



WASTEWATER TREATMENT SYSTEMS

A large, faint, light blue version of the BioClear logo is centered in the background of the page.

**Owner's Instruction Manual
Model ST10
Model ST8**

HIGHLAND TANKS PTY LTD

ACN 090 907 725 ABN 93 090 907 725 PO BOX 1158, MITTAGONG NSW 2575

Phone: 02 4889 8288 Fax: 02 4889 8566

Email: sales@highlandtanks.com.au Website: www.ultraclear.com.au

Highland Tanks Pty Ltd trading as



ABN 93 090 725 ACN 090 907 725

Owner's Instruction Manual

Models ST10 & ST8 Single Tank Systems

Contents

Page

Foreword	
Description of Treatment Process	3
Description & Function Primary Treatment Cross Contamination Prevention Aerobic Treatment Surge Control Sludge Return Settling Chamber Disinfection Effluent Disposal Operation Electrical	4-5
Intended Use	5
Basic Operating Instructions	5
Trouble Shooting Low Air Alarm High Water Alarm Bad Odours from System Bad Odours from Sprinklers Blocked Drainage Lines Electrical	6-7
Landscaping	8
Safety Information	8
Non Use of System	8
Spreading of Hydraulic Loads	8
Recommended Product Usage	9
Responsibility	9
EPA and Local Government Requirements	9
Warranty & Statement of Service Life	10
Servicing Requirements Quarterly Service	11
Desludging Requirements Irrigation / Disposal Area	12
Sample Service Form	13
Sample Service Agreement	14
Service Record	15

