Approval

1. The Advanced Enviro-septic (AES 38) ("the System") described in the Specifications and Drawings in the attached Schedule and manufactured by Presby Environmental Inc. Whitefield, New Hampshire ("the manufacturer") and supplied by Chankar Environmental Pty Ltd (ACN 148 175 455) ("the supplier") has been assessed in accordance with the Queensland Plumbing and Wastewater Code (QPW Code) dated 15th January 2013.

2. Approval is granted for a secondary quality wastewater treatment system, subject to compliance by the manufacturer/supplier with the requirements of the Plumbing and Drainage Act 2018, and the conditions of approval detailed below.

3. This approval, the conditions of approval and the Schedule comprise the entire Treatment Plant Approval document.

4. Any modification by the manufacturer/supplier to the design, drawings or specifications scheduled to this approval must be approved by the Chief Executive.

Conditions of approval

5. The manufacture, installation, operation, service and maintenance of the systems must be in conformity with the conditions of this Treatment Plant Approval.

6. The secondary quality wastewater treatment system, which is an example of the approved systems, may only be used on premises that generate per day:
   a) a maximum hydraulic loading of 38L per lineal metre length of AES piping system
   b) a maximum organic loading of 300mg/L BOD₅
   c) a maximum total suspended solids of 300mg/L.

7. The system must continue to meet the requirements of secondary quality wastewater treatment system, producing the following effluent quality —
   a) 90% of the samples taken must have a BOD₅ less than or equal to 20 g/m³ with no sample greater than 30 g/m³.
   b) 90% of the samples taken must have total suspended solids less than or equal to 30g/m³ with no sample greater than 45g/m³.

8. Each system must be serviced in accordance with the details supplied in the owner’s operation and maintenance manual.

9. The system design is based upon secondary quality effluent design loading rate as defined in AS/NZ1547 using the AES Design Calculator prepared by a qualified designer. System designs must be verified and signed by the supplier before being submitted to the Local Government.
10. A septic tank conforming to AS/NZ 1546.1 and sized in accordance with AS/NZ 1547 for the influent hydraulic load from the dwelling is a component of the system. Waste from the septic tank is to be diverted to the AES piping system prior to the system sand and basal area. The septic tank that feeds into the system must be regularly monitored and maintained (including de-sludging) in accordance with AS/NZ 1547 to ensure optimum operation of the system.

11. When granting a compliance permit, the local government must satisfy itself that the designer’s choice of the system configuration is optimal for the proposed use and site conditions and that the effluent can be retained within the land application area.

12. Each application for a compliance permit to install a system must also be accompanied by a copy of a completed Advanced Enviro-Septic Design Calculator Report endorsed by the supplier, showing the footprint/basal area of the proposed system and number of pipe modules for the site.

13. An inspection/sampling point must be installed permanently in the sand immediately below the half-way point of the AES piping system. Where a system is installed in a sloping basal area an additional inspection/sampling point must be installed at the lowest point of the system extension.

14. Routine maintenance of the system at set intervals, other than septic tank sludge levels, is not stipulated by the manufacturer/supplier. However, routine monitoring may be required by the Local Government. In the event of failure of the system’s land application area an AES authorised person may need to follow the rejuvenation procedures set out in the manufacturer/supplier’s Design and Installation Manual.

15. Where a system installed at a site, has been found not to operate satisfactorily during its service life, and as a result requires modification to achieve the required performance requirements, in particular, water quality limits, the installed system is to be modified accordingly. Any modifications including any of the supplier’s rejuvenation procedure outcomes must be recorded on the service report.

16. Permitted use of the effluent is for sub-surface absorption only.

17. Each system must be supplied with —

   (a) a copy of this Treatment Plant Approval document;
   (b) details of the system;
   (c) instructions for authorised persons for its installation;
   (d) a copy of the owner’s manual to be given to the owner at the time of installation; and
   (e) detailed instructions for authorised service personal for its operation and maintenance.
18. At each anniversary of the Treatment Plant Approval date, the supplier must submit to the Chief Executive a list of all systems installed in Queensland during the previous 12 months. Where the Chief Executive is notified of any system failures the Chief Executive may randomly select a number of installed systems for audit. The Chief Executive will notify the supplier’s nominated NATA accredited laboratory which systems are to be audited for BOD5 and TSS. The sampling and testing of the selected systems, if required, is to be done at the supplier’s expense. The following results must be reported to the Chief Executive;

a) Address of premises;
b) Date inspected and sampled;
c) Sample identification number;
d) BOD5 for influent and effluent; and
e) TSS for influent and effluent.

19. The Chief Executive may, by written notice, cancel this approval if the manufacturer/supplier fails —
   a) to comply with one or more of the conditions of approval; or
   b) within 30 days, to remedy a breach, for which a written notice been given by the Chief Executive.

