



**CHIEF EXECUTIVE APPROVAL 14/2014**  
**Amendment No.1**  
*Plumbing and Drainage Act 2002, part 5.*

**Approval**

1. The Advanced Enviro-septic (AES) ("the System") manufactured by Presby Environmental Inc. Whitefield, New Hampshire ("the manufacturer") and supplied by Chankar Environmental Pty Ltd (ACN 148 175 455) ("the supplier") was approved in Queensland and subsequently issued with a Chief Executive Approval No. 14/2014, under the *Plumbing and Drainage Act 2002* (PDA) on 19 December 2014. This approval continues in force until 18 December 2019.
2. The Chief Executive received notification that Chankar Environmental Pty Ltd has requested an amendment to Chief Executive Approval 14/2014 for '**Condition 14** - *Each system installation must be inspected and checked by the designer or the designers' agent. The designer on completion, is to certify that the system has been constructed, installed and commissioned in accordance with its design, the conditions of accreditation and any additional requirements set in the permit*' – be deleted.
3. Approval is granted for the amendment described in Clause 2 above and the conditions applying to the authorisation dated 19 December 2014 apply to this amended approval.

A handwritten signature in blue ink, appearing to read 'Lindsay Walker', written over a faint blue circular stamp.

**Lindsay Walker**  
**Director**  
**Plumbing Drainage and Special Projects**  
Date Amendment No.1 approved: 1 September 2015

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**CHIEF EXECUTIVE APPROVAL 14/2014**  
**Amendment No.1**  
*Plumbing and Drainage Act 2002, part 5.*

**Approval**

1. The Advanced Enviro-septic (AES) ("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 an advanced secondary quality wastewater treatment system, subject to compliance by the manufacturer/supplier with the requirements of the Plumbing and Drainage Act 2002, part 5 and the conditions of approval detailed below.
3. This approval, the conditions of approval and the Schedule comprise the entire Chief Executive 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 Chief Executive Approval.
6. The advanced 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 90L / 3 metre length of AES piping system
  - (b) a maximum organic loading of 240mg/L BOD<sub>5</sub>
  - (c) a maximum total suspended solids of 300mg/L.
7. The system must continue to meet the requirements of advanced secondary quality wastewater treatment system, producing the following effluent quality —
  - (d) 90% of the samples taken must have a BOD<sub>5</sub> less than or equal to 10 g/m<sup>3</sup> with no sample greater than 20 g/m<sup>3</sup>.
  - (e) 90% of the samples taken must have total suspended solids less than or equal to 10g/m<sup>3</sup> with no sample greater than 20g/m<sup>3</sup>.
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 pre-requisite. 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.

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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 Chief Executive 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 Chief Executive 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.

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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 18 December 2019 unless cancelled earlier in accordance with paragraph 19 above.

## **SCHEDULE**

**Attachment 1: Specifications**

**Attachment 2: Drawings**

**Attachment 3: Sample AES Design Calculator Report**



**Lindsay Walker**

**Director  
Plumbing Drainage and Special Projects**

Date Amendment No.1 approved: 1 September 2015

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**CHIEF EXECUTIVE APPROVAL No. 14/2014**  
**Amendment No.1**  
*Plumbing and Drainage Act 2002, part 5, division 1, section 93*

**SCHEDULE**

**Attachment 1**

Specifications for the  
**Advanced Enviro-Septic (AES)**

Department of Housing and Public Works  
**Chief Executive Approval**

Approval No: 14/2014

Date of Issue: 20/12/14

Delegate Signature: [Signature]  
Building Codes Queensland

**Informative Specifications**

**Advanced Enviro-Septic (AES) Waste Water Treatment System**

The **Advanced Enviro-Septic (AES)** ('the system') treats primary domestic wastewater effluent from an existing or newly installed septic tank. The Septic tank settles the raw influent and anaerobic bacteria consume the gross solids. The *system* is passive, non-mechanical and non-electrical. Given that the AES further treats the primary effluent from the septic tank the serviceable life of the land application area may be extended. In some soil types the size of the land application area may be reduced in comparison to other trench systems.

