

TREATMENT PLANT APPROVAL 03/2024
Plumbing and Drainage Regulation 2019, part 4



Approval

1. The **Nature Clear GWS10** ("the system") described in the attached Schedule and manufactured by **Ecoflo Wastewater Management Pty Ltd** ("the manufacturer") (ABN 33 606 583 895) ("the manufacturer") has been assessed in accordance with the *Queensland Plumbing and Wastewater Code Version 1 2024 (QPWC)*.
2. Approval is granted for the system as an "**Medium quality effluent**" wastewater treatment system, subject to compliance by the manufacturer with the requirements of the *QPWC - Schedule 1*, the *Queensland Plumbing and Drainage Regulation 2019*, and the conditions of approval detailed below.
3. As no changes have been made to the system, this approval replaces the previous Treatment Plant Approval (TPA) TPA 01/2022 Amendment 1 issued on 22 December 2023.
4. This approval, the conditions of approval, and the Schedule comprise the entire Chief Executive Approval document.
5. 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

6. The manufacture, installation, operation, service, and maintenance of the system must be in conformity with the conditions of this TPA.
7. The system may only be used on premises that generate per day:
 - (a) a maximum hydraulic loading of 2700 L; and
 - (b) a maximum organic loading of 800 g BOD₅.
8. For the system to meet the requirements of an "**Medium-quality effluent**" greywater treatment system, the system must produce the following effluent quality —
 - 90% of the samples taken must have a BOD₅ less than or equal 20 g/m³ with no sample greater than 30 g/m³; and
 - 90% of the samples taken must have total suspended solids less than or equal 30 g/m³ with no sample greater than 45 g/m³; and
 - 90% of the samples taken must have thermotolerant coliform count not exceeding 30 organisms per 100 mL with no sample exceeding 200 organisms per 100 mL.
 - The total chlorine concentration shall be greater than or equal to 0.2 gm³ and less than 1.0 g/m³ in four out of five samples taken.
9. Each system must be serviced in accordance with the manufacturer's details supplied in the owner's service and maintenance manuals.
10. 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.

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11. This approval does not extend, apply to, or include the land application system used in conjunction with an approved system installed on premises.
12. 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.
13. 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 several 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 (BOD₅) 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 (BOD₅).
 - (e) Total Suspended Solids (TSS).
14. 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.
15. This approval may only be assigned with the prior written consent of the Chief Executive.
16. This approval expires on **30 April 2029** unless cancelled earlier in accordance with paragraph 14 above.

Lindsay Walker

Treatment Plant Approval
Approved by: Lindsay Walker
Delegated Authority
Department of Energy & Public Works



Director

Plumbing, Drainage and Special Projects
Date approved: 29 April 2024

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SCHEDULE

Nature-Clear GWS10 Greywater Treatment System.

Attachment 1 – Nature-Clear GWS10 Greywater Treatment System - Operators manual.

Attachment 2 – Nature-Clear GWS10 Greywater Treatment System - Schematic diagrams.



Nature-Clear GWS10 Greywater System

Owner's Installation & Maintenance Guide

Phone: 07 3889 6144 Phone: 1300 138 182
Email: info@ecoflo.com.au Web: www.ecoflo.com.au



Specifications

What the package includes:

1. 450 Litre Filter tank
2. 100 mm DWV inlet pipe + 2X50mmØx900mm Pipes
3. 1 large piece of Fine Geotextile (Grey)
4. 1 medium piece of Green Shade Cloth
5. 1 small piece Green Shade Cloth
6. 3 x sample bags of gravel & sand

You will require

1. 100 kg of gravel nominal size 12-25 mm
2. 120 Kg of fine sand of nominal size 0.4-1.2mm
3. 320Kg of coarse sand of nominal size 1.5- 3 mm
4. 210 Litres of Pine bark
5. Optional FRP Lid

NATURE-CLEAR GWS10 2.0 GREYWATER TREATMENT SYSTEM

The system provides a simple and low-cost effective means of treating greywater. Not only is the equipment low cost, but also, on a suitable site, the only significant excavation work required to install the system will be the trenching. The ongoing costs of the GWS10 will be similar to those of a standard septic system.

In order for the filtration tank to work effectively it is necessary to remove food scraps and grease from the kitchen waste water (see page 7 for further details). For this purpose, we supply a 300L grease trap. As an alternative we can supply smaller grease traps which need more frequent emptying.

