



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: *"Turbojet Single" Advanced STS-AWTS*

Manufacturer: *Precast Civil Industries t/a
Icon Septech CIVILMART*

Address: *11 Industrial Drive, Pakenham, VIC, 3810*

The "Turbojet Single" 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: *21 August 2020*

Certificate No: *STS-AWTS048*

Expires: *31 December 2025*

Schedule A: Specification / Description of the Turbojet Single Advanced STS-AWTS

Name & Model – Turbojet Single

Treatment Capacity - The Turbojet Single is designed to treat sewage from a residential dwelling, occupied by a maximum of 10 persons.

The Turbojet Single is contained in collection well of design capacity 7100 L manufactured by Toowoomba Tanks, at 32 Cumners Road, Torrington, QLD, 4350, and NSW Health Accreditation Number STCW044

| Chamber | Design capacities |
|---------------------------------|-------------------|
| Primary Treatment Chamber 1 | 2003 L |
| Primary Treatment Chamber 2 | 924 L |
| • Partition | Yes |
| Secondary treatment | |
| • Aeration chamber | 2485 L |
| • Clarifier | 528 L |
| • Irrigation chamber | 360 L |
| Emergency storage | 1977 L |
| Operational water level (depth) | |
| • primary | 1770 mm |
| • secondary | 1740 mm |

The emergency storage capacity is achieved by lowering the levels in the aeration chamber.

The Turbojet Single has the following components:

- **Primary treatment chambers 1 and 2:** Sewage from the dwelling flows into the primary treatment chamber where anaerobic activity takes place causing physical separation of foreign materials such as fat, grease and scum occurs and allows for a 25 – 30% reduction in Total Suspended Solids and Biochemical Oxygen Demand (BOD₅).
- **Aeration chamber:** Primary treated wastewater flows into the aeration chamber where the aeration is cycled 24hrs on and 0 hours off to assist denitrification of the nitrogen oxides in the wastewater. 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 using an airlift skimmer device.
- **Disinfection:** A chlorine disinfection unit is installed on the outlet of the clarifier filled with 200 gram tablets.
- **Filtration:** The treated and disinfected effluent is filtered through a centrifugal water filter or an equivalent Nefarim disc filter.
- **Air Supply:** Air is supplied to the aeration chamber by a Thomas HP120 air blower, or equivalent producing a nominal 120 litres/minute air flow at 1.38 m water depth. The air is distributed via a manifold to aeration legs located near the base of the aeration chamber and to airlift devices located in the aerobic zone and in the clarifier. The airlift devices continually return partially treated wastewater and settled solids to the inlet of the primary treatment tank.
- **Irrigation:** A Davey D40a mode submersible irrigation pump or equivalent is installed in the irrigation chamber.
- **Alarm system:** A remote alarm is placed in an easily observable position to indicate by visual/audio means the loss of power, low air pressure and high-water level, however caused. The visual alarms are duplicated in the control box at the tank.

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 Turbojet Single 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 Turbojet Single 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 Turbojet Single 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 Turbojet Single 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 Turbojet Single 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 Turbojet Single 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 Turbojet Single 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 Turbojet Single 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 Turbojet Single 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 Turbojet Single. 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 Turbojet Single in their area once accreditation has been obtained:
- | | |
|-----------------------------------|--------------------------------------|
| • Statement of warranty | • Manufacturer's Service Report Form |
| • Statement of service life | • Engineering Drawings |
| • Quality Assurance Certification | • Specifications |
| • Installation Manual | • A4 Plans |
| • Service Manual | • Certificate of Accreditation |
| • Owner's Manual | 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 Turbojet Single 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 Turbojet Single by a licensed electrician and in accordance with the relevant provisions of AS/NZS 3000.

2.3 The owner / occupier shall not commission the Turbojet Single 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 Turbojet Single 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 Turbojet Single;
 - uses replacement parts which meet the minimum specification of the Turbojet Single;
 - 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 Turbojet Single unless they are an authorised agent.

3.3 The Turbojet Single once installed and commissioned shall be serviced at 3 monthly intervals.

3.4 The manufacturer / supplier of the Turbojet Single shall place on its web site a copy of the service manual, service sheet or form and specifications for the Turbojet Single 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 Turbojet Single 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 Turbojet Single 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.

