATMENT PLANT APPROVAL No. 03/2021**  
**Amendment 1**

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**SCHEDULE**

**Attachment 1**

Specifications for the

**M800s Greywater System**

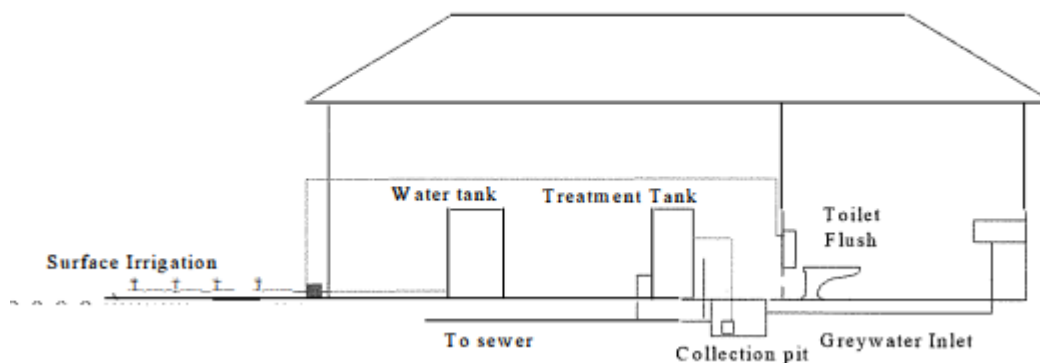
## How the System Works

The M800s system is an on-site packaged greywater treatment system designed to treat household greywater and kitchen waste water from domestic houses at the rate of 720 litres per day with up to eight occupants.

The system comprises a below ground collection tank which is coupled to an above ground treatment tank. The recycled water is connected to the house for re-use but additionally the below ground tank is connected to the sewer in case of malfunction.

The M800s uses a state-of-the-art treatment process that produces reclaimed water of exceptional quality at a reasonable cost.

An overview of the treatment systems is illustrated below.

