



Certificate of Accreditation

Sewage Management Facility

Aerated Wastewater Treatment System

Advanced Secondary Effluent

This Certificate of Accreditation is issued by the Secretary of the NSW Ministry of Health pursuant to Clause 41(1) of the Local Government (General) Regulation 2005.

System: *Ultra Clear Model ST10 Advanced*

Manufacturer: *Highland Tanks Pty Ltd t/a Ultra Clear Wastewater Treatment Systems*

Address: *16 Gantry Place, Braemar, NSW, 2575*

The Ultra Clear Model ST10 Advanced AWTS as described in Schedule A, has been Accredited as a sewage management facility in accordance with the Secondary Treatment System Accreditation Guideline 2018 for use in single domestic premises in NSW. This Accreditation is subject to the conditions and permitted uses specified in Schedule B.

*A/Director, Environmental Health
for Secretary (delegation PH335)*

Issued: *1 February 2021*

Certificate No: *STS-AWTS055*

Expires: *31 December 2025*

Schedule A: Specification / Description of the Ultra Clear ST10 Advanced AWTS

Name and Model of ULTRA CLEAR AWTS: Ultra Clear Model ST10 Advanced

The ULTRA CLEAR ST10 Advanced AWTS is designed to treat sewage from a residential dwelling occupied by a maximum of 10 persons

The ULTRA CLEAR AWTS is contained in a collection well with a design capacity of 7300 L. NSW Health Accreditation Number STCW 005

Chamber	Design capacities
Primary treatment	
Primary chamber 1	1850 L
Primary chamber 2	1050 L
Partition	Yes
Secondary treatment	
Aeration chamber 1	1275 L
Aeration chamber 2	1275 L
Settling chamber	450 L
Disinfection Pump Chamber	500 L
Emergency storage	1200 L
Operational water level (depth)	
Primary	1540mm
Secondary	1540mm

The emergency storage capacity is achieved by flooding the air space between the normal water operating level and the top of the concrete walls creating the discrete chambers, thus providing 1200L of emergency storage prior to water overflowing the chamber walls.

The ULTRA CLEAR ST10 Advanced AWTS has the following components:

- Primary treatment chambers: Sewage from the dwelling flows into the primary treatment tank. Wastewater and solids are treated through sedimentation and anaerobic digestion, with the lighter materials of oils and fats floating to the surface to form a crust. Anaerobic bacteria digest and reduce the organic load or Biochemical Oxygen Demand (BOD₅).
- Aeration chambers: Settled wastewater from the primary chambers flows into the first aeration chamber overflowing into the second aeration chamber, with media pack fixed below water level. Oxygen is supplied to the liquid through four air diffusers and microbes attach to two media packs, producing an aerobic state which reduces the organic load and nitrifies ammonia.
- Clarifier: After aeration the wastewater overflows into the clarifier/settling chamber. Suspended solids settle under quiescent conditions. Settled particles referred to as sludge, return automatically to primary chamber inlet by sludge return. This method aids with de-nitrification and provides a constant flow of food supply, which supports the treatment process during limited usage.
- Disinfection/pump chamber: Water flows through a regulated chlorination device to the disinfection chamber, removing final pathogens before flowing into the pump chamber. Chlorinated water flows into the disinfection chamber, providing a minimum of 350 litres contact time prior to pump cycle. Any remaining solids settle in base of settling chamber to be removed during regular maintenance by venturi device. Treated effluent is automatically pumped to disposal area using a minimum 10 metre head pump, with a pump out cycle of greater than 120 litres.
- Air Supply: Air is supplied to the aeration chamber by a Nitto LA80B or equivalent air blower. This produces a nominal 80 litres/minute air flow at 1320mm water depth, providing air to the manifold which is regulated using taps to the four air diffusers and venturi air lift devices.
- Electrical Control Unit: The system is fitted with an Electrical Control Unit incorporating an alarm panel for internal use in dwelling, e.g. laundry or strobe light for external use. A green light is constant on panel to indicate power to system. If a fault occurs with the system both audio and visual warnings indicate fault. The audio alarm will mute for 24 hours when pressed or swiped.