The AES comprises a number of 3m long by 300mm diameter engineered perforated plastic pipe modules which are linked together to provide a treatment volume in accordance with the AES Design Calculator. The treated effluent is distributed by the perforated pipe modules through a layer of sand into the sub-surface land application/absorption area.

- Each 3m pipe module is wrapped in coarse fibres and non-woven geotextile fabric.
- Coupling connectors and offset adapters are used to join together the AES pipe modules in multiples of 3m lengths.
- The AES is bedded in sand in a prepared excavation. The Composition of the sand is to conform to the specifications in section E of the AES Design and Installation Manual.
- Where site conditions do not permit gravity feed between the septic tank and the AES, a pump is to be fitted. Note, pressure distribution is not to be used therefore the pump is only to be used to gain sufficient elevation and enable gravity feed to the AES.
- Air vent pipes are installed at the end of the AES in addition to required sanitary drainage ventilation. This is to allow free circulation of air through the AES. If a pump is fitted between the septic tank and the AES, venting must be installed in accordance with Section J of the AES Design and Installation Manual.
- The level of primary effluent in the AES pipes rises and falls as the waste water from the septic tank passes into it, allowing aerobic bacteria in the biofilm around the pipes to further reduce organic matter. This will result in minimising potential clogging of receiving soils below the AES.

The design hydraulic load is 90 L/3m pipe module. By connecting a number of pipes end to end and in rows in accordance with the AES Design Calculator Report and the site and soil conditions, a land application area capable of meeting the hydraulic loss of the waste water from the dwelling can be constructed.

## Specifications of AES Components

<b>AES Pipe</b>		
	Length	3 metre
	Diameter	0.3 metre
	No. of Corrugation / 3m	90
	No. of Skimmer Tap / 3m	720
	Bio Accelerator	0.76 square metre
	Fibers	2.83 square metre
	Geotextile Fabric	2.83 square metre
<b>AES Coupling</b>		
	Diameter	0.308 metre
	Width	0.178 metre
	No. of Engagement Ridges	4
<b>AES Offset Adaptor</b>		
	Diameter	0.310 metre
	Width	0.12 metre
	Inlet / Raised Connection	0.092 metre
	No. of Locking Taps	4
<b>Oxygen Demand Vent Cowl</b>		
	Diameter	0.1metre
	Height	0.105 metre

<b>AES pipe</b>	HDPE
<b>Interconnection pipes, vents and fittings</b>	PVC-U suitable for drainage, waste and vent appliaction

Department of Housing and Public Works  
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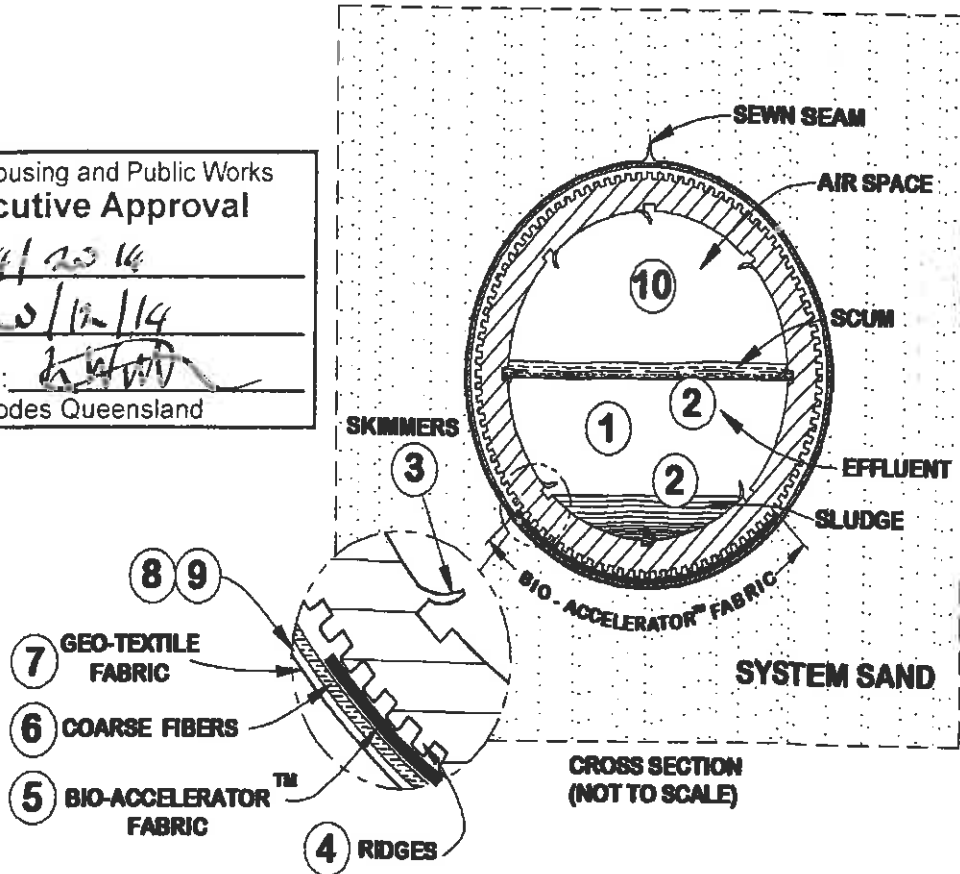
Delegate Signature: [Signature]