The filtration tank, which is less than 1 cubic metre in size, consists of a pine bark coarse filter on top of a fine sand filter.

The coarse filter removes:

- large particles not caught in the grease trap; and
- lint from the washing machine.

The sand filter:

- traps still finer particles
- polishes the water; and
- reduces the organic content of the water.

The pine bark is separated from the sand by filtration material. The filtered material and bark will compost over time but should be removed and replaced with fresh bark as per the instructions in the maintenance section of this manual. If your distribution area is downhill from the filtration tank your geotech engineer will be able to design a distribution system without the use of a pump. If this is not the case, you will need a pump well. If required, we recommended that the well and pump are purchased locally from your plumbing store. General instructions on how to install a pump are provided in this manual.

The water that exits in the filtration tank is classified as having undergone "Primary Treatment" and must be distributed into trenches as specified by your engineer. Make sure their size calculation does not include an allowance for toilet water, which would make the trenches unnecessarily large and expensive



GWS10 Filtration Tank

GWS10

FILTRATION TANK INSTALLATION

The filtration tank should be at least partially dug (at least 500mm deep) into the ground. The tank should be laid on a bed of sand with a 1-2% incline towards the outlet pipes.

1. The tank is first filled with 5 - 6 x 20kg bags of gravel (River sands Resources #3 gravel or similar with a nominal size of 12-25 mm). The gravel must be no smaller than this. The layer should be at least 80mm deep and cover the outlet pipe. Rake the gravel flat. Be careful not to damage the outlet pipes as the gravel is added.
2. Lay the larger fine grey coloured filter cloth material on top of the gravel. The excess material may be hung over the top edge & outside the tank.
3. Carefully add 120kg of fine grade washed sand (River sands 7C sand or similar with a nominal size of 0.4-1.2mm). The fine sand layer should be about 100 mm thick. Rake the sand flat.
4. Lay the smaller fine grey coloured filter cloth material on top of the previous layer. The excess material may be hung over the top edge & outside the tank.
5. Then add 320 kg of coarse washed sand (River sands #6 sand or similar with nominal size of 1.5-3.0 mm). Rake flat & neatly fold over grey filter material.

Note:

We strongly recommend that the sand is washed before putting it into the tank by placing it on the filtration material and allowing water to flow thru to remove the fines from the sand. If the sand is not washed until the fines have been removed they will end up further down the system with the possibility of causing expensive blockages.

6. Lay the Shade Cloth over the previous layer. Fit the pipe work – DO NOT glue together. The top of the shade cloth is designed to extend beyond the top of the tank for ease of removal when the material needs to be cleaned. The 'U' shaped slots in the top of the shade cloth are for fitting around the inlet pipe. Add the medium coarse pine bark 160 litres on the green shade cloth. Fold the excess cloth on top of the bark.
7. Connect the outflow from the grease trap (if kitchen water is being diverted into your Nature-Clear) and other waste water sources to the inlet pipe of the tank ensuring that the inlet pipe is sealed where it enters the tank. Also seal the opposite end of the inlet pipe where it exits the tank. The capped end should be on the same end of the tank as the Outlets at the base of the tank.
8. If the application area is to be gravity fed the 2 outlet pipes from the filtration tank will now need to be connected to the pipe work of the application area.

Contact Ecoflo for replacement materials:

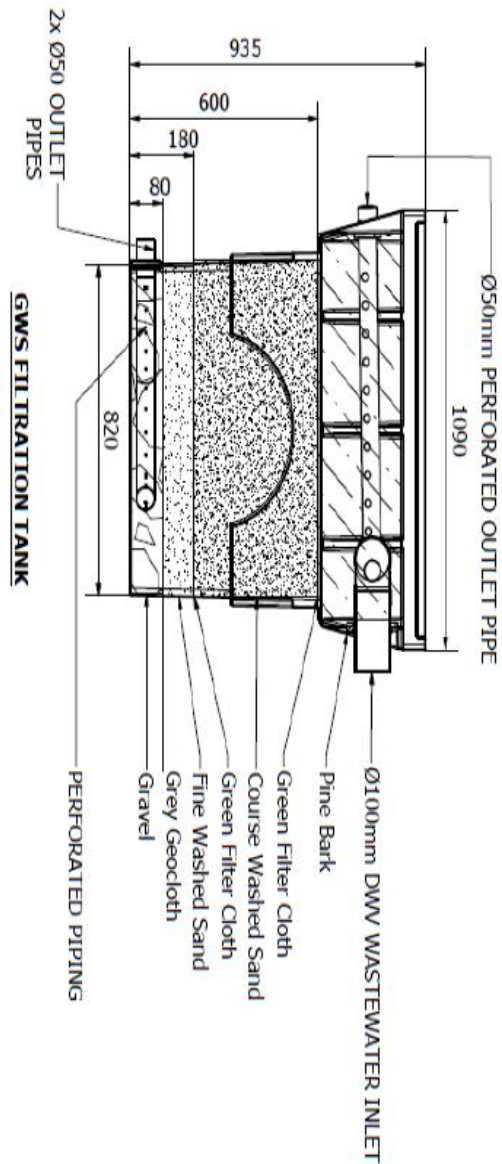
Ph.: 07 3889 6144 or 1300 138 182 Email: info@ecoflo.com.au

