WaterFlow
Bringing Clarity to Wastewater

ECONOTREAT™

VBB-C-2200 Treatment System

System Specificatons & Installation Instructions

WF-ET-2200C-Spec and Install-241011

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Compliance Requirements

All Waterflow Septic Tanks and Treatment Modules meet the requirements of the New Zealand Building Code G13-VM4, Clause B1 - Structure, and Clause B2 Durability As stated in the AS/NZS 1546.1:2008 Standard, 1.5.2.1, all septic tanks constructed to this Standard meet the requirements of the New Zealand Building Code for Clause B1 - Structure and Clause B2 Durability.

The design and specifications of the septic tank are fully compliant with the AS/NZS1546.1:2008 Standard, including but not limited to:

Structural Integrity: The tank is designed using 50 MPa fibre-reinforced concrete with appropriate foot anchors and reinforcement, ensuring it meets the structural requirements specified in the standard.
Material Specifications: All materials used, including the reinforcing details and concrete mix, comply with the necessary standards for durability and suitability in septic tank applications.
Capacity and Dimensions: The tank's dimensions and baffle placements align with the standard's guidelines, ensuring proper functionality and waste management.
Access and Maintenance Provisions: The design includes provisions for easy access, necessary for regular inspection, cleaning, and maintenance in accordance with the standard.

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

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Treatment Process

Primary Chamber / Tank
Influent enters the chamber via the source whereby scum and solids capable of settling are separated from the raw influent. Primary treated effluent flows through a transfer port to the aeration tank. This primary tank will also act as a storage chamber for sludge returned from the Clarification Chamber.
After primary settling, the sewage passes through a Reln outlet filter.

Aeration Chamber
Water enters from the Primary Chamber. Air is introduced into this chamber via an air blower to create an environment for aerobic bacteria and other helpful organisms to consume the organic matter present. The aeration tank is designed in a manner to help prevent short circuiting of the wastewater to ensure extended aeration. Media is present in the tank to support the growth of bacteria.

Clarification Chamber
The Clarification chamber is essentially a quiescent zone where suspended particles/solids are settled out of the water. These particles are returned to the Primary chambers via a sludge return which aids in further biological reduction, denitrification and providing a constant food supply rich in microbes supporting the system through periods of limited flows.

System Performance
The Econotreat VBB-C-2200 system is capable of treating up to 2200L per day peak flow to an advanced secondary standard. The effluent is suitable for UV disinfection where required.

Benchmark Ratings
The **Waipapa Tanks Econo-Treat® VBB C-2200-2** system **achieved** the following effluent quality ratings:

Indicator Parameters	Median	Std Dev.	Rating	Rating System				
				A+	A	B	C	D
BOD (g/m^3)	3.4	1.5	A+	<5	<10	<20	<30	≥30
TSS (g/m^3)	4.98	3.49	A+	<5	<10	<20	<30	≥30
Total nitrogen TN (g/m^3)	13.6	1.3	A	<5	<15	<25	<30	≥30
Ammonia Nitrogen NH4-N (g/m^3)	1.1	1.8	A	<1	<5	<10	<20	≥20
Total phosphorus TP (g/m^3)	4.2	0.5	B	<1	<2	<5	<7	≥7
Faecal Coliforms FC (cfu/100mL)	11,200	50,196	B-	<10	<200	<10,000	<100,000	≥100,000
Energy (kWh/d) (mean)	1.8	-	B	0	<1	<2	<5	≥5

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Effluent Quality

The EconoTreat VBB-C-2200 Series wastewater treatment system generates advanced secondary treated effluent of the following quality provided that there are no inhibitory or toxic substances within the wastewater that will impair the biological performance of the system:

- 5-day Biochemical Oxygen Demand (BOD5) 15 mg/L
- Suspended solids 15 mg/L

Note: Please read Guidelines on how to care for your EconoTreat wastewater system which are to be adhered to at all times.

The treated wastewater will usually be disposed of via a land application system, designed accordingto AS/NZS 1547:2012which describes various land application systems for primary treated effluent. Disposal systems must also comply with the relevant Regional Authority rules, and these should be consulted.

Loading Rates

• Total Daily Flow Rate	2200 L per day
• Organic loading as BOD5	700g per day
• Suspended solids loading	700g per day

Important: the actual maximum loading of an installed EconoTreat VBB-C-2200 System is limited to the capacity of the land application system it discharges to. For example if the land application system is designed with a capacity of 800L per day, then the VBB-C-2200 System must not be loaded at more then 800L per day.

