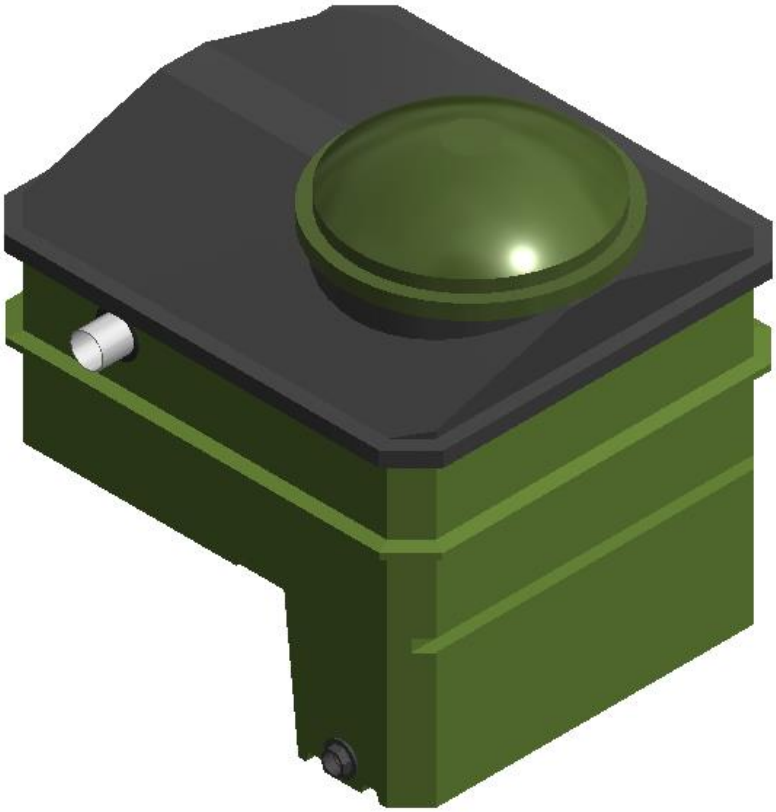
naturalflow
eco-wastewater & sewage systems
by Waterflow NZ Ltd

NaturalFlow Series NF600TH Treatment System

System Specifications & Installation Instructions



Compliance Requirements

All NaturalFlow Treatment Systems meet the requirements of the NZ Building Code G13-VM4.

Section 9 of AS/NZS 1546.1:2008 state that tanks constructed to these Standards will meet the requirements of the Code for Clauses B1 and B2, structure and durability.

Compliance with Section 9 of AS/NZS 1546.1:2008 and also Clauses G13.3.4 relating to on-site treatment and disposal systems and G14.3.1 and 14.3.2 relating to the control of foul water as an industrial waste are covered in the 'NaturalFlow Compliance Requirements' document.

Please feel free to ask for a copy of this complete document, if required.

The Treatment Process

The NaturalFlow Series NF600TH Treatment System comprises of a 1.2m x 0.8m WORMORATOR® bed where the wastewater, in order to separate the solids from the liquid, is directed onto a bed of natural medium, designed to retain maximum solids.

These residual solids are seeded with tiger worms which proceed, as results of long term testing have shown, to digest them reducing the volume by approximately 95%, leaving only residual vermicasts which are virtually free of harmful bacteria and other pollutants. The black water (B/W) then flows through a secondary settling stage, which further treats and settles out contaminants, reducing BOD and the particle size in the TSS to less than 1mm. This secondary settling stage acts as an in-built outlet filter AS/NZS 1546 1:2008 Clause D3.3. and has a minimum life expectancy of 15 years.

It then trickle flows into the Dose Treatment Chamber where it is combined with the grey water (if separate) and final settlement and discharge takes place. This system has a buffering capacity of 1000ltrs to contain any surge flows.

It is then disposed of, into the receiving environment, in accordance with AS/NZS 1547:2012 and the relevant local authority's requirements. The size and extent of the disposal systems are determined by the receiving environment and the expected flow volumes. Factors such as soil types, slope and the proximity of potentially sensitive environments and constraints such as creeks, bores, wells etc determine the extent, location and type of disposal system chosen.

The Wormorator® and associated dose tank has a 1200ltr reserve capacity where pump loading is necessary to allow for 24 hrs emergency storage should a pump fail. The operating capacity of the NaturalFlow Series NF600TH Treatment System is 640ltrs per day of combined Black and Grey water.

Because the WORMORATOR® is a dry vault system there is negligible sludge build up so it does not require any regular de-sludging. This specifically meets clause AS/NZS 1547:2012 5.4.2.2.1 as to desludging requirements.

Wormorator® & Dose Chamber Specifications

Tanks are made of Cotene 9050 which is a linear medium density polyethylene, designed specifically for rotational molding of large tanks and products that require a high level of rigidity. It contains a fully formulated long term UV stabilization package (with a minimum UV8 rating) and is suitable material for wastewater treatment containment meeting all the requirements of Section 4.3.3 of AS/NZS 1547:2012 which cross references the structural performance requirements of its section 2.4.2.3 back to the relevant provisions of AS/NZS 1546.1, which for plastic septic tanks constructed via by rotational molding using thermoplastics (polyethylene) are set out in Section 9 of that Standard. These tanks have an expected lifespan of 50 years.