Schedule B: Conditions of Accreditation

1. General

- 1.1 Prior to installation the owner/occupier of the premises shall make an application, in accordance with Clause 26 of the *Local Government (General) Regulation 2005*, to the local council for approval to install and operate the Ultra Clear ST10 Advanced AWTS as a Sewage Management Facility in accordance with Section 68, Part C of the *Local Government Act 1993*.
- 1.2 The local council shall apply those Conditions of Accreditation, appropriate to the owner / occupier, to any approval to operate the Ultra Clear ST10 Advanced AWTS issued under Clause 45(4), *Local Government (General) Regulation 2005*.
- 1.3 In accordance with Clause 36 of the *Local Government (General) Regulation 2005*, the Ultra Clear ST10 Advanced AWTS shall have an expected service life of 5 years in the case of mechanical and electrical components and 15 years in the case of other components.
- 1.4 The owner / occupier shall ensure that the Ultra Clear ST10 Advanced AWTS is installed or constructed:
- in accordance with the accredited specifications of the type tested unit and in accordance with good trade practice, and
 - so as to allow ease of access for maintenance, and
 - with regard to the health and safety of users, operators and persons maintaining the facility, and
 - must be installed or constructed so as to make appropriate provision for access to and removal of contents in a safe and sanitary manner, and
 - must, if it is intended to be a permanent fixture, be anchored to prevent movement.
- 1.5 The manufacturer / supplier shall ensure that the Ultra Clear ST10 Advanced AWTS is supplied, constructed and installed in accordance with the design (including the disinfection unit) as submitted and accredited by the NSW Ministry of Health. The Ultra Clear ST10 Advanced AWTS shall not be modified or altered except that alternate individual mechanical and electrical components such as pumps, PLCs, etc, may be substituted provided that the component meets the Accredited design specification.
- 1.6 Any permanent modification or variations to the Accredited design of the Ultra Clear ST10 Advanced AWTS shall be submitted for separate consideration and variation of the Certificate of Accreditation by the NSW Ministry of Health. Modifications will be considered in accordance with section 2.3.13 of AS1546.3:2017.
- 1.7 Each Ultra Clear ST10 Advanced AWTS shall be permanently and legibly marked by the manufacturer in accordance with section 3 of AS1546.3:2017.
- 1.8 The manufacturer shall supply with each Ultra Clear ST10 Advanced AWTS an owner's manual, which sets out the care, operation, maintenance and on-going management requirements of the system. The owner's manual prepared by the manufacturer shall specifically contain a plan for the on-going management of the Ultra Clear ST10 Advanced AWTS. The plan shall include details of:
- the treatment process,
 - procedures to be followed in the event of a system failure,
 - emergency contact numbers,
 - maintenance requirements,
 - inspection and sampling procedures to be followed as part of any on-going monitoring program developed by the local authority.
- 1.9 The manufacturer shall provide the following information to each local council where it is intended to install an AWTS in their area once Ministry Accreditation has been obtained:
- | | |
|-----------------------------------|--------------------------------------|
| • Statement of warranty | • Service Manual |
| • Statement of service life | • Owner's Manual |
| • Quality Assurance Certification | • Manufacturer's Service Report Form |
| • Installation Manual | • Engineering Drawings |

- Specifications
- A4 Plans
- Certificate of Accreditation documentation from NSW Health.

The manufacturer need not provide the above information to the local council where the information or document is contained on the manufacturer's web site.

2. Installation and Commissioning

- 2.1 The owner / occupier shall have the Ultra Clear ST10 Advanced AWTS inspected and checked by the manufacturer or the manufacturer's agent. The manufacturer or the agent is to certify that the system has been installed and commissioned in accordance with its design, conditions of Accreditation and any additional requirements of the local council.
- 2.2 The owner / occupier shall ensure that all electrical work is carried out on the Ultra Clear ST10 Advanced AWTS by a licensed electrician and in accordance with the relevant provisions of AS/NZS 3000.
- 2.3 The owner / occupier shall not commission the Ultra Clear ST10 Advanced AWTS unless the land application system has been completed.