Dual Chamber Septic Tank

5200L Nominal Capacity
2500mm Long
1700mm Wide
1975mm High
- 3100kg

Aeration Tank

5200L Nominal Capacity
2500mm Long
1700mm Wide
1975mm High
- 2900kg

Pump Chamber

500L Pump Chamber
2200L Emergency Storage

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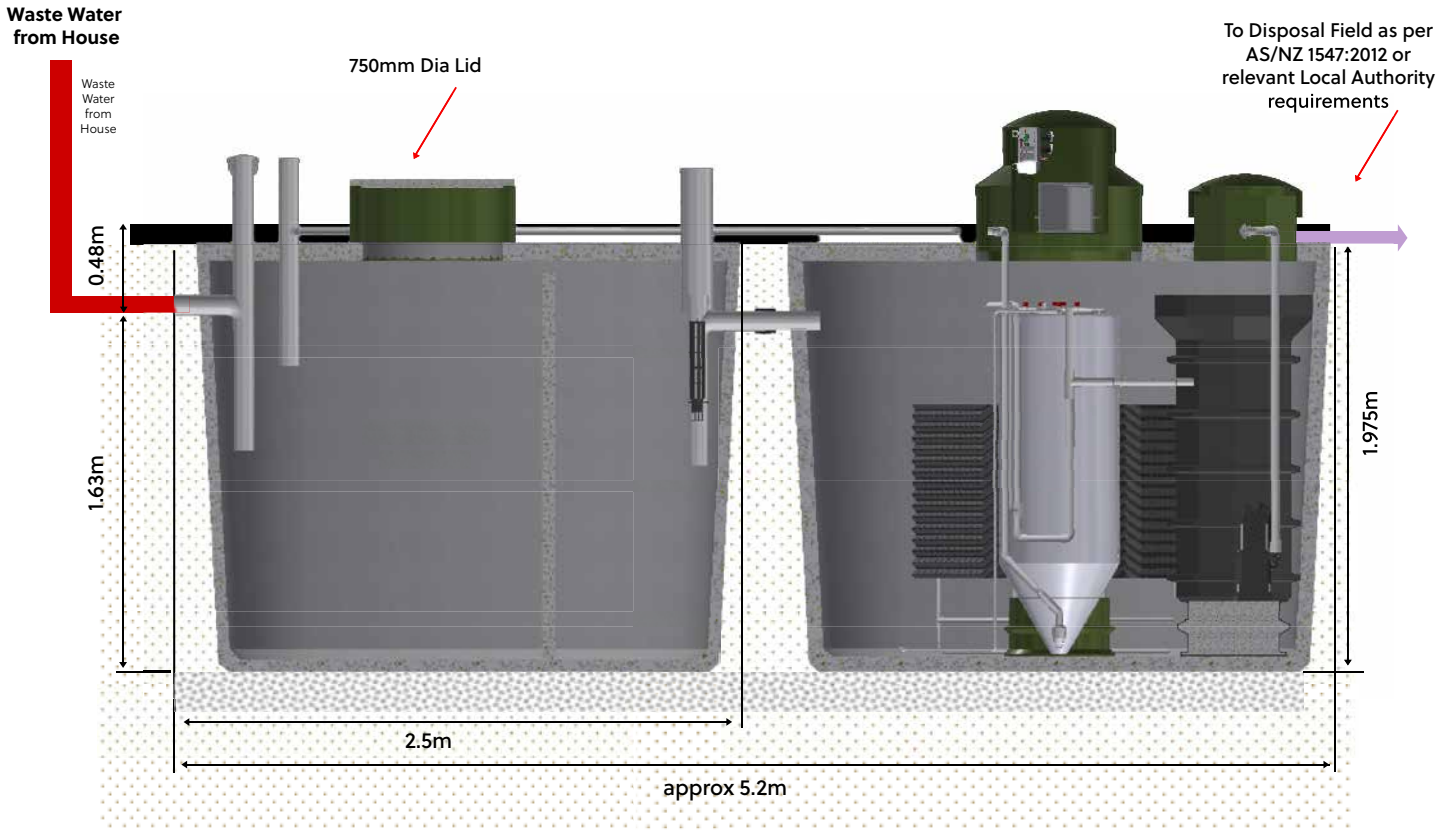
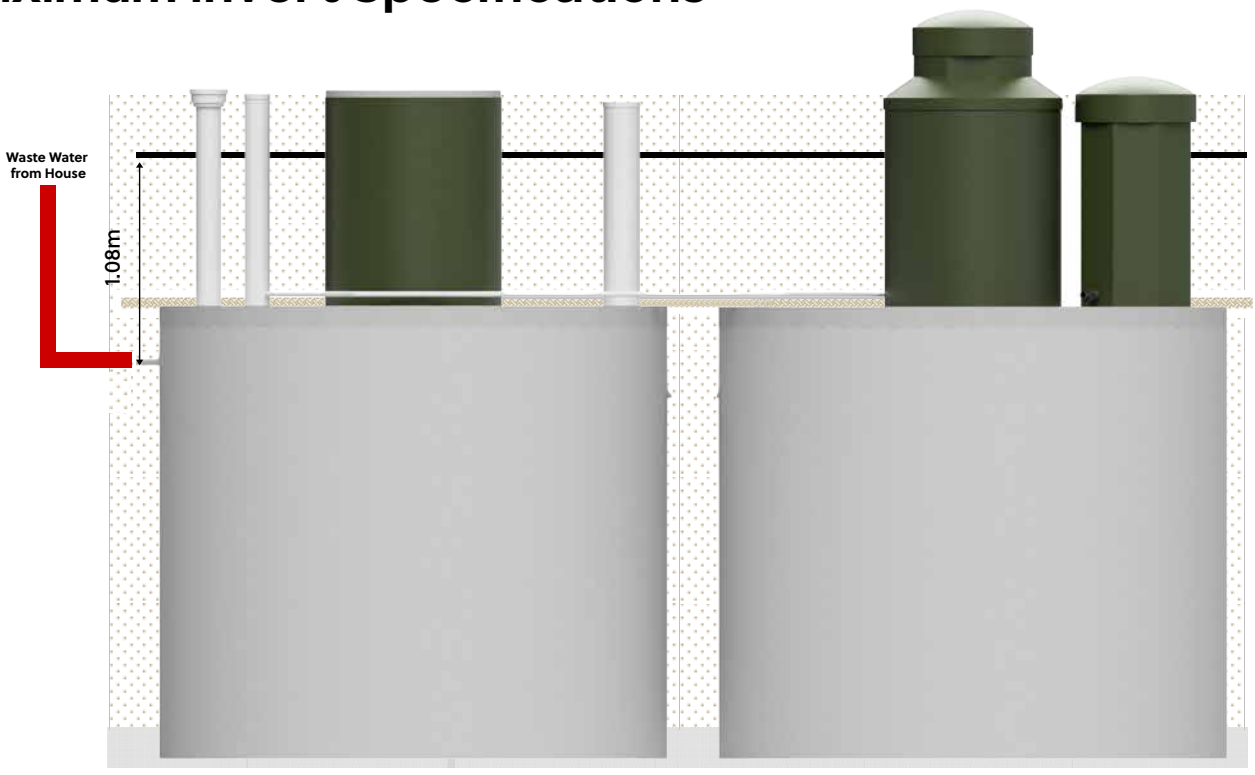
Schematic Drawings