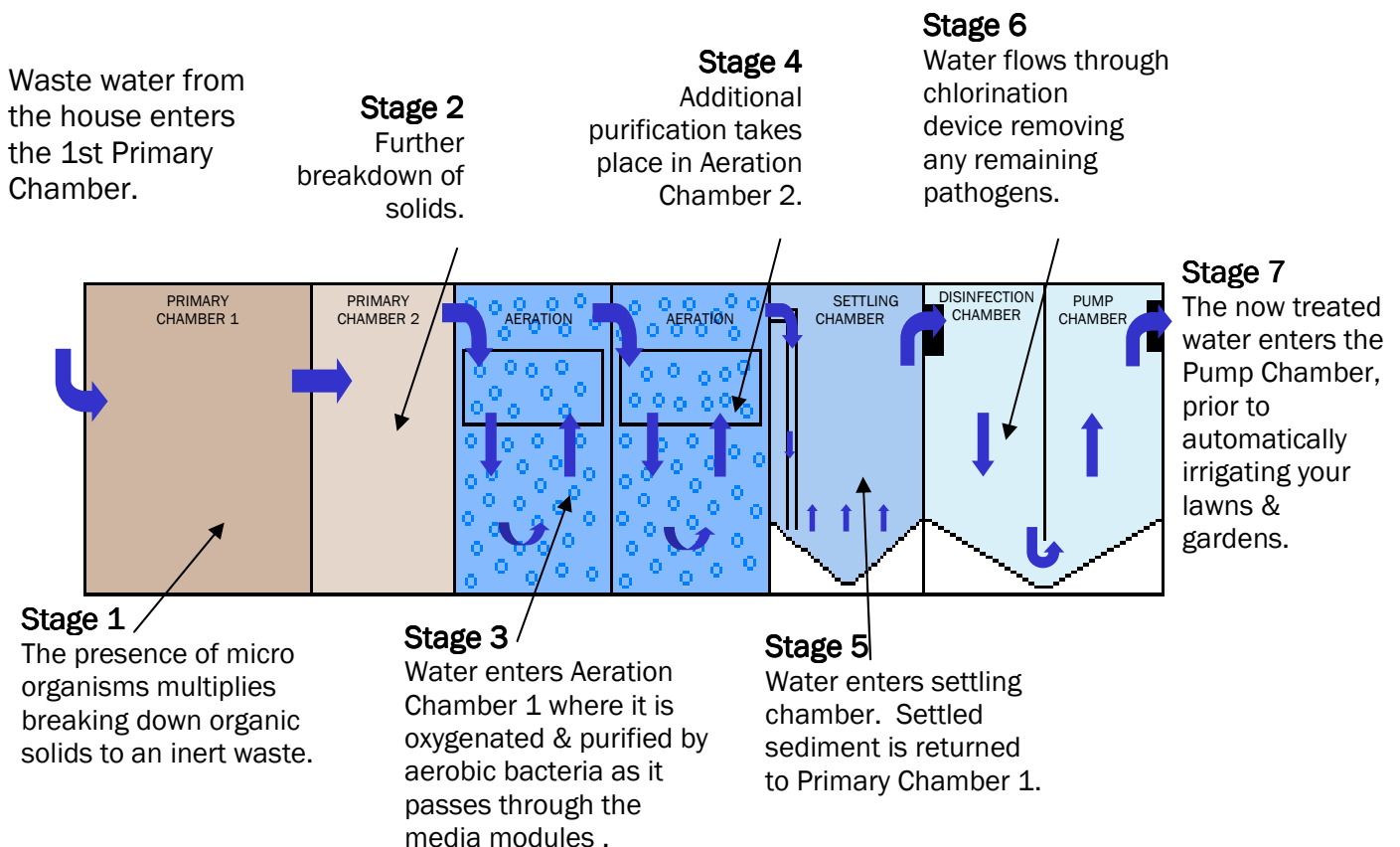
Foreword

The Bio Clear single tank aerated wastewater treatment systems, Models ST10 and ST8, have been designed to meet the NSW Health Department Guidelines, and Australian Standard. The systems have been tested at the AWTs Manufacturers Association's test site at Moss Vale Sewer Plant in the Southern Highlands. The Bio Clear single tank systems have been designed by Darryl Rebbeck. The design allows ease of maintenance and servicing, allowing easy and full access to all chambers, to ensure the efficient functioning of your system.

Regular quarterly servicing and desludging, as advised by your service technician, is crucially important to the proper functioning and longevity of the system. Regular servicing protects your sewerage asset, reduces the severity of system faults and subsequent cost of repairs, and protects the health of your family, employees, the public and the local environment.

This handbook will provide information on the function of your BIO CLEAR AWTs. Your authorised service technician will be able to help further if you have any queries.

January 2013



Description of Treatment Process

System includes air blower, submersible irrigation pump, electrical control box and alarm panel.

Description & Function

Primary Treatment

All waste water and solids from house enter primary treatment chamber where the digestion process takes place. The presence of anaerobic micro organisms quickly multiply to break down faecal solids to an inert waste. To maintain the highest level of anaerobic action in the primary chamber, the exclusion of certain chemical and anti-bacterial cleaning products is very important.

Cross Contamination Prevention

Cross contamination of primary to aeration chambers is prevented by the main concrete baffle to lid, in the event of a system malfunction. This is reinforced by a 1,000 litre free board across the entire system.

Aerobic Treatment

The aerobic treatment consists of two chambers with media pack fixed below water level. Oxygen is supplied to the liquid through diffusers to produce an aerobic state. Microbes quickly form and attach to media pack. These microbes, called aerobes, clean the water as it passes through.

Surge Control

A surge control device is located between the primary and secondary treatment chambers. This allows water to rise and fall by up to 200 litres in the primary treatment chamber, to reduce water surging, (e.g. bath water, washing machine), through the aeration chambers to less than 10 litres per minute, allowing complete treatment of influent.

Sludge Return

The settling sludge in the sedimentation chamber is returned to the primary inlet of septic chamber.

Settling Chamber

Suspended solids are allowed to settle under still conditions. Settled particles (called sludge) return automatically to primary chamber inlet, by a venturi device, which is set by the service technician.

Disinfection

Although clear, the clarified water will contain some bacteria which needs to be removed. Water flows through a regulated chlorination device to the retention chamber, removing final bacteria before flowing into pump chamber.

