

Certificate of Accreditation

Sewage Management Facility

Aerated Wastewater Treatment System – Advanced Secondary Effluent – Nutrient Reduction

This Certificate of Accreditation is issued by the Secretary of the NSW Ministry of Health pursuant to Section 41(1) Local Government (General) Regulation 2021.

System: BioCycle Twin Concrete AWTS

Manufacturer: EcoSeptic Pty Ltd

Of: 65 Warradale Road, Warragamba, NSW, 2752

The BioCycle Twin Concrete Advanced Nutrient Reduction AWTS as described in Schedule 1, has been accredited as a Sewage Management Facility for use in single domestic premises in NSW. This accreditation is subject to the conditions of accreditation and permitted uses specified in Schedule 2. The AWTS has been independently certified as being manufactured to Australian / New Zealand Standard "AS/NZS1546.3:2017 On-site domestic wastewater treatment units – Part 3: Aerated wastewater treatment systems".



Director, Environmental Health

For Secretary (Delegation PH335)

Issued: 11 / 06 / 25

Certificate Number: STS-AWTS080

Expires 31 December 2030

Schedule 1: Specification / Description of the BioCycle Twin Concrete AWTS

Name and Model of STS: BioCycle Twin Concrete Advanced Nutrient Reduction AWTS

The BioCycle Twin Concrete Advanced NR AWTS is designed to treat sewage from a residential dwelling occupied by a maximum of 10 persons. The BioCycle Twin Concrete AWTS is contained in BioCycle (Econocycle) twin septic tank/collection well with design capacities of 3600 L and 3700 L with NSW Health Accreditation Number STCW037A.

Chamber	Design capacities
Primary treatment	3000 L
• Partition 2:1	Yes
Secondary treatment	2840 L
• Aeration chamber	2125 L
• Clarifier	295 L
• Irrigation chamber	420 L
Emergency storage	1000L
Operational water level (depth)	
• primary	1380 L
• secondary	1300 L

The emergency storage capacity is achieved by increased height of chambers. Note: Main baffle wall between septic and final pump out chamber is full height.

The BioCycle Twin Concrete AWTS is contained in two Concrete tanks having the following components:

- **Primary treatment tank** – Sewage from the dwelling flows into the primary treatment tank where a physical separation of foreign material such as fat, grease and scum occur and allows for a reduction in BOD and TSS concentrations.
- **Aeration chamber** – Primary treated wastewater flows into the aeration chamber where aeration occurs. The media in the chamber provides a surface area for the growth of bacteria to allow for the biodegradation of organic material in the wastewater.
- **Clarifier** – Treated wastewater is transferred into the clarifier allowing for the removal of settled solids. The solids are transferred to the primary treatment tank by way of an airlift device.
- **Disinfection** – A chlorine disinfection unit is installed on the outlet of the clarifier.
- **Air Supply** – Air is supplied to the contact aeration chamber by a Hiblow HP80 air blower or equivalent, producing an airflow of a nominal 80 litres/minute at 1.3 m water depth. The air is distributed via a manifold to two aeration legs located near the base of the aeration chamber and two airlift devices located in the clarifier. The two airlift devices continually return partially treated wastewater and settled solids to the inlet of the primary treatment tank.
- **Final Chamber**- A submersible irrigation pump which delivers a minimum flow of 2.0 m³/hour at a minimum head of 7 m, or equivalent is installed.
- **Alarm System**- The system has an alarm panel or strobe wired into the electrical box which indicates problems with the unit. Air and water problems are separately alarmed with 24-hour mute function.

Schedule 2: 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 2021, to the local authority for approval to install and operate the BioCycle Twin Concrete AWTS 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 BioCycle Twin Concrete AWTS issued under Section 45(4), Local Government (General) Regulation 2021.
- 1.3 In accordance with Section 36 of the Local Government (General) Regulation 2021, the BioCycle Twin Concrete 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 BioCycle Twin Concrete 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 BioCycle Twin Concrete 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 BioCycle Twin Concrete 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 BioCycle Twin Concrete 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 BioCycle Twin Concrete 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 BioCycle Twin Concrete 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 BioCycle Twin Concrete 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 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 BioCycle Twin Concrete 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 authority.

2.2 The owner / occupier shall ensure that all electrical work is carried out on the BioCycle Twin Concrete 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 BioCycle Twin Concrete 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 BioCycle Twin Concrete 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 BioCycle Twin Concrete AWTS;
 - uses replacement parts which meet the minimum specification of the BioCycle Twin Concrete AWTS;
 - has advised of their name, contact details and credentials to the local authority;
 - submits a completed NSW Health "Local Council Service Report" (template attached) to the local authority immediately after each and 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 BioCycle Twin Concrete AWTS unless they are an authorised agent of the manufacturer.

3.3 The BioCycle Twin Concrete AWTS once installed and commissioned shall be serviced at three (3) monthly intervals.

3.4 The manufacturer / supplier of the BioCycle Twin Concrete AWTS shall place on its web site a copy of the service manual, service sheet or form and specifications for the BioCycle Twin Concrete 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,
- 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 BioCycle Twin Concrete 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 0.2 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 BioCycle Twin Concrete 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	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.
- ‡ Where chlorine disinfection is used.
- † Minimum level, not 90% of samples.
- ‡ Where UV light is used for disinfection.

7. Reduction in nutrient levels

7.1 During the testing of the BioCycle Twin Concrete AWTS the treated effluent was tested for Total N (TN) and Total P (TP) concentrations. The treatment process was reported to reduce the TN and TP concentrations as follows:

- Total N reduction by 36.7%;
- Total P reduction by 7%.



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