3. Maintenance

- 3.1 The owner / occupier of the premises shall enter into a minimum 12 month contract or agreement with a service agent and ensure that the Ultra Clear ST10 Advanced AWTS is serviced:
- in accordance with the manufacturer's / supplier's service manual and using the manufacturer's / supplier's service sheet; and
 - by a service agent who
 - has completed a course on the servicing and maintenance of STS; and has some supervised servicing experience or extensive un-supervised experience;
 - is employed or authorised by the manufacturer / supplier of the Ultra Clear ST10 Advanced AWTS;
 - uses replacement parts which meet the minimum specification of the Ultra Clear ST10 Advanced AWTS;
 - has advised of their name, contact details and credentials to the local council;
 - submits a completed NSW Health "Local Council Service Report" (attached) to the local council immediately after each and every service;
 - shall report to the local council any instances where the owner / occupier refuses to authorise repairs, replacement of parts or maintenance; and
 - does not perform electrical work or enter confined spaces unless trained and is suitably qualified to do so.
- 3.2 The owner/occupier shall not service the Ultra Clear ST10 Advanced AWTS unless they are an authorised agent.
- 3.3 The Ultra Clear ST10 Advanced AWTS once installed and commissioned shall be serviced at 3 monthly intervals.
- 3.4 The manufacturer / supplier of the Ultra Clear ST10 Advanced AWTS shall place on its web site a copy of the service manual, service sheet or form and specifications for the Ultra Clear ST10 Advanced AWTS to facilitate servicing, maintenance and repairs. Commercial-in-confidence documents may be provided directly to the service agent without uploading to the web site.
- 3.5 Each three monthly service shall, as a minimum where provided, include a check on all mechanical, electrical and functioning parts of the system including:
- The chlorinator and replenishment of the disinfectant,
 - Any alternative disinfection unit,
 - Replace a UV light globe at recommended intervals and keep a record,
 - Pump and air blower,
 - The alarm system,
 - Slime growth on the filter media,

- Operation of the sludge return system,
- The effluent irrigation area,
- On-site testing for free residual chlorine, pH and dissolved oxygen at the appropriate check points.

4. Verification

4.1 Effluent from the Ultra Clear ST10 Advanced AWTS taken in any random grab sample shall comply with the following standard:

- BOD⁵ less than 30 mg/L
- TSS less than 45 mg/L
- E. coli less than 100 cfu/100 ml
- Free residual chlorine greater than 0.5 and less than 2.0 mg/L

5. Permitted uses

5.1 The effluent is suitable for re-use for garden purposes by way of any of the forms of irrigation as described in AS/NZS 1547:2012:

- above ground spray irrigation; and/or
- surface drip irrigation covered by mulch; and/or
- sub-surface drip irrigation installed at around 100 mm depth; and or
- any form of sub-soil application.

Each of the forms of irrigation or application is subject to the approval of the local authority.

6. Advanced Secondary Treatment System

6.1 The Ultra Clear ST10 Advanced AWTS when tested by a Product Certification Body in accordance with AS1546.3:2017 was found to comply with the Advanced Secondary Effluent Criteria as follows:

**TABLE 2.1 (Abrev) AS1546.3:2017
ADVANCED SECONDARY EFFLUENT COMPLIANCE CRITERIA FOR A STS**

Parameter	Advanced secondary effluent	
	90% of Samples	Maximum
BOD5	≤ 10mg/L	20 mg/L
TSS	≤ 10 mg/L	20 mg/L
<i>E. coli</i> *	≤ 10 cfu/100mL	30 cfu/100mL
FAC p	Minimum 0.5 mg/L†	N/A
Turbidity ?	N/A	10 NTU

* Where disinfection is required.

p Where chlorine disinfection is used.

† Minimum level, not 90% of samples.

? Where UV light is used for disinfection.