Effluent Disposal

Treated effluent is automatically pumped onto gardens and lawns. Disposal area is to comply with local Council requirements. The maintenance of filters and irrigation sprinklers is the responsibility of the owner or occupier of property.

Operation

When all drainage and electrical supply is connected to unit by licensed contractors, the system is commissioned by our service technician. Landscaping must be completed by the owner to comply with local Council requirements. The system operates automatically. Any adjustments to system should be carried out by authorised technicians.

Electrical

Power is relayed from the Bio Clear electrical control box fitted in turret on top of the treatment tank. The alarm panel is a low voltage device (12 volt) that decodes a data signal from the main control box at the treatment tank. The alarm panel is fitted with a rechargeable back up battery. Under normal operating conditions, the green power led will light. Power consumption to run system is similar to an average household refrigerator.

Intended Use

The system is intended for the treatment of all domestic waste water for up to 10 persons per household for Model ST10, and for up to 8 persons per household for Model ST8. All household waste water is recycled by treatment using anaerobic and aerobic bacteria, with a final disinfectant agent. Safe, clean, treated effluent is irrigated onto lawns and gardens, according to government regulations.

Maximum hydraulic load is 2,000 litres per day for Model ST10 and 1,700 litres per day for Model ST8. Required effluent quality to be produced is <20 BOD, <20 SS and <30 FC for surface and/or subsurface disposal as per local government regulations.

Basic Operating Instructions

1. Ensure system is serviced every 3 months by approved service technician.
2. Use correct products as per manual.
3. Respond to alarms as indicated in manual.
4. Do not disconnect power supply to system.

Trouble Shooting

Low Air Alarm

- ◆ Press alarm mute button, the alarm will reset in 24 hours.
- ◆ Phone your authorised service agent.
- ◆ The air blower is not operating. Repairs may need to be carried out, e.g. diaphragm kit.

High Water Alarm

- ◆ Press alarm mute button, the alarm will reset in 24 hours.
- ◆ Especially after mowing or work being carried out in the yard, make the following checks.
 1. Ensure irrigation taps are turned on.
 2. If filter is installed, ensure it is clean. Turn off pump at control box by disconnecting irrigation pump plug, to avoid being sprayed with water. Remember to turn pump on when filter is cleaned.
 3. Check sprinkler outlets for any blockages.
 4. Check irrigation line for kinks.
- ◆ If irrigation line, etc. are OK, phone your authorised service technician.
- ◆ High water alarm can indicate pump failure, technician to repair or replace.

Bad Odours from System

- ◆ Wrong products being used, or system overload with overuse.
- ◆ Check products used. Especially avoid any disinfectants, bleaches or antiseptics and overuse of laundry powders and fabric softeners.
- ◆ Ensure washing loads are spread over the day.

Bad Odours from Sprinklers

- ◆ The air blower may not be working to its full capacity, causing low aeration.
- ◆ Phone your authorised service technician.

Blocked Drainage Lines

- ◆ Blocked drainage lines from house to the system are plumbing problems.
- ◆ Check drainage line at inspection opening to clear.
- ◆ Contact your local plumber or drainer if necessary.

Electrical

- ◆ After power black outs or electrical storms it is advisable to check meter box to ensure all circuit breakers are on.
- ◆ Power is supplied to the BioClear electrical control box from house circuit board. Electrical components, i.e. air blower, irrigation pump and alarm, are powered from control box in turret on top of treatment tank.
- ◆ All electrical wiring from system to meter box and to alarm panel is the responsibility of the electrician, and is not covered by our warranty.
- ◆ The alarm panel is fitted with a rechargeable backup battery.
- ◆ The alarm plate has three leds. Under normal operating conditions, the green power led will light. High water alarm will activate the red water led and the audible alarm will sound to attract attention. If air blower fails the red air led will be activated and the audible alarm will sound to attract attention.
- ◆ Silence alarm by pressing the MUTE button in the middle of the alarm panel.
- ◆ If problem is not rectified within 24 hours, the led will be activated again with the audible alarm. Silence alarm by pressing the MUTE button.
- ◆ If power supply to the treatment system fails, the power led will flash on briefly every 3 seconds, and the alarm will give a brief beep in sequence with the power led. This beep can be muted for 24 hours.
- ◆ The back up battery will keep the alarm panel powered between 2 to 14 days depending on the state of its charge before the power failure. It is automatically recharged when the power is restored to the treatment system.
- ◆ Contact your authorised service technician if any alarms occur.