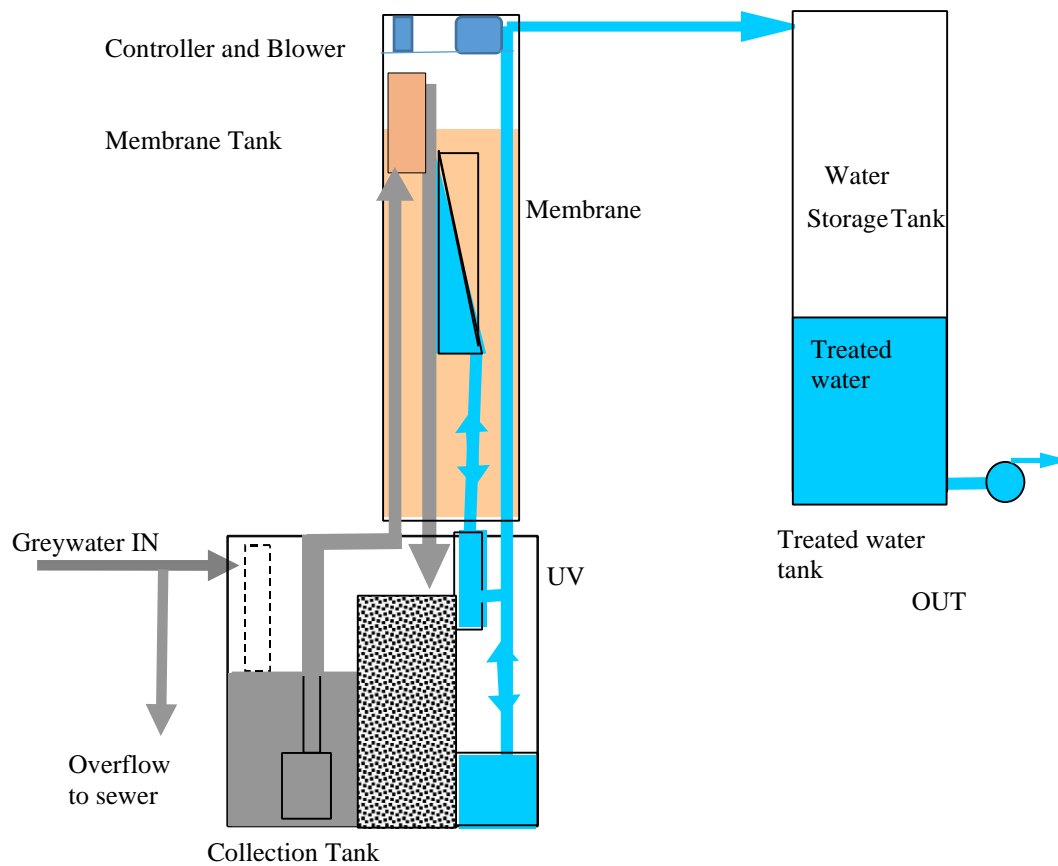


## How Waste is Processed

The greywater flows into an in ground feed tank where the liquid is strained to remove hair, lint and other items. The collected liquid is then pumped to the above ground treatment system where it enters a bioreactor, membrane filter and finally passes through an ultraviolet disinfection system before entering a small treated water tank.