Local Council STS (DGTS) Service Report: February 2018		
Owner's Name:		Local Council:
Installation Address:		
System Brand & Model:	<input type="checkbox"/> Domestic	<input type="checkbox"/> Commercial
Date of this service: / /	Date of last Service: / /	Next service due: / /
Has the STS/DGTS been serviced in accordance with the manufacturer's / supplier's requirements and using the service sheet? <input type="checkbox"/> Yes <input type="checkbox"/> No If "No" why not?		
STS/DGTS functioning correctly? <input type="checkbox"/> Yes <input type="checkbox"/> No If "No" why not?		
According to sludge-judge or other methodology is de-sludging needed? <input type="checkbox"/> Yes <input type="checkbox"/> No If "Yes" what action is recommended?		
Offensive odours? <input type="checkbox"/> Yes <input type="checkbox"/> No If "Yes" what action is recommended?		
Alarms tested and functional? <input type="checkbox"/> Yes <input type="checkbox"/> No If not "functional" what action is recommended?		
Final Effluent Quality Tested? <input type="checkbox"/> Yes <input type="checkbox"/> No Disinfected? <input type="checkbox"/> Yes <input type="checkbox"/> No Chlorine tablets remaining? <input type="checkbox"/> Yes <input type="checkbox"/> No Quality? <input type="checkbox"/> Satisfactory <input type="checkbox"/> Unsatisfactory On what evidence is this judgement made? If "Unsatisfactory" what action was recommended?		
Land Application Area Surface ponding? <input type="checkbox"/> Yes <input type="checkbox"/> No Run off? <input type="checkbox"/> Yes <input type="checkbox"/> No Excess plant growth? <input type="checkbox"/> Yes <input type="checkbox"/> No Effluent leaving premises? <input type="checkbox"/> Yes <input type="checkbox"/> No High risk areas contaminated? * <input type="checkbox"/> Yes <input type="checkbox"/> No * Patio, play areas, BBQ, etc Operating satisfactorily? <input type="checkbox"/> Yes <input type="checkbox"/> No If "Not operating satisfactorily" what action was recommended?		
Overall Condition of STS? <input type="checkbox"/> Excellent <input type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor Comments / Action Recommended / Repairs Needed / Repairs Performed: Has the owner / occupier taken recommended actions? <input type="checkbox"/> Yes <input type="checkbox"/> No		
Service Agent:		Contact Details:
Signature:		Date:

Source: Adapted from "Checklist 4.2: Operational AWTS inspection report for use by service providers and Council inspectors" in *Designing and Installing On-Site Wastewater Systems*, Sydney Catchment Authority, May 2012

Highland Tanks Pty Ltd trading as
Ultra Clear
Wastewater Treatment Systems
 ABN 93 090 907 725
 PO Box 1158, MITTAGONG NSW 2575
 Phone: 02 4871 2156

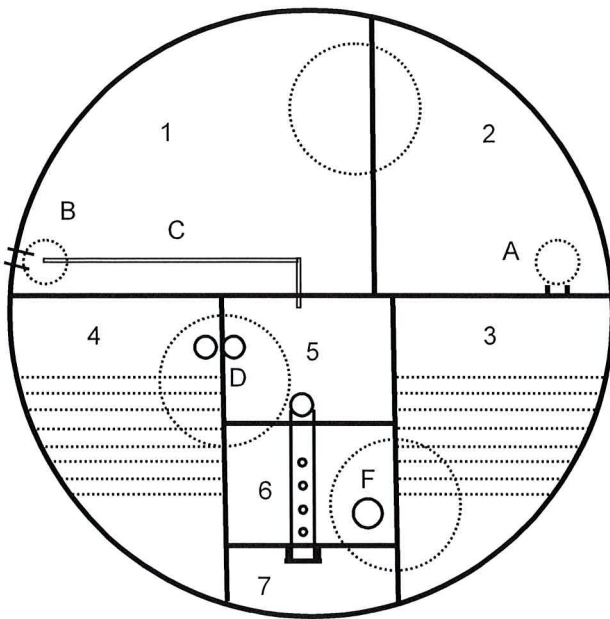
Model ST10

Aerated Wastewater Treatment System
 suitable to deal with WC's and all waste
 on residential premises