Landscaping

Ensure drainage is away from system at all times. Do not make gardens that create a pooling effect around tanks. Warranty does not cover storm water damage. Stormwater must be diverted away from the treatment tank and irrigation disposal area, to prevent damage to system components and irrigation disposal area. All tank openings are to remain free of soil, mulch, vegetation or obstructions. The top of tank is to extend a minimum 75mm above ground level on high side. This prevents storm water run off from entering tank.

Safety Information

To ensure no damage to system and safety of occupants, lids and manhole covers should not be removed other than by authorised service technicians. The electrical wiring must be carried out by licensed electricians. Installation of system to be carried out by licensed plumbers. For safety of service technicians, avoid trees or shrubs larger than two metres in close proximity to tanks. In accordance with government requirements, avoid contact with effluent. Vehicles are not to be driven over the tank. The tank is highly visible, and installed above ground level which prevents vehicles from driving on tank. The disposal area is to be fenced and sign posted in accordance with EPA and local government requirements.

Non Use of System

If the system is to be used intermittently, leave power connected. Do not turn off power. If extended periods of non use are anticipated, longer than 2 to 3 weeks, power may be turned off without any ill effects to system. Turn power back on prior to household water usage.

Spreading of Hydraulic Loads

Avoid use of bath, washing machine and dishwasher at the same time. Spread washing loads during the week where possible.

Recommended Product Usage for Bio Clear AWTs

Washing Powders & Liquids

Avoid powders with added bleaches and whiteners. The bleach is harmful to the system. No laundry powders or liquids with added softeners. Use recommended dosage or less, too much may cause odour.

Fabric Softeners

Better not used. Coats bacteria and prevents effective treatment of waste water.

Products Not to Be Used

Antibacterial solutions, bleaches, toilet cleansers, products with ammonia.

Aerated systems, like all sewage treatment/disposal systems, are biological, so that if a product kills bacteria in the house, it will kill the bacteria that carry out the sewage treatment.

Recommended Products

We recommend the use of products that are environmentally friendly and safe for use in septic tanks.

Tip

When using spray ons, etc. for bathroom cleaning, wipe off with a cloth and rinse cloth in a bucket. Empty contents of bucket in yard, to avoid bleaches, etc. entering the system.

Responsibility

The owner/occupier of the system is responsible for the operation and maintenance of the system, by following manual instructions, to provide the best effluent possible, in accordance with EPA guidelines.

EPA and Local Government Requirements

1. Follow your local Council requirements.
2. System to be installed in accordance to plans submitted to Council.
3. System is not to be operated until approved by local council, including landscaping requirements.
4. Disposal of irrigated effluent is to remain on your property, with no run off to adjoining properties, drains, gutters, etc., in compliance with government regulations.
5. No fruit or vegetables to be irrigated with the effluent.
6. A continuous maintenance agreement must be held.

Bio Clear Wastewater Treatment Systems

Model ST10
Model ST8

WARRANTY

SYSTEM

15 YEARS

Including tanks and internal concrete components, other than mechanical and electrical parts as specified below, all labour and materials to be supplied free of cost by the manufacturer during warranty period
-warranty commencing on installation date

ALL MECHANICAL AND ELECTRICAL PARTS

2 YEARS

Including air blower, irrigation pump, control box, alarm panel and internal pipework
-warranty commencing on installation date

NOTE: This warranty is subject to a continuous service agreement being held with Bio Clear Wastewater Treatment Systems approved agent to ensure proper maintenance of the system. Also subject to installation in accordance with our Plumber's & Electrical Installation Manuals.