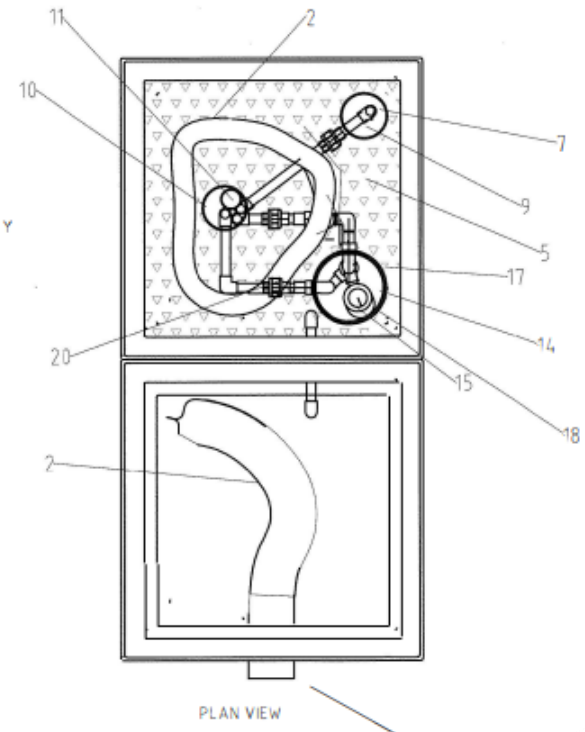
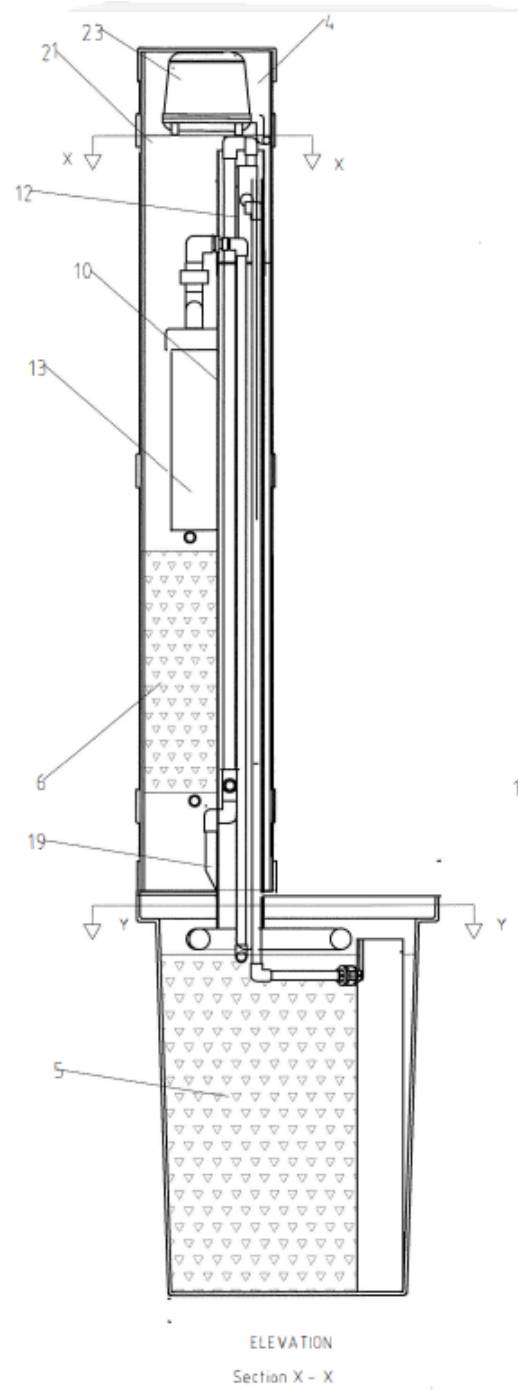
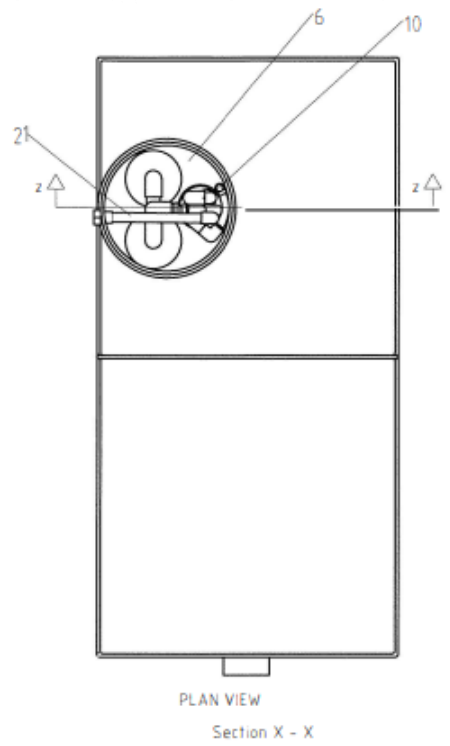
When the liquid in the water tank reaches a predetermined level it is automatically pumped back to backflush the membranes. The bulk of the treated water is pumped to a larger water storage tank for reuse.

