

Approval

PURSUANT TO
SECTION 53M(7) OF THE
ENVIRONMENT PROTECTION ACT 1970
CERTIFICATE OF APPROVAL

An approval is hereby issued by Environment Protection Authority ('EPA') under Section 53M(7) of the *Environment Protection Act 1970* ('the Act')

TO: HIGHLAND TANKS PTY LTD

**FOR: BIOCLEAR WASTEWATER TREATMENT SYSTEMS
Models: ST8, ST10**

Treatment type: Aerated Wastewater Treatment System with Media Biofilter

Wastewater source: Domestic sewage

This is to certify that the above system ('the system') is a type of septic tank system approved by EPA for the purposes of Part IXB of the Act, subject to the attached conditions.

A separate permit ('the permit') is required from the relevant municipal council before installation, pursuant to Section 53M(5)(b) of the Act. The permit shall govern the dispersal method and maintenance requirements.

Approval Number: CA 109/14

Date of Issue: 23 July 2014



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**QUENTIN STEPHEN COOKE
DELEGATE
ENVIRONMENT PROTECTION AUTHORITY**

**This Certificate of Approval is valid until 23 July 2019,
unless withdrawn earlier by EPA.**

SYSTEM DESCRIPTION

The Highland Tanks BioClear Aerated Wastewater Treatment System ('the system') collects, treats, disinfects and irrigates domestic wastewater.

- I. Treatment system components (see *Schematic drawing*):
 - a) A single 7300L concrete tank divided into several chambers:
 - i) two anaerobic primary treatment chambers (2001L and 1005L);
 - ii) two 1273L aerobic treatment chambers with one aerator;
 - iii) an HP80 or XP80 HiBlow air blower;
 - iv) a 433L settling chamber;
 - v) a 591L chlorine disinfection chamber; and
 - vi) an effluent storage chamber with a suitably-sized irrigation pump.
 - b) Electrical control unit and audio/visual alarm with maximum 24 hour muting facilities.
- II. Treatment process:
 - a) Wastewater enters the first primary treatment chamber, where wastewater and solids are treated through sedimentation and anaerobic digestion. The wastewater then enters the second primary treatment chamber, where it is further treated through sedimentation of the solids and anaerobic digestion.
 - b) The primary treated wastewater enters the first aerated treatment chamber and then flows into the second treatment chamber, both of which contain fixed filter media ('bio-tube') below the water level. Air, supplied through diffusers at the bottom of the chambers, aerates the water and feeds the microbes. The aerobic micro-organisms attached to the media and suspended in the water treat the wastewater by oxidising organic compounds.
 - c) Treated wastewater from the second aerobic chamber enters the settling chamber, where suspended solids (biomass) settle under quiescent conditions. Settled sludge is automatically returned to the primary inlet by an air uplift return system.
 - d) Treated wastewater from the settling chamber flows through the chlorine contact unit in the disinfection chamber and into the effluent storage chamber.
 - e) Treated effluent is automatically pumped to the irrigation area.
- III. Estimated electricity usage for a 4 person household with average wastewater flows and loads:

Electrical Equipment	Watts	Daily operation (hours)	kWh/year	~Annual Cost @ ~\$0.33/kWh
HP80 HiBlow Aerator	71	24	622	\$205
or XP 80 HiBlow Aerator	58	24	508	\$167
Bianca BIA-B424 submersible irrigation pump or similar	550	0.75	150	\$ 50
TOTAL				\$255

General

1. This approval is valid until 23 July 2019 unless withdrawn earlier by EPA.
2. No modifications or variations to the system may be made unless the manufacturer has prior approval from the EPA in writing.
3. At least twelve months before the expiry of this Certificate of Approval, a completed Application for Reapproval must be submitted by the manufacturer to EPA for the purpose of verification of the systems' performance. The effluent from systems installed in Victoria (and/or another State where <20 have been installed in Victoria) must be tested to ensure that they comply with the Renewal of Approval testing procedures as outlined in the latest version of EPA Publication 935.1 *Guidance on Applying for a Certificate of Approval for an Onsite Wastewater Treatment Systems* and Publication 760 *Guidelines for aerated on-site wastewater treatment systems* (as amended) or other methods approved by EPA in writing.
4. The system is approved subject to the following activities meeting the requirements outlined in the most recent version of EPA Publication 891.3 *Code of Practice - Onsite Wastewater Management* (see EPA website www.epa.vic.gov.au) and the most recent version of Australian/New Zealand Standards AS/NZS 1546.1 *On-site Domestic Wastewater Treatment Units: Septic Tanks*, AS/NZS 1546.3 *On-site Domestic Wastewater Treatment Units: Aerated Wastewater Treatment Systems*, and AS/NZS 1547 *On-site Domestic Wastewater Management*:
 - a) the design, manufacture, installation and maintenance of the treatment system; and
 - b) the design, installation and maintenance of the irrigation system.