NATURE-CLEAR GWS10 FILTRATION TANK SPECIFICATIONS

FILTRATION TANK:

- Material; Medium density grade polyethylene
- Properties; U. V stabilised - High stress resistance
- Thickness; Average 5 mm
- Construction;
 - Rotational moulding
 - All surfaces are continuous with no welded or joined seams
 - Ribbed structure for additional strength
- Dimensions;
 - Height: 960 mm
 - Length: 860 - 1090 mm
 - Width: 860 - 1090 mm

NATURE-CLEAR GWS10 FILTRATION TANK SPECIFICATIONS



COMPONENTS

3x GEOTEXTILE BARRIERS

APPROX 0.07 CUBIC METRES OF NOMINAL SIZE GRAVEL 12 - 25mm

APPROX 0.2 CUBIC METRES OF NOMINAL SIZE FINE WASHED GRAVEL 0.4 - 1.2mm

APPROX 0.16 CUBIC METRES OF NOMINAL SIZE COARSE WASHED SAND 1.5 - 3.0mm

1x Ø100mm - 50mm INLET PIPE ASSEMBLY

2x Ø50mm OUTLET PIPES WITH 50mm PERFORATED PIPE

FILL REMAINING SPACE UP TO RIM OF TANK WITH PINE BARK

NATURE-CLEAR GREY WATER PRIMARY TREATMENT SYSTEM (GWS10)



GWS10 PUMP WELL INSTALLATION (OPTIONAL)

If a pump well is to be used, it needs to be located next to the filtration tank on a flat bed of sand such that the lid is just protruding above ground. The outlet pipes from the bottom of the filtration tank need to be connected to the upper inlet port on the pump well (as shown in the schematic on the previous page) such that water will flow under gravity. All ports to be sealed on the outside and inside of the tank.

The pump is now to be installed. It should be raised above the floor of the tank by using, for example, a couple of bricks so that any sludge collects beneath the pump.

GWS10 MAINTENANCE

CLEANING AGENTS:

- Use only biodegradable household cleaners for cleaning any equipment or appliance connected to the system.
- Use low phosphate and sodium detergents.
- Minimise the use of disinfectants, bleaches, whiteners and spot removers.

WASTE WATER:

- Dispose of kitchen waste via a composter unit or garbage collection system.
- Minimise the amount of fat deposited in the drains by wiping pans and plates with kitchen paper towel before washing.
- Put a strainer on the kitchen sink to minimise the load on the filter system.
- Do not dispose of non-liquid waste or chemicals into the drains.
- Do not use a garbage grinder.
- Ensure your grease trap is regularly cleaned out as per the supplier's recommendations.

FILTRATION TANK:

- Inspect the inlet pipe for blockages on a quarterly basis. Clean if necessary.
- Aerate pine bark by raking every 3 months. At this time inspect the green coloured filtration material and remove for cleaning or replacement as necessary. When the bark contains more than 25% foreign matter, tip it into a garden bed where it will continue to compost. Replace with fresh bark.
- If water starts to pool on top of the bark the top green shade cloth needs cleaning - remove the bark and green filtration material as per the above. Clean or replace the shade cloth, remove any sludge from the top of the grey filter material and top up sand as necessary. Reinstall the filter material & shade cloth and cover with the bark and green filtration material.
- Every ten years replace all the sand and clean the tank.

GREASE TRAP:

- Inspect the inlet pipe for blockages on quarterly basis and clean if necessary.
- Pump out the 300 litre tank every three years.
- If you have the smaller grease trap it should be cleaned every six weeks.



