



Certificate of Accreditation

Sewage Management Facility

Aerated Wastewater Treatment System

Advanced Secondary / Nutrient Reduction

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: ***“BioSeptic S-TEN NR” Advanced STS-AWTS***

Manufacturer: ***BioSeptic Pty Ltd***

Address: ***67 Smeaton Grange Road,
Smeaton Grange, NSW, 2567***

The “BioSeptic S-TEN NR” Advanced STS-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: *4/4/2022*

Certificate No: *STS-AWTS057*

Expires: *31 December 2027*

Schedule A: Specification / Description of the BioSeptic S-TEN NR Advanced STS-AWTS

Name & Model – BioSeptic S-TEN NR Advanced

Treatment Capacity - The BioSeptic S-TEN NR Advanced is designed to treat sewage from a residential dwelling, occupied by a maximum of 10 persons.

The BioSeptic S-TEN NR Advanced is contained in a single multi-chambered vessel with a design capacity of 7027L. NSW Health Accreditation Number STCW 050.

| Chamber | Design capacities |
|---------------------------------|--------------------------|
| Primary treatment | 3439 L |
| • Partition | Yes |
| Secondary treatment | 3588 L |
| • Aeration chamber | 2488 L |
| • Clarifier | 623 L |
| • Irrigation chamber | 477 L |
| Emergency storage | 2311 L |
| Operational water level (depth) | |
| • primary | 1656 mm |
| • secondary | 1656 mm |

The emergency storage capacity is achieved by flooding the air space between the normal water operating level and the top of the concrete walls that create the discrete chambers, thus providing 2311L of emergency storage prior to water overflowing the chamber walls. Chamber partitions terminate at the underside of the lid except the partition between the aeration chambers and clarifier which terminate 259mm above the operational water depth.

The BioSeptic S TEN NR Advanced has the following components:

- **Primary treatment tank** –
Sewage from the dwelling flows into the primary treatment chambers. The heavier material settles from the liquid and the lighter fraction of oils and fats floats to the surface to form a crust to create an anaerobic condition. The Total Suspended Solids concentration is partially reduced. Anerobic bacteria digest and reduce the organic load or Biochemical Oxygen Demand (BOD₅).
- **Aeration chamber** –
Settled wastewater from the primary tank flows into the first aeration chamber and then overflows into the second aeration chamber. The wastewater is directed through a large area of bacterial support media in each chamber. This provides the best conditions for the aerobic bacterial community to digest the remaining organic load.
- **Clarifier** –
After aeration the wastewater overflows into the clarifier. This is a quiescent chamber that settles out any remaining suspended solids. These are returned by an airlift sludge return to the septic chamber for further treatment and to assist in nitrogen reduction. Any remaining floating material is transferred to the first aeration chamber by an airlift skimmer.
- **Disinfection** –
After settling, the wastewater flows through a proprietary erosion chlorinator before entering the pump well. The chlorinated water is held in the pump well for three pump cycles to ensure good pathogen kill prior to being discharged.

Air Supply –

Air is supplied to the aeration chamber by a Secoh JDK 80, 48 watt air blower, or equivalent. This produces a nominal 80 litres/minute air flow at 1.656m water depth. The air is distributed to the bottom of the aeration tank via a manifold with taps.