Performance

5. Hydraulic and Organic Loading:

The system is approved for treatment of wastewater from residential and commercial premises with the following MAXIMUM hydraulic and organic loads:

Model	Hydraulic load (L/day)	Biochemical Oxygen Demand (g/day)
BioClear ST8	1700	560
BioClear ST10	2000	700

6. Effluent quality for sub-surface irrigation and disposal:

Ninety percent (90%) of treated effluent samples tested must not exceed the maximum limit:

Parameters	Secondary Standard	Maximum Limit
5-day Biochemical Oxygen Demand (BOD ₅)	20 mg/L	30mg/L
Total Suspended Solids (TSS)	30 mg/L	45mg/L
Where disinfection is required in sandy soils:		
5-day Biochemical Oxygen Demand (BOD ₅)	20 mg/L	30mg/L
Total Suspended Solids (TSS)	30 mg/L	45mg/L
<i>E. coli</i>	10 cfu/100mL	30 cfu/100 mL

Where treated wastewater is disinfected, effluent must have a free chlorine residual of between 0.5 and 2.0 mg/L.

Permitted Uses

7. Treated effluent must be applied to land via sub-surface land application systems in accordance with the most recent version of and the EPA Publication 891 Code of Practice, *Onsite Wastewater Management* and AS/NZS 1547 *Onsite domestic wastewater management*.

Installation

8. When a treatment system is purchased the manufacturer or distributor must provide the property owner with a copy of the following documents:
 - Statement of warranty and of service life;
 - Schematic drawing and detailed specifications;
 - Operation and maintenance manual
 - Service agreement contract
 - A full description of the treatment train and mechanical and electrical component parts; and
 - Approval documentation obtained from EPA i.e. this Certificate of Approval CA 109/14.
9. Installation of the treatment system must be carried out in accordance with the manufacturer's specifications.
10. The pipework connecting the house to the treatment system, and the treatment system to the irrigation area, must be installed by a person licensed or registered with the Victorian Building Authority (VBA) in Plumbing (Drainage) work or working under the direct supervision of a person licensed with the VBA, in accordance with the most recent versions of:
 - a) Australian Standard AS/NZS 1546.1 *On-site domestic wastewater treatment units: Part 1 Septic tanks*;
 - b) Australian Standard AS/NZS 1546.3: *On-site domestic wastewater treatment units: Aerated wastewater treatment systems*;
 - c) Australian Standard AS/NZS 1547 *On-site domestic wastewater management*; and
 - d) *Victorian Plumbing Regulations*.
11. The system must be continuously connected to a 240V/50Hz AC power supply. A weather-proof isolating switch must be provided at the power outlet. The power supply must have its own clearly marked residual-current device (RCD) -protected circuit breaker in the fuse box with no other appliances connected to the same circuit.
12. Each system must be fitted with an effective effluent collection point so that samples of treated wastewater can be easily taken by an independent third party without compromising the sample.
13. The system must be installed so that easy and ongoing access to all chambers and relevant components is ensured for the purpose of inspection and maintenance. Access openings over all chambers must be watertight and located at finished ground surface level or above. Where a tank may be buried below ground level, an access riser must be installed to raise the access cover to or above finished ground level.
14. The permanent, clear and indelible notice listing the manufacturer's name and contact details, the model name and number and the date of installation of the treatment system, must be attached to the system in a prominent position.

Maintenance and Monitoring

15. The audio/visual alarm system must be installed in an appropriate location to indicate high water levels.
16. The relevant local Council shall require the owner/user of the system to enter into a service contact with an accredited service technician to service and maintain the treatment and irrigation

system every three months. The maintenance and servicing must be carried out in accordance with the manufacturer's specifications. An accredited service agent is a person who:

- a) has been suitably trained by the system manufacturer regarding the installation, operation and service requirements of the system; and
 - b) is accredited by the system manufacturer in writing to undertake the service.
17. The septic tank must be inspected and the depth of scum, liquid and sludge measured annually. Where the depth of the scum and sludge layers is equal to or greater than the liquid layer, the septic tank must be desludged at the property owner/occupier's expense.
18. Treated effluent from each system installed must be sampled and tested annually at the expense of the premises owner and the results forwarded to the local Council. The sample must be tested for 5-day Biochemical Oxygen Demand (BOD₅), Total Suspended Solids (TSS) and, where applicable, E.coli and residual chlorine.
19. All treated effluent samples must be taken by an appropriately trained person and analysed by a laboratory that is accredited by the National Association of Testing Authorities (NATA) to undertake the required tests.

Reporting

20. The service agent must submit the following documents to the local council:
- a) Quarterly treatment and irrigation system inspection and maintenance reports;
 - b) Annual laboratory analytical test reports on NATA laboratory letterhead; and
 - c) The date when the system was last desludged.