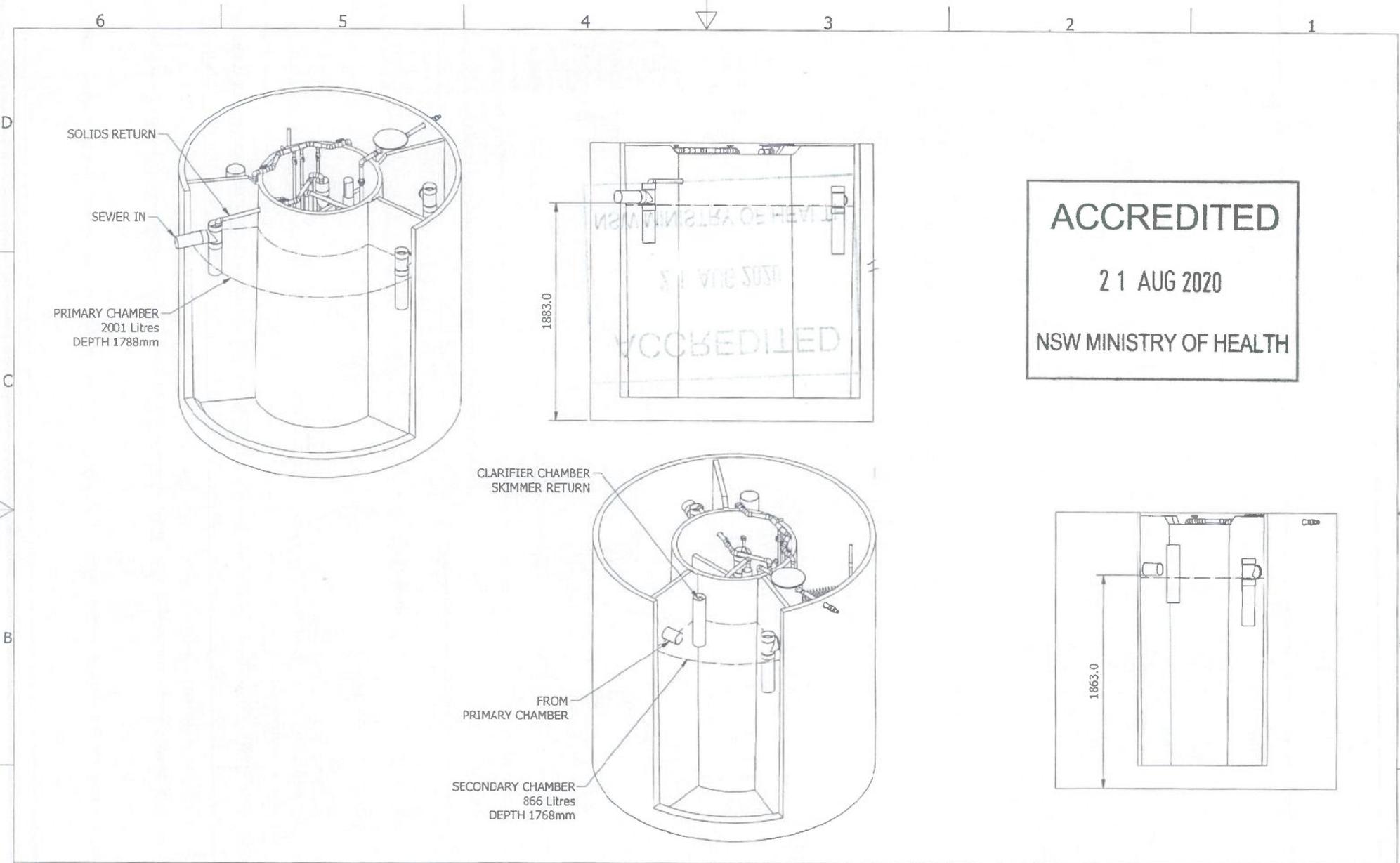
p Where chlorine disinfection is used.

† Minimum level, not 90% of samples.