NF600TH Module

1250ltrs Nominal capacity
1350mm Long
1200mm Wide
1200 mm O/A height

Installation Location and Certification

These tanks are not designed for vehicle loads and shall be located no closer than 1.50m to a driveway, road frontage or a building. If for any reason the tank is located where vehicle traffic may drive over the tank or approach closer than 1.50m, or where it may be trampled on by farm stock then the tank should be protected by a concrete slab designed to support these loads. Surface water must also be diverted from flowing into the installation.

Installation must be certified to AS/NZS 1547:2012, the certificate to be issued and held by the regulatory authority.

High Water Table Installations

The NF600TH is not designed for high water table situations

Plumbing Pipes and Fittings

All internal plumbing is done with PVC pipes with appropriate connections according to AS/NZS 1260 and AS/NZS 4130.

Backfill and Bedding

Place and bed to NZBC G13/AS2, using compacted granular metal, in layers not exceeding 100mm.

Electrical

Where a pump is required on a flat site electrical connection must be installed according to AS/NZS 3000 and the control and alarm system must be in a weatherproof housing located in a readily visible position.

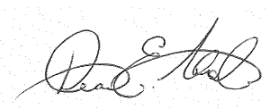
Warranty

WATERFLOW NZ LTD warrants that the NaturalFlow System will be free from defects in material and workmanship for the following periods of time from the date of installation as set out in the following conditions:

1. Roto-Molded tanks 15yrs
2. Filter media 15yrs
3. Dosing float/and or pumps 2yrs
4. WATERFLOW NZ LTD will at its discretion replace or repair such components that prove to be faulty with the same or equivalent part at no charge.
5. Warranty of operation covers the performance of the NaturalFlow systems as connected to the effluent inflow for which they are designed, and also installed to the criteria as set out in the relative installation instructions and procedures.

Warranty excludes defects due to:

A) Failure to use the system in accordance with owner's manual.
B) A force majeure event outside the reasonable control of WATERFLOW NZ LTD such as (but not limited to) earthquake, fire, flood soil subsidence ground water table variations or plumbing fault.
C) Modifications to surrounding landscape contours after installation
D) The actions of a third party
E) The system required to bear loads (either hydraulic or biological) greater than that for which it was designed
F) Any modifications or repairs undertaken without the consent of WATERFLOW NZ LTD
G) Failure, where applicable, to fence and plant land application system (disposal field)



1st October 2019
Dean Hoyle
Managing Director

The NaturalFlow system is to be installed or signed off by a registered Drain layer to the design specified by Waterflow NZ Ltd.

The following installation instructions and procedures followed correctly will ensure System performance is not compromised in any way.

1. Excavate a 1.4m (wide) x 1.6m (long) level platform at the appropriate depth, so when it is placed there is adequate fall to inlet from its source. Ensure it is not so deep so as to bury the tank below the point where tank is joined (approx. 1050mm).
2. Lay 100mm of bedding metal on platforms and place the tank.
3. Where possible excavate a trench away from System and lay drain coil and drainage metal at the base of the system to drain away any surface or ground water.
4. Trench from outlet to disposal field, ensuring there is a constant fall from outlet to disposal field (fall only required if siphon discharge.)
5. Take a minimum of 2 photos at this point to show correct installation for sign off.
6. Back fill around tanks with pea metal. DO NOT back fill with soil or clay of any type as this can cause point pressure on the modules and could cause distortion. Do not back fill above join in the tank.

Caution: System must be protected from excessive super imposed loads both lateral and top loads. E.g. loads from vehicular traffic. There needs to be at least 2m of clearance maintained around system.

Worms: Ensure adequate moisture in the Wormorator® and add worms once installed unless systems is not going to be used within 2 months of installation.

Appendix A

Instructions for fitting UNISEAL®

1. Cut hole to the Hole saw size indicated for the UNISEAL® you are using. Either 127mm hole for a 4”/100mm pipe or 67.2mm hole for a 2”/50mm pipe.

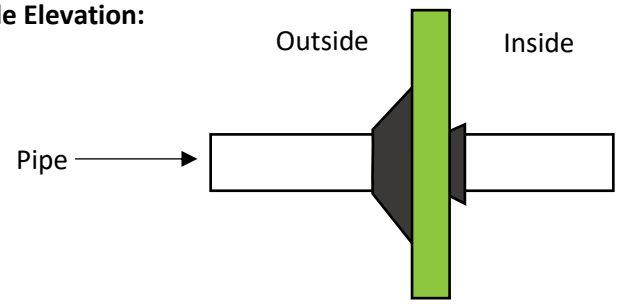
2. Ensure that the hole is clean cut with sharp edges. Irregularities could cause poor seating and ultimate leakage.

3. Insert the UNISEAL® into the hole with the wide side facing the pipe to be inserted.

4. Make certain that the pipe end to be inserted is clean cut. File the edges so that there are no sharp points to cut UNISEAL®.