Building Codes Queensland

# ADVANCED ENVIRO-SEPTIC™ WASTEWATER TREATMENT SYSTEM

TEN STEPS OF WASTEWATER TREATMENT: ADVANCED ENVIRO-SEPTIC™ TREATS EFFLUENT MORE EFFICIENTLY TO PROVIDE LONGER SYSTEM LIFE AND TO PROTECT THE ENVIRONMENT.

Department of Housing and Public Works  
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 Building Codes Queensland



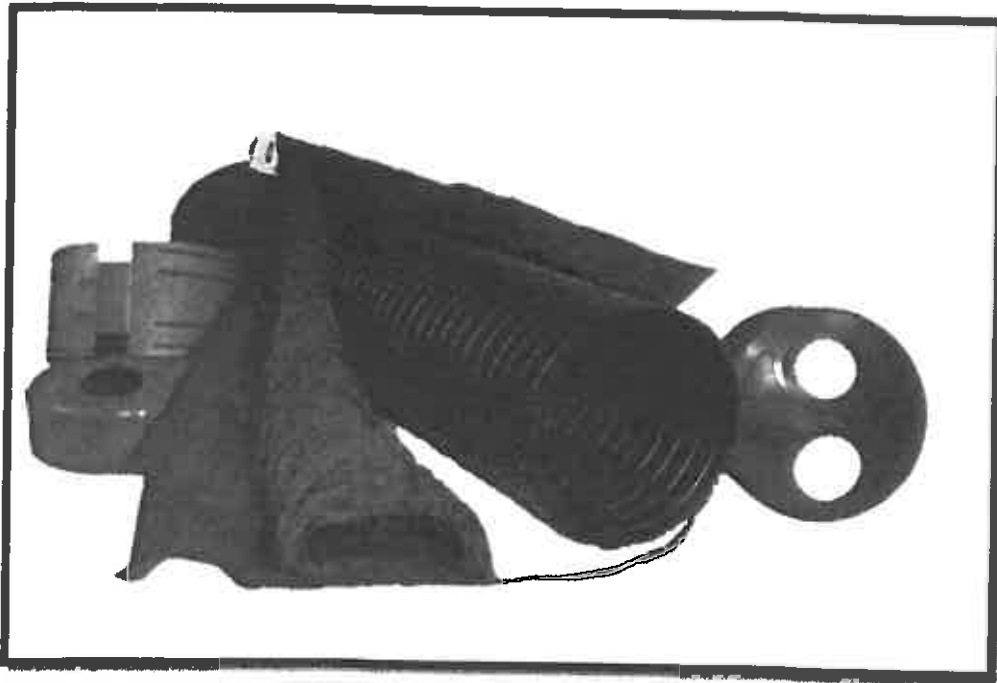
- STAGE 1: WARM EFFLUENT ENTERS THE PIPE AND IS COOLED TO GROUND TEMPERATURE.**
- STAGE 2: SUSPENDED SOLIDS SEPARATE FROM THE COOLED LIQUID EFFLUENT.**
- STAGE 3: SKIMMERS FURTHER CAPTURE GREASE AND SUSPENDED SOLIDS FROM THE EXITING EFFLUENT.**
- STAGE 4: PIPE RIDGES ALLOW THE EFFLUENT TO FLOW UNINTERRUPTED 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 ENABES 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.**