Maximum Invert Specifications



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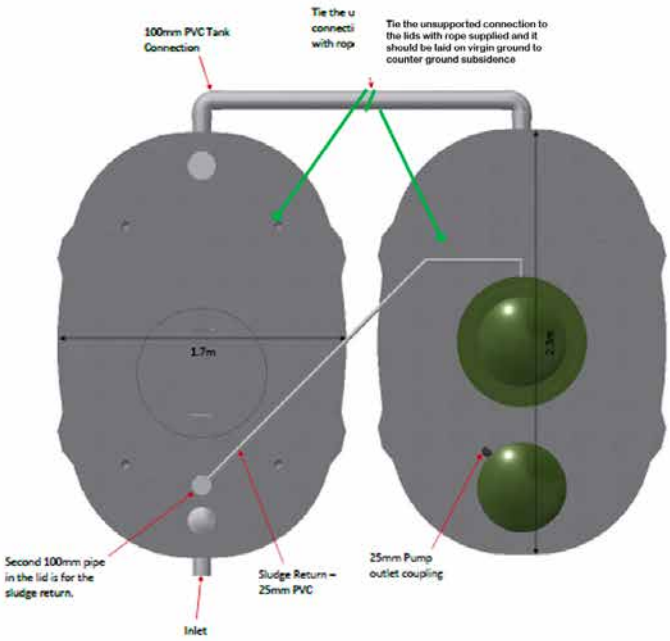
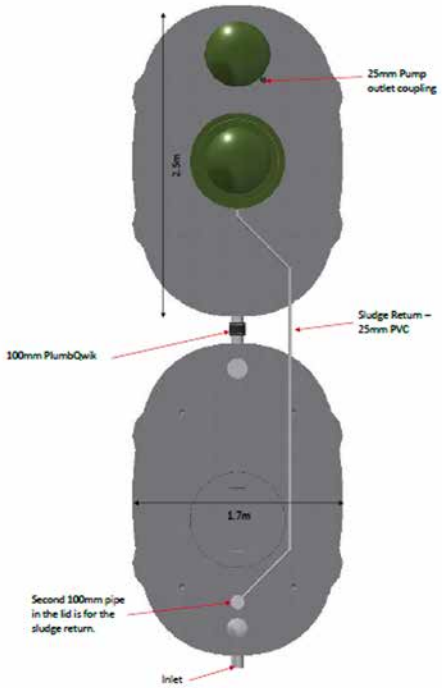
Schematic Drawings