STATEMENT OF SERVICE LIFE

All fittings, fasteners and components of the Bio Clear AWTS other than pumps and motors and electrical are of non-corroding material and designed to function reliably with a MINIMUM SERVICE LIFE OF 15 YEARS.

All mechanical and electrical parts have a MINIMUM SERVICE LIFE OF 5 YEARS.

Highland Tanks Pty Ltd
ACN 090 907 725 ABN 93 090 907 725
PO Box 1158
MITTAGONG NSW 2575

Ph 02 4889 8288
or 02 4889 8562
Fax 02 4889 8566
Email: sales@highlandtanks.com.au
www.ultraclear.com.au

BCWF 01 Rev 1 15 July 2010

Servicing Requirements

As required by EPA the system is to be serviced every 3 months by an authorised service agent to maintain the high quality treatment process. To maintain warranty it is important to use a Bio Clear authorised service agent. The system requires no maintenance by owner as it operates automatically. Approved service technicians only to make adjustments to the system. The owner is to follow Bio Clear recommendations regarding product use and any advice given by service technician. If system is in an enclosure, a working gateway must be provided. Ensure all manholes on tank and electrical box are clear of foreign objects.

Strictly no bark chips or aggregate on tank.

At each service, the technician will take water samples, sludge readings, make adjustments where required, replenish chlorine, and report to governing bodies. A copy of the service report is left for the customer.

Quarterly Service

The following checks are carried out at each quarterly service by the service technician.

1. Turbidity is checked using visual tube, to check clarity and odour of water.
2. PH reading to check acidity or alkalinity of water.
3. Aeration sludge is checked using sludge stick.
4. Sediment sludge is checked and removed if needed and returned to primary 1 chamber.
5. Chlorine level is checked and replenished.
6. Septic Sludge at outlet is checked, technician will advise if full desludge is required.
7. Operation of irrigation pump and air blower is checked.
8. Air blower filter is cleaned.
9. Free residual chlorine test.
10. Adjust scum skimmer and sludge return if required.
11. Build up of bacteria growth on media pack is noted.
12. Irrigation line is checked by engaging irrigation pump.

The irrigation is inspected by the service technician, but is maintained by the owner/ occupier in accordance with the relevant municipal council permit governing the dispersal method and maintenance requirements.

Desludging Requirements

Bio Clear service technicians check sludge accumulation levels at each service. This is noted on your service report at *Septic Sludge at Outlet*, in centimetres. You will be advised on the *Comments* section of your service form when a full desludge of primary chamber is required. Sludge build up depends upon the number of persons in the household and upon product usage. Time varies between 3 to 8 years. The owner is responsible for the full pump out cost, to be carried out by an approved contractor.

Irrigation / Disposal Area

It is the owner's responsibility to install irrigation as required by Council .

Maintenance of irrigation system –

Above ground disposal – owner is to fortnightly check disposal area for any pooling of treated effluent, and if applicable clean filters.

Sub surface disposal – owner to follow instructions by installer.

The irrigation area is part of the aerated system and therefore requires regular maintenance.

Refer to the most recent version of EPA publication 891 *Septic Tanks Code of Practice*, available for downloading at www.epa.vic.gov.au.

 **UltraClear**
WASTEWATER TREATMENT SYSTEMS

Phone: (02) 4889 8288 or (02) 4889 8562 PO Box 1158, MITTAGONG NSW 2575

11624

Date of Service: _____ Technicians Name: _____

Time of Service: _____ AM _____ PM Model: _____

NAME: _____ ST NO: _____

ADDRESS _____ SUBURB: _____

Shire/Council: _____ Region: _____

Blower No. _____ Make: _____ Pump No: _____ Make: _____

Clarity 1: _____ cm Clarity 2: _____ cm PH1: _____ PH2: _____

Aeration Sludge: _____ cm Sed. Sludge: _____ cm DO 1: _____ mg/L DO 2: _____ mg/L