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 BioSeptic S-TEN NR Advanced 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 BioSeptic S-TEN NR Advanced 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 BioSeptic S-TEN NR Advanced 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 BioSeptic S-TEN NR Advanced 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 BioSeptic S-TEN NR Advanced 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 BioSeptic S-TEN NR Advanced 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 BioSeptic S-TEN NR Advanced 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 BioSeptic S-TEN NR Advanced 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 BioSeptic S-TEN NR Advanced 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 BioSeptic S-TEN NR Advanced. 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 a BioSeptic S-TEN NR Advanced in their area once 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 authority 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 BioSeptic S-TEN NR Advanced 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 authority.
- 2.2 The owner / occupier shall ensure that all electrical work is carried out on the BioSeptic S-TEN NR Advanced by a licensed electrician and in accordance with the relevant provisions of AS/NZS 3000.
- 2.3 The owner / occupier shall not commission the BioSeptic S-TEN NR Advanced 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 BioSeptic S-TEN NR Advanced 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 BioSeptic S-TEN NR Advanced;
 - uses replacement parts which meet the minimum specification of the BioSeptic S-TEN NR Advanced;
 - has advised of their name, contact details and credentials to the local authority;
 - submits a completed NSW Health "Local Council Service Report" (attached) to the local authority immediately after every service;
 - shall report to the local authority 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 BioSeptic S-TEN NR Advanced unless they are an authorised agent.

3.3 The BioSeptic S-TEN NR Advanced once installed and commissioned shall be serviced at 3 monthly intervals.

3.4 The manufacturer / supplier of the BioSeptic S-TEN NR Advanced shall place on its web site a copy of the service manual, service sheet or form and specifications for the BioSeptic S-TEN NR Advanced 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 BioSeptic S-TEN NR Advanced 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 authority.

6. Advanced Secondary Treatment System

6.1 The BioSeptic S-TEN NR Advanced 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 ‡ | Minimum 0.5 mg/L† | N/A |
| Turbidity ? | N/A | 10 NTU |

* Where disinfection is required.

‡ Where chlorine disinfection is used.

† Minimum level, not 90% of samples.

? Where UV light is used for disinfection.

7 Reduction in nutrient levels

During the testing of the BioSeptic S-TEN NR Advanced the treated effluent was tested for total Nitrogen (TN) and total Phosphorous (TP) concentrations. The treatment process has the capacity to reduce the TN and TP concentrations as follows:

- Total N from an average of 69.4 mg/l to 52.78 mg/l which represents a reduction of 23.96%.
- Total P from an average of 10.98 mg/l to 9.20 mg/l which represents a reduction of 16.2%.