A schematic of the system is as follows:-

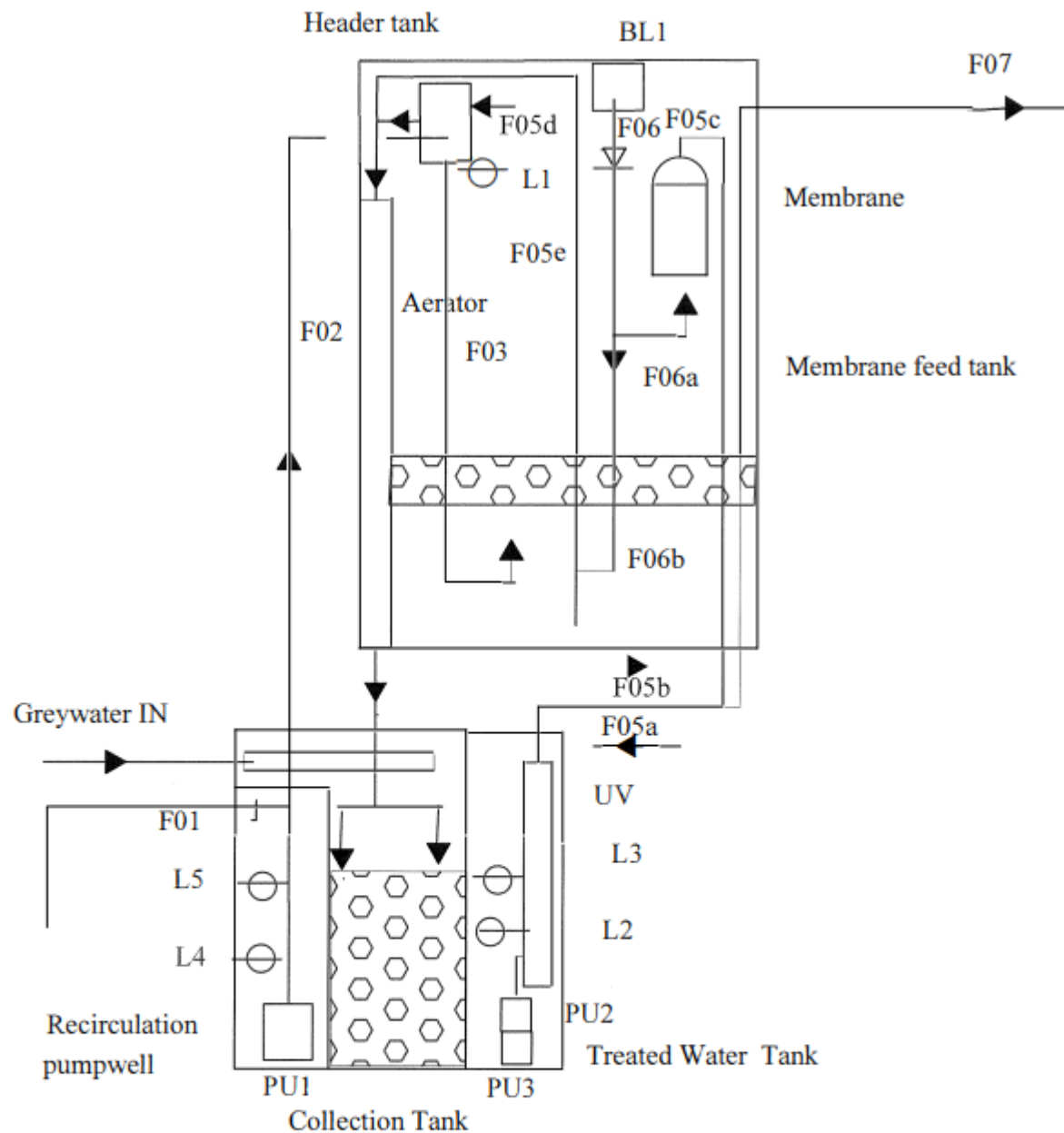


**Electrical, mechanical and communication**

The M800s utilises four small low wattage pumps, an ultra-violet disinfecter and an aerator. The system is self-contained and only needs to connect to a standard 10 amp GPO outlet. A audio visual alarm is also incorporated in to the system with light and buzzer which alerts you to a problem.



ITEM	DESCRIPTION	DETAIL
1	Inlet Pipe	100DWV from inlet and to overflow
2	Pre-filter	100mm ag pipe with sock
3, 3a	Collection tank	Everhard Tank Pumpwells with extension. 500 litres
4	Membrane Tank/upper section housing blower	300mm SW pipe with end caps
5	Trickle bed reactor	100mm ag pipe cut into 100mm lengths 220l
6	Treatment cartridge	50 mm ag pipe cut into 50mm lengths
7	Recirculation Pump	12v DUMP
8	Pump-well	10mm DWV pipe
9	Collection tank floats	Two magnetic float switches
10	Standpipe	Two magnetic float switches
11	Aeration tube	50mm ag pipe without holes
12	Membrane feed tank	100 mm DWV
13	Membrane cartridge	2x Microdyn NadirUltra flow UF Membrane BT42
14	Booster pump	Rule 12 v
15	UV	Wedeco LCU2
16	Water tank	SW pipe with end caps 30 litres
17	Water tank Floats	Two magnetic float switches attached to outlet pipe
18	Water Tank Pump	Rule 12v pump
19	Air lift pipes	Lift 20mm pipe Air pipe 15mm
20	Solenoid valve	12v DC solenoid valve
21	Outlet pipe	15mm female connection
22	Contol Panel	300mm SW pipe
23	Blower	Hiblow HP80 Blower
24	Controller	Aqua Clarus specification
25	Air lift pipe	20mm pipe



Displayed Text	Detail	Litres/ day
F01	Max 150l/hr	800
F02	20 l/m when pump running	6760
F03	96 l/hr	905
F04	300l/hr	7200
F05a	96 l/hr Approx 1.2 litre/min. When booster PU2 on 2 l/m	905
F05b	Backwash 5 sec 0.55l + pump out L3 to L4 11 sec 4.14l Also every 30min for 5sec. Total 37.5 l/hr	929
F05c	Backwash 5 sec 0.55l Total 4.4l/hr	60
F05d	0.55l per backwash. 4.4 l/hr plus Carried by air lift from 6a est. 4litres/hr Total 8.4l/hr	160
F05e	Air lift 8 l/m Air on 2m/hr Total 16l/hr	400
F06	Air 20 l/min 2min hr	500
F06a	Air 10l/min(air holes sized to balance flow between 6a and 6b)	250
F06b	Air 10l/min	250
F07	20 l min Pump on 4 sec 4.1 litres. 190 pump outs One every 8min.	800
		<b>Power kWhr</b>
PU1 Recirc	20l/min 20 kPa 58W on 2min off 8min 2.9 hrs/day	0.17
PU2 Booster	2l/min 36 kPa 40W 2hrs/day	0.08
PU3 Water	20l/m 74 kPa 80W 0.8 hrs/day	0.06
BL Blower	38 W 1hr /day	0.04
UV	20W On 24 hrs	0.44
	<b>TOTAL</b>	<b>0.79 kWhr</b>
L1		
L2—L3	188 mm 61 litres L2 136 l L3 75 l	Overflow 153 l
L4-L5	268 mm 4.7 litre	