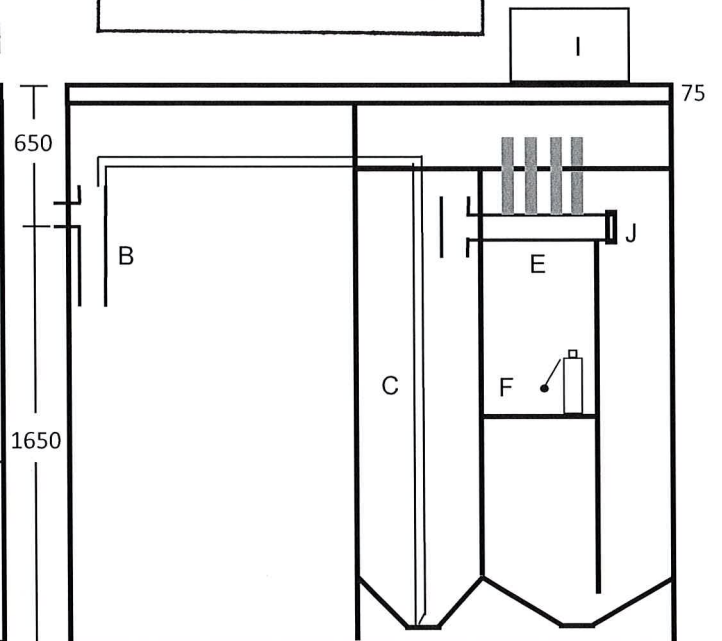
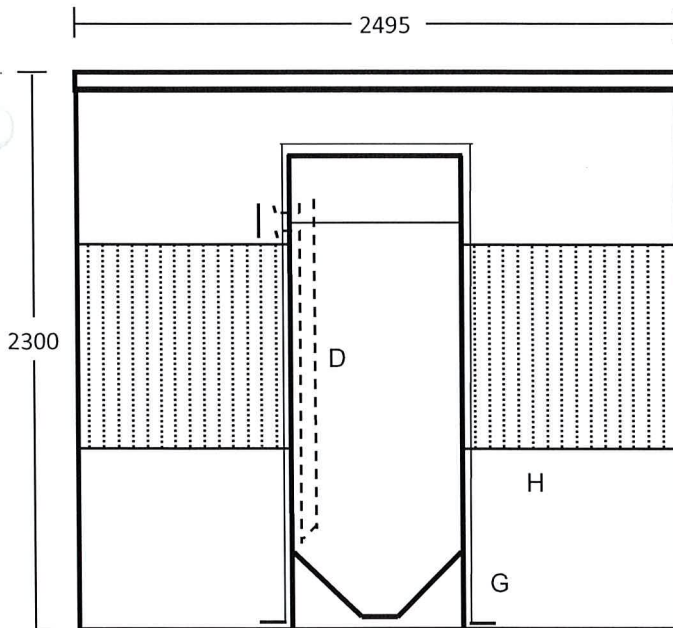
Drawn & Designed by: DW Rebbeck
 UCST10SD 55 Revision 2 21/09/2020

No.	Capacity	Description
1	1850 litres	Primary Chamber 1
2	1050 litres	Primary Chamber 2
3	1275 litres	Aerobic Chamber 1
4	1275 litres	Aerobic Chamber 2
5	450 litres	Settling Chamber
6/7	500 litres	Disinfection Pump Chamber
	6400 litres	Total Capacity

No.	Description Parts	No.	Description Parts
A	Flow pipe primary to aeration	F	Pump ledge and pump
B	Inlet square	G	Air line and diffuser
C	Sludge return pipe	H	Media pack
D	Flow pipe aeration to settling chamber	I	Blower and electrical housing cover
E	Chlorinator	J	Chlorine adjustor



ACCREDITED
 1 FEB 2021
 NSW MINISTRY OF HEALTH



Collection wells manufactured by **Highland Tanks**
 PO Box 1158, MITTAGONG NSW 2575
 16 Gantry Place, BRAEMAR NSW 2575
 Phone: 02 4871 2156

All Septic Tanks & Collection Wells are manufactured to comply with Australian Standards AS/NZS 1546.1:2008
 All internal and sundries supplied by
Ultra Clear Wastewater Treatment Systems