Side by Side Installation



End to End Installation



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Instructions for Installation

The EconoTreat 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 two 3m x 2m level platforms at an appropriate depth to ensure adequate fall for inlet pipe from the source. This has to be installed on virgin ground. The two platforms are ideally on the same level and next to each other, either side-by-side or end-on-end.

2. Lay 100mm of bedding metal on platform and place the Septic and Aeration tanks next to each other. As close as practically possible to minimize the connection distance between the tanks.

3. Connect the two tanks with 100mm PVC. If the tanks are side-by-side the connection will need supporting. This is done by, extending the connection back onto virgin ground or hard-filling and compacting and also tying it back to the wire on the lids with a length of rope supplied. The rope can be found in the top of the treatment tank.

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4. Next connect the sludge return. This is a 25mm PVC pipe that come out of the central riser on the treatment tank. This must be plumbed back to the second 100mm PVC at the start of the septic tank. It is important that this pipe is falling slightly or at minimum flat.

5. Trench from Dose Chamber outlet to disposal field and lay the 25mm alkathene feed line.

6. Take a minimum of 3 photos at this point to showing connections and back fill, to ensure correct installation for sign off.

7. Back fill around tanks. Using spoil from the excavation is fine if it is suitable otherwise consider a hard fill. Please be aware that soils will settle over time though.

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.

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Installation Location and Certification

These tanks are not designed for vehicle loads and shall be located no closer than 2m 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 2m, 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

All tanks have been engineered and designed for maximum strength, in accordance with the NZC 3604. Clauses B1 and B2 for structure and durability, to withstand any hydraulic pressures, both lateral and uplift, created by high water table conditions.

In high water table installations, it is important to fill the tanks with water. This removes the hydraulic uplift and simplifies the installation. In extremely high-water tables, cement can be added to fine metal to create a mass around the dead men anchors secured to the tanks (alternately concrete could be used). Waterflow must be made aware of this early on in vies of supplying a tank that is fit for purpose.

Plumbing Pipes and Fittings

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

Alarm System

The VBB-C-2200 System is equipped with an AS/NZS 1546.3 compliant audible and visual alarm with a mutable alarm signal and alarm light. The alarm panel must be mounted in a location that is readily visible within the dwelling.

Alarm is triggered by a high-level float switch in the pump well.

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

Backfill and Bedding

Backfill the excavation from the base of the tank with a GAP/PAP 20 metal, dry mixed with cement to form a solid mass, to a minimum of 400mm above the anchor plates. Then continue with metal, clean unsaturated soils or spoil from the excavation, (if suitable i.e. up to Class 4 as per AS/NZS 1547:2012) in approximately 200mm layers. Compact each layer evenly with a mechanical compactor to minimise subsidence and back fill to the level of the invert pipe.

Electrical

Where a pump is required to dose the Land Application System, all electrical connections must be installed according to AS/NZS 3000. The electrical connections are housed in an enclosure on the top of the tank. Please see separate Electrical Guide for more details.

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Warranty

WATERFLOW NZ LTD warrants that all Treatment Systems manufactured by WaterFlow NZ Ltd will be free from defects in materials and workmanship for the following periods from the date of installation, under the following conditions:

1. Plastic-Moulded tanks: 15 years

2. Concrete Tanks: 15 years

3. Filter Media: 5 years

4. Dosing float: 2 years

5. Electrical Components and Pump: 2 years

WATERFLOW NZ LTD will, at its discretion, repair or replace any defective components with the same or equivalent part at no charge to the consumer, in accordance with the following terms and conditions laid out in the WaterFlow NZ's Warranty Certificate. Full text warranty available on request.

1st June 2014
Dean Hoyle
Managing Director

WaterFlow

Bringing Clarity to Wastewater

Our team of wastewater experts are here to help.
Let's see if Econotreat could be right for your backyard.

Smarter wastewater and sewage systems, for a cleaner New Zealand.

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