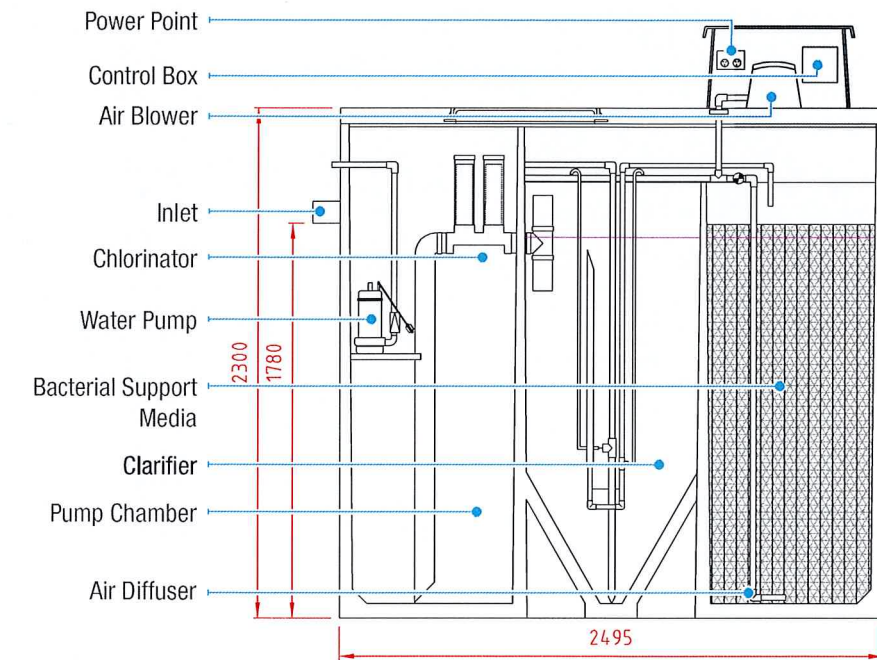
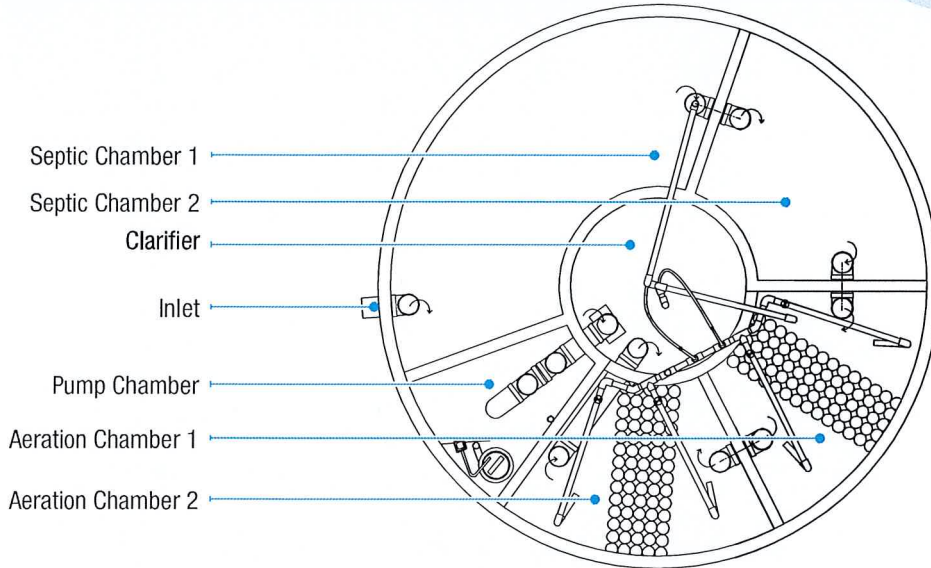
| Local Council STS Service Report: February 2018 | | |
|---|--|---|
| Owner's Name: | Local Council: | |
| Installation Address: | | |
| System Brand & Model: | <input type="checkbox"/> Domestic | <input type="checkbox"/> Commercial |
| Date of this service: / / | Date of last Service: / / | Next service 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 |
| Operating satisfactorily? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | | * Patio, play areas, BBQ, etc 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

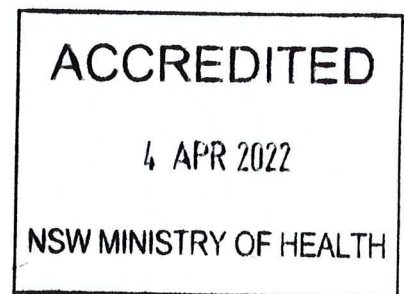
BioSeptic S-TEN NR

NUTRIENT REDUCTION

NSW Health Certificate of Accreditation - STS-AWTS 057



| CHAMBERS | CAPACITIES |
|---|------------|
| Septic chamber 1 | 2289 L |
| Septic chamber 2 | 1150 L |
| Aeration chamber 1 | 1244 L |
| Aeration chamber 2 | 1244 L |
| Clarifier (surface area 0.5m ²) | 623 L |
| Pump chamber | 477 L |
| Total capacity | 7027 |
| Surcharge capacity - >1000L | 2300L |



The **BioSeptic S-TEN NR STS-AWTS** has been tested to AS1546.3:2017 Table 2.1, and achieved the **Advanced Secondary** Effluent Quality level, with **Nutrient Reduction** in Nitrogen and Phosphorous.

The BioSeptic S-TEN NR multi chambered tank is cast in one piece from fibre reinforced 40mpa concrete and it is accredited to AS/NZS1546.1:2008 Table A1.

The BioSeptic S-TEN NR is a 10EP system and it will treat all waste from a household of 10 people.

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 The Ultimate Sewage System

NSW MINISTRY OF HEALTH
1 APR 2004
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