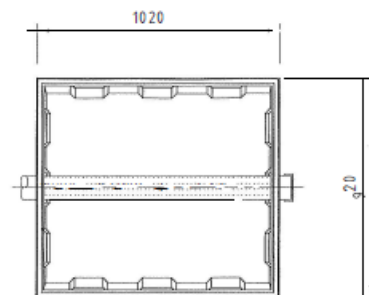
GWS10 TROUBLESHOOTING

If the filtration tank is draining too slowly reduce the amount of grease entering the system by wiping pans and plates with kitchen paper towel.

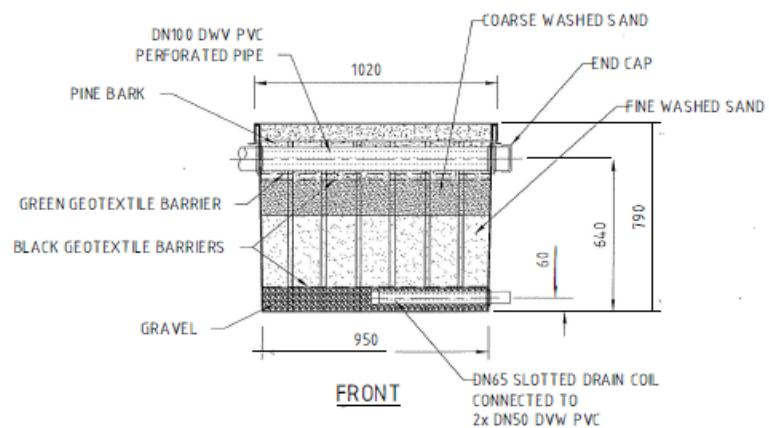
Alternatively call Ecoflo (07 3889 6144 or 1300 138 182) for a supply of Nature Flush enzyme concentrate. A daily dose of Nature Flush enzymes into the kitchen sink over a 2-week period will improve the performance of the Nature-Clear as the enzymes digest the grease and fat deposits which may have caused minor blockages within the system.

If water is draining too slowly from the sink the grease trap needs emptying.

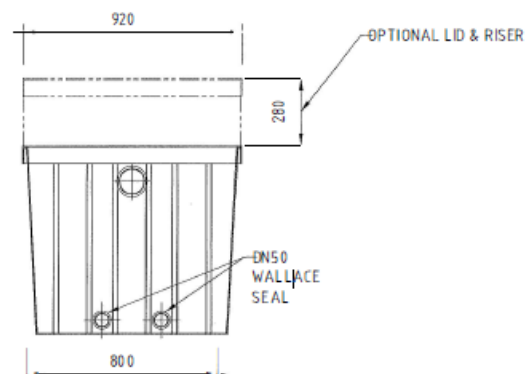
Attachment 2 – Nature-Clear GWS10 Greywater Treatment System - Schematic diagrams.



TOP



FRONT



SIDE

NOTES:

1. MANUFACTURING TOLERANCE $\pm 2\%$.
2. ALL MATERIAL LDPE EXCEPT PVC PIPING AND S/S FASTENERS.
3. TANK CONTENT: <NOT SUPPLIED>
 - 3.1. 100kg GRAVEL OF NOMINAL SIZE 12-25mm.
 - 3.2. 100kg FINE SAND OF NOMINAL SIZE 0.4-1.2mm.
 - 3.3. 300kg SAND OF NOMINAL SIZE 1.5-3.0mm.

PRELIMINARY
NOT FOR CONSTRUCTION

				UNLESS OTHERWISE STATED ALL DIMENSIONS IN mm			 PH 1300 138 182 www.ecoflo.net.au ABN 33 606 583 895			CONSULTANT : NEUBAU www.neubau.com.au PH (07) 3252 1244		
				THIRD ANGLE PROJECTION			CLIENT : ECOFLO WASTEWATER MANAGEMENT			A3		
				DRAWN BY: HN			JOB TITLE : NATURE CLEAR GWS10			SHEET		
				DATE : 14.3.16			DWG TITLE : GREY WATER PREFILTER 450 L ARRANGEMENT AND DETAILS			1 OF 1		
				DATE : -			SCALE: 1:20			REV		
				DATE : -			JOB No: -			C		
				DATE : -			DWG No: ECO-301-G-01					
							FILE NAME: - SUB DR - DR - DATE - BY: -					

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