



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: Earthsafe Solar Septic SS10 8Ep Advanced AWTS

Manufacturer: Earthsafe Australia Pty Ltd

Address: Unit 2 / 6 Paddock Place, Rutherford, NSW, 2320

The Earthsafe Solar Septic SS10 8Ep 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: 30 October 2020

Certificate No: STS-AWTS043

Expires: 31 December 2025

**Schedule A: Specification / Description of the Earthsafe Solar Septic SS10 8Ep
Advanced Secondary Treatment System for 8 persons**

Name and Model of STS: Earthsafe Solar Septic SS10 8Ep Advanced STS

The Earthsafe Solar Septic SS10 8Ep STS is designed to treat sewage from a residential dwelling occupied by a maximum of 8 persons, or 1200 LPD. The Earthsafe Solar Septic SS10 8Ep STS is contained in two polyethylene collection well vessels each of 3000L manufactured by Everhard Industries Pty Ltd with NSW Certificate of Accreditation STCW001.

Chamber	Design capacities
Primary treatment/ Anaerobic treatment	2000 L and 300 L Biological Anaerobic Filter
<ul style="list-style-type: none"> • Partition 	yes
Secondary treatment	
<ul style="list-style-type: none"> • Aeration chamber 	1985 L
<ul style="list-style-type: none"> • Clarifier 	430 L
<ul style="list-style-type: none"> • Irrigation chamber 	393 L
Emergency storage Operational	1000L
water level (depth)	
<ul style="list-style-type: none"> • primary 	1100 mm
<ul style="list-style-type: none"> • secondary 	1250 mm

The emergency storage capacity is achieved within the available buffer volume above the LWL in the primary tank and additional volume above the LWL of the aeration chamber. A surge volume is created between the LWL and HWL of the primary chamber of 500 L.

The Earthsafe Solar Septic Model SS10 has the following components:

- **Primary Treatment Tank:** sewage flows from the dwelling into the primary treatment tank where a physical separation of foreign material such as fat, grease and scum occur. The in-flowing sewage is mixed in the existing primary treatment chamber and diluted with the recirculated treated liquor from the clarifier.
- **Aeration Chamber:** primary treated wastewater is transferred to the aeration chamber at a controlled rate through the anaerobic biofilter using an airlift pump. The aeration is cycled at a controlled rate (typically 20 minutes ON and 20 minutes OFF) to assist with denitrification of the nitrogen compounds in the wastewater. The media in the aeration chamber provides a large surface area for the growth of bacteria to promote the bio-degradation of organic material in the wastewater.
- **Clarification:** treated wastewater flows into the clarification chamber where heavy solids are separated out to the base of the chamber. The settled solids are returned to the primary chamber at a controlled rate using an airlift pump.
- **Disinfection:** clear liquid is decanted from the clarifier and flows through the chlorination unit into the irrigation chamber.
- **Dual Aeration System:** air is supplied to the system using a Nitto LA120 air blower or equivalent. Air is delivered directly into the aeration chamber and through a set of electrical solenoids controlled by a PLC (programmable logic controller). The PLC controls individual solenoids to control the transfer, sludge return and back flushing air lifts in the system. The operation of the transfer and sludge return airlifts continually recirculates partially treated wastewater at a predetermined rate back to the primary treatment chamber.
- The treated and disinfected effluent that flows into the irrigation chamber is pumped out into the environment either with a vortex submersible pump or an optional air operated syphon pump. The PLC continuously monitors the volume of liquid flowing into the irrigation chamber and records the accumulated hydraulic flow through the system. This total can be recorded at each scheduled service and reset for the next period.
- A unique feature of the SS10 is achieved by detecting the change in level in the primary chamber which indicates whether the dwelling is occupied or not.
- When sewage is discharged into the primary chamber the level rises and the transfer process is activated. If no sewage flow is detected within a 24 hour period, the PLC can be programmed to reduce the air supply to the system by swathing off the recirculation air lifts.

- With dwellings that are operated off the grid and on solar power with storage batteries the PLC can be programmed to control the aeration cycle to prioritise the aeration treatment process in daylight hours provided there is enough sunlight available on the PV cells.
- Any changes to the PLC program must only be made by an authorised field services and must not be altered by any unauthorised persons.
- **Alarm System:** Once any critical component fails the alarm is activated which is visual and audible and installed within the household.

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 authority for approval to install and operate the Earthsafe Solar Septic Model SS10 as a Sewage Management Facility in accordance with Section 68, Part C of the *Local Government Act 1993*.
- 1.2 The local authority shall apply those Conditions of Accreditation, appropriate to the owner / occupier, to any approval to operate the Earthsafe Solar Septic Model SS10 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 Earthsafe Solar Septic Model SS10 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 Earthsafe Solar Septic Model SS10 is installed or constructed:
 - in accordance with the accredited specifications of the type tested unit and in accordance with good trade practice, and
 - to allow ease of access for maintenance, and
 - regarding the health and safety of users, operators and persons maintaining the facility, and
 - must be installed or constructed 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 Earthsafe Solar Septic Model SS10 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 Earthsafe Solar Septic Model SS10 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 Earthsafe Solar Septic Model SS10 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 Earthsafe Solar Septic Model SS10 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 Earthsafe Solar Septic Model SS10 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 Earthsafe Solar Septic Model SS10. 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 authority where it is intended to install an AWTs in their area once Ministry Accreditation has been obtained:

- Statement of warranty
- Statement of service life
- Quality Assurance Certification
- Installation Manual
- Service Manual
- Owner's Manual
- Manufacturer's Service Report Form
- 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 Earthsafe Solar Septic Model SS10 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 Earthsafe Solar Septic Model SS10 by a licensed electrician and in accordance with the relevant provisions of AS/NZS 3000.