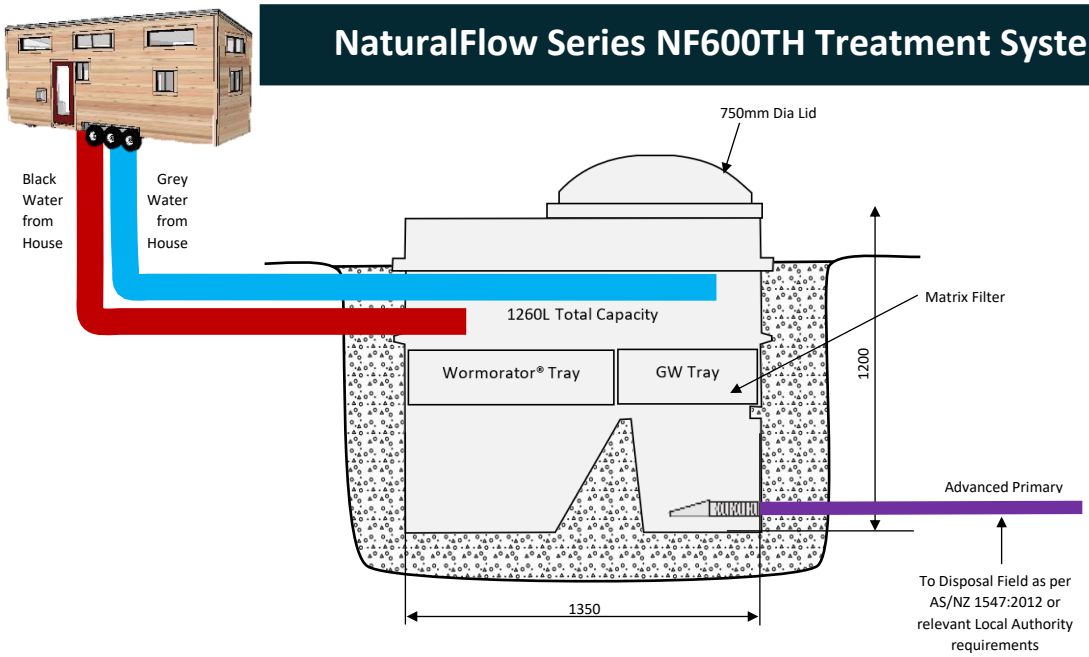
5. Using Detergent, lubricate the outside of the pipe end to be inserted, then push the pipe through the UNISEAL® from the large flange side. The detergent will be squeezed off as the pipe passes through the UNISEAL®. The co-efficient of friction of the rubber holds the pipe tightly in place.

Side Elevation:

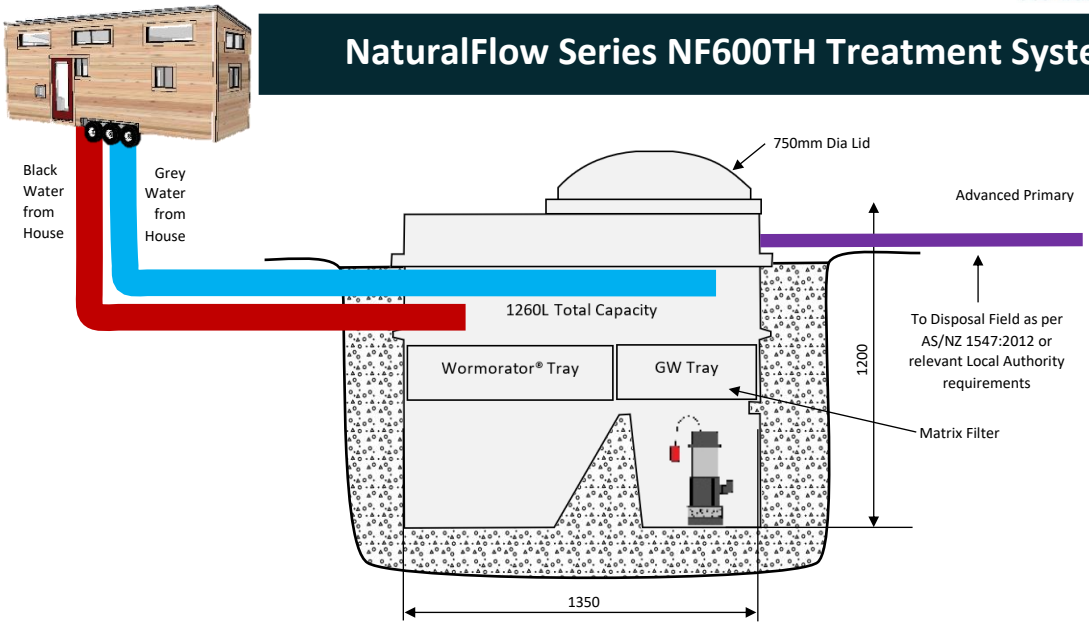


NaturalFlow Series NF600TH Flow Charts

NaturalFlow Series NF600TH Treatment System Dose



NaturalFlow Series NF600TH Treatment System Pump



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