20. This approval may only be assigned with the prior written consent of the Chief Executive.

21. This approval expires on 1 January 2024 unless cancelled earlier in accordance with paragraph 19 above.
TREATMENT PLANT APPROVAL No. 01/2020
Plumbing and Drainage Act 2018

SCHEDULE

Attachment 1

Specifications, Drawings and Sample AES Design Calculator Report for the

Advanced Enviro-Septic (AES 38)
APPLICATION FOR PRODUCT ACCREDITATION
(Onsite Wastewater Treatment System)

ADVANCED ENVIRO-SEPTIC (AES-38) SYSTEM COMPONENTS

Advanced Enviro-Septic™ is an effective, passive onsite wastewater treatment system for residential, commercial and community use. Each AES-38 unit is a 3 meter long engineered pipe with outer layers of randomly placed fibres, bio accelerator and non-woven geotextile fabric. The geotextile fabric is sewn together to hold the pipe, fibres and the bio accelerator for easy handling.

Main components of AES-38 system include;

1. AES Pipe unit (3 meter long pipe) – incorporates corrugation, perforated holes and internal skimmer taps
2. AES Couplings – patented connector to join the AES pipe units as per the design requirements.
3. AES Offset Adaptor – 308mm diameter cap that has 1 x 92mm pre cut hole 9 (open to suit 100mm PVC pipe). This 92mm hole is for connection to the septic tank outlet and for raised connection between rows of AES-38 pipes. Required number of offset adaptor depends on the resign requirements.
4. Oxygen Demand Vent – 100mm vent cowl with mosquito proof screen.
**AES-38 System Organic Loading and Wastewater Parameters**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MODEL NO.</strong></td>
<td>AES-38</td>
</tr>
<tr>
<td><strong>INFLUENT</strong></td>
<td></td>
</tr>
<tr>
<td>Hydraulic Load</td>
<td>114 litres per 3 metre long unit</td>
</tr>
<tr>
<td>BOD$_5$</td>
<td>160-300 mg/L</td>
</tr>
<tr>
<td>TSS</td>
<td>110-300 mg/L</td>
</tr>
<tr>
<td>FOG</td>
<td>50 mg/L (maximum)</td>
</tr>
<tr>
<td>PH</td>
<td>6-9</td>
</tr>
<tr>
<td>TEMP</td>
<td>5-30 degree celsius</td>
</tr>
<tr>
<td><strong>EFFLUENT</strong></td>
<td></td>
</tr>
<tr>
<td>BOD$_5$</td>
<td>≤ 20 mg/L</td>
</tr>
<tr>
<td>TSS</td>
<td>≤ 20 mg/L</td>
</tr>
</tbody>
</table>

* Wastewater that enters the AES system must be Primary Treated.
TEN STEPS OF WASTEWATER TREATMENT: ADVANCED ENVIRO-SEPTIC™ TREATS EFFLUENT MORE EFFICIENTLY TO PROVIDE LONGER SYSTEM LIFE AND TO PROTECT THE ENVIRONMENT.

STAGE 1: WARM EFFLUENT ENTERS THE PIPE AND IS COOLED TO GROUND TEMPERATURE.

STAGE 2: SUSPENDED SOLIDS SEPARATE FROM THE COOLED LIQUID EFFLUENT.

STAGE 3: SKIMMERS FURTHER CAPTURE GREASE AND SUSPENDED SOLIDS FROM THE EXITING EFFLUENT.

STAGE 4: PIPE RIDGES ALLOW THE EFFLUENT TO FLOW UNINTERRUPTED AROUND THE CIRCUMFERENCE OF THE PIPE AND AID IN COOLING.

STAGE 5: BIO-ACCELERATOR™ FABRIC SCREENS ADDITIONAL SOLIDS FROM THE EFFLUENT AND DEVELOPS A BIOMAT WHICH PROVIDES TREATMENT AND ENSURES ACCELERATED BIOMAT DEVELOPMENT.

STAGE 6: A MAT OF COARSE RANDOM FIBERS SEPARATES MORE SUSPENDED SOLIDS FROM THE EFFLUENT.

STAGE 7: EFFLUENT PASSES INTO THE GEO-TEXTILE FABRICS AND GROWS A PROTECTED BACTERIAL SURFACE.

STAGE 8: SAND WICKS LIQUID FROM THE GEO-TEXTILE FABRICS AND ENABLES AIR TO TRANSFER TO THE BACTERIAL SURFACE.

STAGE 9: THE FABRICS AND FIBERS PROVIDE A LARGE BACTERIAL SURFACE TO BREAK DOWN SOLIDS.