? Where UV light is used for disinfection.

| Local Council STS 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



NOTES

| REV | DESCRIPTION | DWN | CKD | APP | DATE |
|-----|-------------------------|-----|-----|-----|------------|
| 01 | FILTER ADDED | P.B | K.H | M.B | 26/10/2019 |
| 00 | ISSUED FOR CONSTRUCTION | P.B | K.H | M.B | 02/07/2019 |

REVISION HISTORY

CIVILMART
#1 in Civil / Built to last

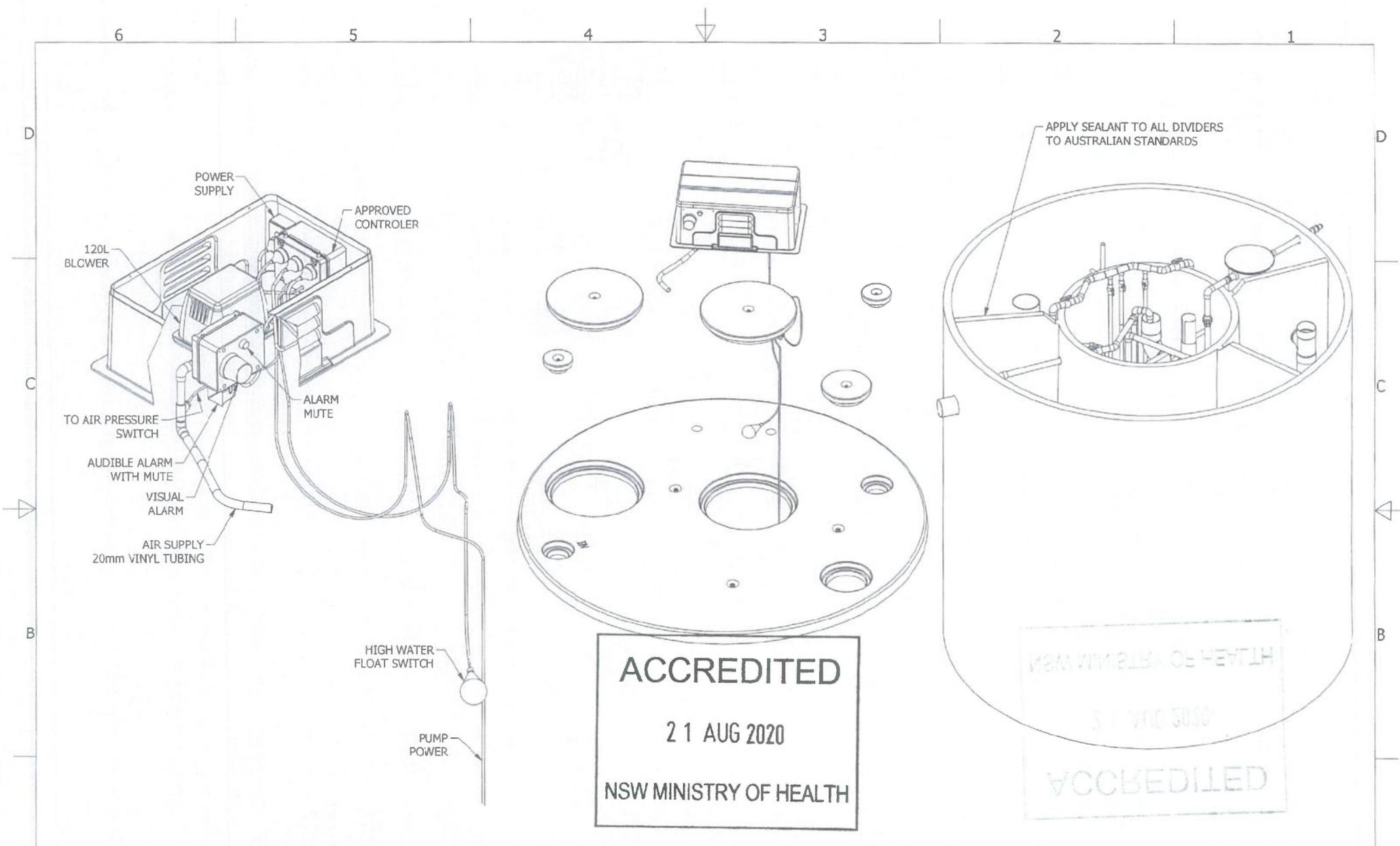
| | |
|--------------|-------------------|
| PART NO | SB 440-1TAST 2020 |
| STOCK NO | |
| INC PROGRAM | |
| PART FILE | SB 440-1T 0000 |
| DRAWING FILE | SB 440-1T 0000 |
| WEIGHT | N/A |