2.3 The owner / occupier shall not commission the Earthsafe Solar Septic Model SS10 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 Earthsafe Solar Septic Model SS10 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 Earthsafe Solar Septic Model SS10;
 - uses replacement parts which meet the minimum specification of the Earthsafe Solar Septic Model SS10;
 - has advised of their name, contact details and credentials to the local council;
 - submits a completed NSW Health "Local Council Service Report" (template 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 Earthsafe Solar Septic Model SS10 unless they are an authorised agent of the manufacturer.

3.3 The Earthsafe Solar Septic Model SS10 once installed and commissioned shall be serviced at three (3) monthly intervals.

3.4 The manufacturer / supplier of the Earthsafe Solar Septic Model SS10 shall place on its web site a copy of the service manual, service sheet or form and specifications for the Earthsafe Solar Septic Model SS10 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,
 - 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 Earthsafe Solar Septic Model SS10 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 0.2 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 council.

6. Advanced Secondary Treatment System

- 6.1 The Earthsafe Solar Septic Model SS10 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	12 mg/L
TSS	≤ 10 mg/L	8 mg/L
<i>E. coli</i> *	≤ 10 cfu/100mL	3 cfu/100mL
FAC p	Minimum 0.5 mg/L†	N/A
Turbidity ?	N/A	10 NTU

* Where disinfection is required.

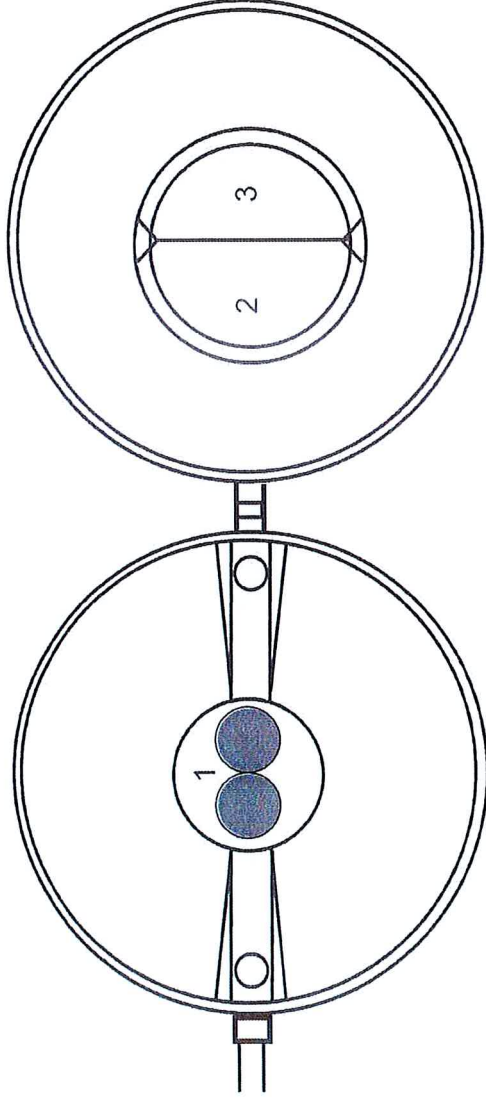
p Where chlorine disinfection is used.

† Minimum level, not 90% of samples.

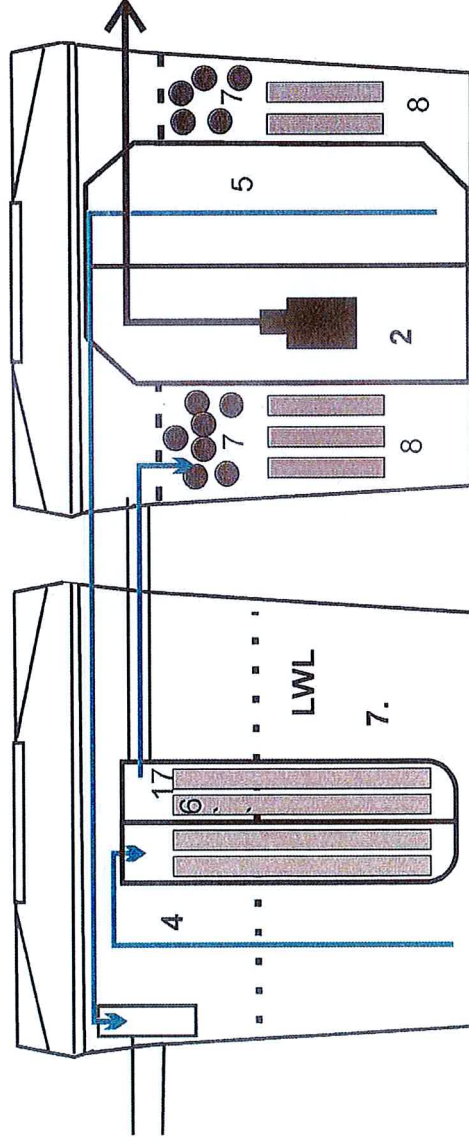
? Where UV light is used for disinfection.

Local Council STS 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



1. BIO FILTER
2. PUMP WELL
3. CLARIFIER
4. PRIMARY TRANSFER
5. SLUDGE RETURN
6. TUBULAR MEDIA
7. BIOBALL MEDIA
8. FIXED MEDIA



ACCREDITED
30 OCT 2020
NSW MINISTRY OF HEALTH



earthsafe
Managed on-site waste water solutions

EARTHSAFE SOLAR SEPTIC SS10PC