STAGE 10: AN AMPLE AIR SUPPLY AND FLUCTUATING LIQUID LEVELS INCREASE BACTERIAL EFFICIENCY.
<table>
<thead>
<tr>
<th>ITEM #</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>PLASTIC PIPE</td>
</tr>
<tr>
<td>2</td>
<td>BIO-ACCELERATOR FABRIC (BOTTOM THIRD OF PIPE)</td>
</tr>
<tr>
<td>3</td>
<td>RANDOMLY ORIENTED PLASTIC FIBER</td>
</tr>
<tr>
<td>4</td>
<td>GEO-TEXTILE FABRIC</td>
</tr>
<tr>
<td>5</td>
<td>SEWN SEAM (ALWAYS ORIENTED UP)</td>
</tr>
</tbody>
</table>

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Material: HDPE Plastic

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Presby Environmental, Inc.
143 Airport Road
Whitefield, NH 03598
800-473-5298
The Next Generation of Wastewater Technology

PART NAME: OFFSET ADAPTER
DRAWN BY: PEI
DATE: Feb 26, 2013
SCALE: NONE
SHEET: 4 OF 5
ENGAGEMENT RIDGES

Ø308 mm [Ø12-1/8"]

SERRATED LOCKING TAB

178 mm [7”]

MATERIAL: PLASTIC

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Presby Environmental, Inc.
143 Airport Road
Whitefield, NH 03598
800-473-5298
The Next Generation of Wastewater Technology

PART NAME: COUPLING

DRAWN BY: PEI
DATE: Feb 26, 2013
SCALE: NONE
SHEET: 5 OF 5
Advanced Enviro-septic Design Calculator V8.3

"Always the BEST Option" until site and soil conditions rule it out.

- Site Address: Must have Lot or Street number, Address and Post Code
- Client Name: Client details and Contact Phone Number
- Designed By: Name, Designers Ph Number, QBSA Lic Number
- Lic Plumber Name: Must have plumber details before we deliver product, etc.
- Council Area: AES Certif Number, Date

This Calculator is a guide only, receiving soil classification, surface water, water tables and all other site constraints addressed by the design.

### System Designers site and soil calculation data entry

#### IMPORTANT NOTES

- Is this a new home installation? Y or N
- Number of person
- Daily Design Flow Allowance Litre/Person/Day
- Number of rows required to suit site constraints
- Infiltration surface Soil Category as established by site and soil evaluation. CATEGORY
- Design Loading Rate based on site & soil evaluation DLR (mm/day)
- Bore log depth below system Basel area
- Enter System footprint Slope in % for standard AES systems to calculate extension
- Is this design a gravity system with no outlet filter? Y or N

**PLEASE CHECK YOU HAVE FALL FROM TANK TO AES SYSTEM PIPES**

### AES System Calculator Outcomes

<table>
<thead>
<tr>
<th>AES System Calculator Outcomes</th>
<th>AES dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total System load - litres / day L/d</td>
<td>AES System</td>
</tr>
<tr>
<td>Min Length of AES pipe rows to suit loading m</td>
<td>Lhs</td>
</tr>
<tr>
<td>Number of FULL AES pipe lengths per row lths</td>
<td></td>
</tr>
<tr>
<td>Total Capacity of AES System pipe in Litres ltr.</td>
<td></td>
</tr>
</tbody>
</table>

DO YOU WISH TO USE CUT LENGTHS OF PIPE IN THIS DESIGN? (ENTER Y)

IF YOU WISH TO USE A TRENCH EXTENSION DESIGN OPTION ENTER "Y"

**AES INFILTRATION FOOT PRINT AREA - L = Q / (DLR x W)**

for this Basic Serial design is

<table>
<thead>
<tr>
<th>Length</th>
<th>Width</th>
<th>Minimum AES foot print required</th>
</tr>
</thead>
<tbody>
<tr>
<td>x</td>
<td>m</td>
<td>m2 total</td>
</tr>
</tbody>
</table>

**AES PIPE**

<table>
<thead>
<tr>
<th>Code</th>
<th>AES System Bit of Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>AES-PIPE</td>
<td>AES 3 mtr Lths required</td>
</tr>
<tr>
<td>AESC</td>
<td>AESC Couplings required</td>
</tr>
<tr>
<td>AESO</td>
<td>AESO Offset adaptors</td>
</tr>
<tr>
<td>AESODV</td>
<td>AES Oxygen demand vent</td>
</tr>
<tr>
<td>AES-IPB</td>
<td>AES 90mm Inspection port base</td>
</tr>
<tr>
<td>AES Equ</td>
<td>AES Speed Flow Equaliser</td>
</tr>
</tbody>
</table>

**TOTAL SYSTEM SAND REQUIRED** (Guide Only) m3

**PLEASE email your AES CALC and Drawings to**

DESIGNREVIEW@ENVIRO-SEPTIC.COM.AU

>- The AES Calculator is a design aid to allow checking of the AES components and configuration and is a guide only. Site and soil conditions referencing the AS 1547 standard are calculated and designed by a Qualified Designer.
>- Chankar Environmental has no responsibility for the soil evaluation, loading calculations or DLR entered by the designer for this calculator.
>- AES pipes can be cut to length on site. They are supplied in 3 meter lths only.

AES-Design-V8.3-Calculator-Slope-Trench-cut pipe Copy Right - Chankar Environmental pty ltd 2014

**Treatment Plant Approval**

Approved by: Lindsay Walker
Delegated Authority
Department of Housing & Public Works

Queensland Government