| | | |
|---|--------|---------|
| UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES UNLESS OTHERWISE SPECIFIED: | | |
| DECIMAL | LINEAR | ANGULAR |
| X | ±0.5 | ±0.5° |
| XX | ±0.1 | ±0.1° |
| XXX | ±0.05 | ±0.05° |
| REMOVE ALL BURRS AND SHARP EDGES | | |
| DO NOT SCALE IF IN DOUBT ASK STATUS | | |
| ISSUED FOR CONSTRUCTION | | |

| | |
|--------|-----|
| DRAWN | P.B |
| CHKD | K.H |
| APPD | M.B |
| ISSUED | G.H |

| | |
|---------|------------|
| PROJECT | 30/04/2019 |
| DATE | 02/07/2019 |

| | |
|---|--------|
| SB 440-1TAST 2020 SUPERTREAT ADVANCED SECONDARY WASTEWATER TREATMENT PLANT | |
| CUSTOMER | TCP |
| SUPPLIER | |
| REV | 01 |
| SHEET | A3 |
| SHEFF | 2 OF 4 |



NOTES

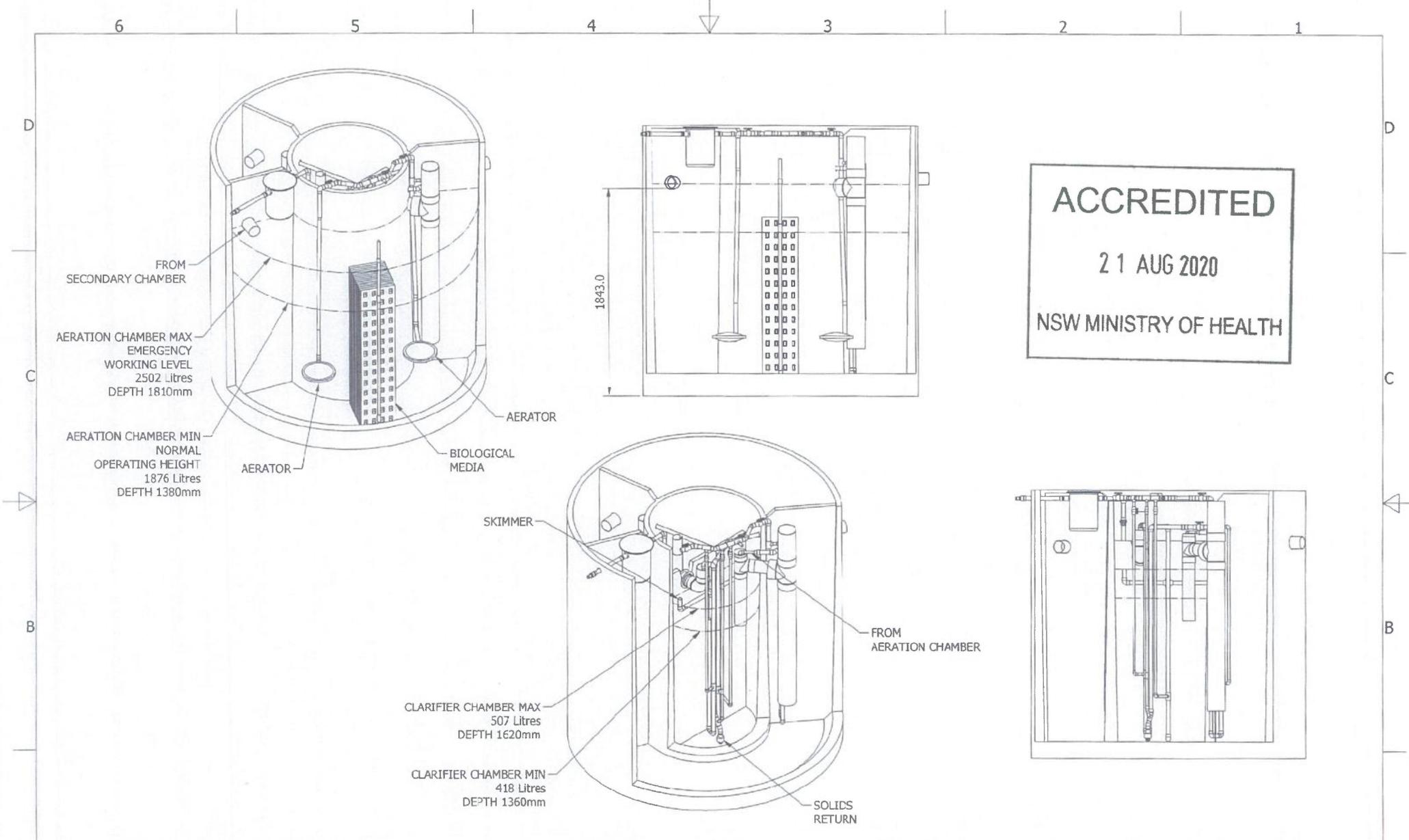
| REV | DESCRIPTION | DWN | OKD | APP | DATE |
|-----|-------------------------|-----|-----|-----|------------|
| 01 | FILTER ADDED | P.B | K.H | N.B | 26/10/2019 |
| 00 | ISSUED FOR CONSTRUCTION | P.B | K.H | N.B | 02/07/2019 |