Sed. Scum: YES / NO Scum Removed: YES / NO Chlorine: Existing _____ Replaced: _____

Septic Sludge at Outlet: _____ cm Odour: NORMAL / SOIL / SEWAGE

Pump Operating: YES / NO RCE: _____ PPM S / S: ON / OFF S / R: ON / OFF

Blower Operating: YES / NO Filter Cleaned: YES / NO Chlorinator Clear: YES / NO

Electrical Connection: _____ OK _____ Needs Repair _____

Bacteria Growth: _____ Alarm Panel: _____

Irrigation Line: Good _____ Needs Repair _____

Comments:

PLEASE ADVISE CHANGE OF OWNERSHIP

Quotation for Maintenance of Domestic Sewage Treatment Plant



WASTEWATER TREATMENT SYSTEMS

ACN 090 907 725 ABN 93 090 907 725
PO Box 1158
MITTAGONG NSW 2575
www.ultraclear.com.au
ultracl@hinet.net.au
Ph 02 4889 8288 Fax 02 4889 8566

Customer Number:

Quotation Number: «Contract_No»

Run Ref. Number:
«RUN_GROUP»«RUN_PLACEMENT»«R
UN_AREA»«R_P_No»

System: «Make» «Model»

Customer:	«TITLE» «INITIAL» «NAME»	Phone:	Home: «Phone_home»	Business: «Business»
Postal Address:	«ATTENTION» «POSTAL» «LINE_2» «TOWN_ETC»	Mobile:	«Mobile»	Fax: «FAX»
Address where the system is located:		Council:	«Council»	
«Site_Address_1» «Site_Line_2» «Site_Address_2»				

Ultra Clear Wastewater Treatment Systems hereby offers to maintain for the above customer the Domestic Sewage Treatment plant located at the site above for a term of one (1) year (i.e. four (4) quarterly services) upon the conditions below and upon payment of the following maintenance fee. Payment for service is required in advance. Payment for repairs is required within 14 days.

QUOTATION PRICE

\$ «price».00 per year
\$ «GST».00 GST
\$ «TOTAL».00 TOTAL

Payment Due«Payment_due»

1ST SERVICE DUE«Date_Due»

Signed by ULTRA CLEAR
WASTEWATER TREATMENT SYSTEMS

ACCEPTANCE OF QUOTATION

I/We hereby accept the above quotation for maintenance.

Dated: / /

Customers Signature:

Date of Quotation«Date_issue»

Note: Repairs are subject to 10% GST. Servicing of aerated systems used in residential premises is GST free.

CONDITIONS

Maintenance Work

On each periodic service ULTRA CLEAR WASTEWATER TREATMENT SYSTEMS will perform the following work:-

1. Adjust the air intake where necessary.
2. Monitor and maintain the balance of the disinfecting agent.
3. Test water quality of system.
4. Report to the governing bodies as required.
5. Desludge of pump chamber if required.

Not Included:-

- Pump Outs – Ultra Clear WTS shall advise the customer if septic tank compartment requires cleaning out to ensure the proper operation of the system, at the customer's expense.

- parts and labour for any repairs required

- Irrigation line and cleaning of sprinklers is the responsibility of the owner.

Disturbance: Ultra Clear WTS will cause as little disturbance as practicable to lawns and gardens.

Ultra Clear WTS will not be responsible for replacement of earth, lawns, plants or trees.

Note: Access must be available to the system during normal business hours.

**Keep this copy
for your records**

Service Record – Bio Clear Aerated Wastewater Treatment System

	Phone No.	Details
Service Technician		
Plumber		
Electrician		
	Date	Details
Installation		
Commissioned		
Year 1 - warranty		
Service One		
Service Two		
Service Three		
Service Four		
Year 2		
Maintenance payment		
Service One		
Service Two		
Service Three		
Service Four		
Repairs		
Year 3		
Maintenance payment		
Service One		
Service Two		
Service Three		
Service Four		
Repairs		
Year 4		
Maintenance payment		
Service One		
Service Two		
Service Three		
Service Four		
Repairs		