REVISION HISTORY

CIVILMART
#1 in Civil / Built to last

| | | | |
|---------------------------------|---|--|---|
| PART N° SB 440-1TAST 2C20 | UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES UNLESS OTHERWISE SPECIFIED: | | PROJECT |
| STOCK N° | DECIMAL LINEAR ANGULAR X ±0.5 ±0.5° XX ±0.1 ±0.1° XXX ±0.05 ±0.05° REMOVE ALL BURRS AND SHARP EDGES DO NOT SCALE IF IN DOUBT ASK STATUS ISSUED FOR CONSTRUCTION | | DRAWN P.B 30/04/2019 CHKD K.H 02/07/2019 APPD M.B 02/07/2019 ISSUED G.H 02/07/2019 |
| VC PROGRAM | | | CUSTOMER TCP SUPPLIER |
| PART FILE SB 440-1T 0000 | | | REV SIZE SHEET 01 A3 1 OF 4 |
| DRAWINGS FILE SB 440-1T 0000 | | | |
| WEIGHT N/A | | | |

| | | |
|--|--|--|
| SB 440-1TAST 2020 SUPERTREAT ADVANCED SECONDARY WASTEWATER TREATMENT PLANT | | |
|--|--|--|



NOTES

| | | | | | |
|-----|-------------------------|-----|-----|-----|------------|
| 01 | FILTER ADDED | P.B | K.H | M.B | 26/10/2019 |
| 00 | ISSUED FOR CONSTRUCTION | P.B | K.H | M.B | 02/07/2019 |
| REV | DESCRIPTION | DWN | CKD | APP | DATE |

REVISION HISTORY

CIVILMART
#1 in Civil Built to last

| | | | |
|--------------|-------------------|---|------------|
| PART Nº | SB 440-1TAST 2020 | UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES UNLESS OTHERWISE SPECIFIED: | PROJECT |
| STOCK Nº | | DECIMAL ±0.5 | 30/04/2019 |
| NC PROGRAM | | LINEAR ±0.1 | 02/07/2019 |
| PART FILE | SB-440-1T 0000 | ANGULAR ±0.5° | |
| DRAWING FILE | SB 440-1T 0000 | ±0.1° | |
| WEIGHT | N/A | ±0.05° | |
| | | REMOVE ALL BURRS AND SHARP EDGES | |
| | | DO NOT SCALE IF IN DOUBT ASK | |
| | | ISSUED FOR CONSTRUCTION | |

| | | | |
|---------|-------------------|----------|--------|
| PROJECT | SB 440-1TAST 2020 | CUSTOMER | TCP |
| DRAWN | P.B | SUPPLIER | |
| CHKD | K.H | REV | 01 |
| APPD | M.B | SIZE | A3 |
| ISSUED | G.H | SHEET | 3 OF 4 |