## Drawings and Photographs of the system

### Advanced Enviro-Septic (AES)

#### Pipe Construction



Main components of AES 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 (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 pipes. Required number of offset adaptor depends on the design requirements.
4. Oxygen Demand Vent – 100mm vent cowl with mosquito proof screen.

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Building Codes Queensland	

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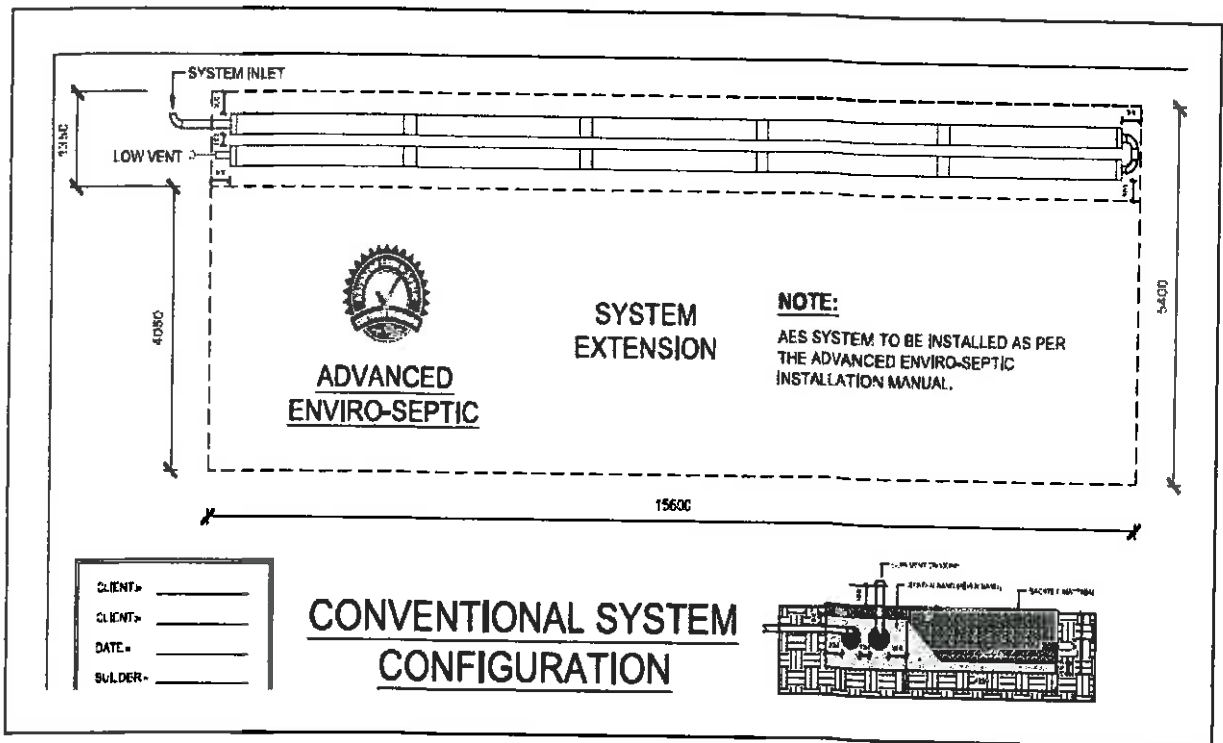
**SCHEDULE**

**Attachment 2**

Drawings for the

**Advanced Enviro-Septic (AES)**

**Example of AES system and Land Application Area**

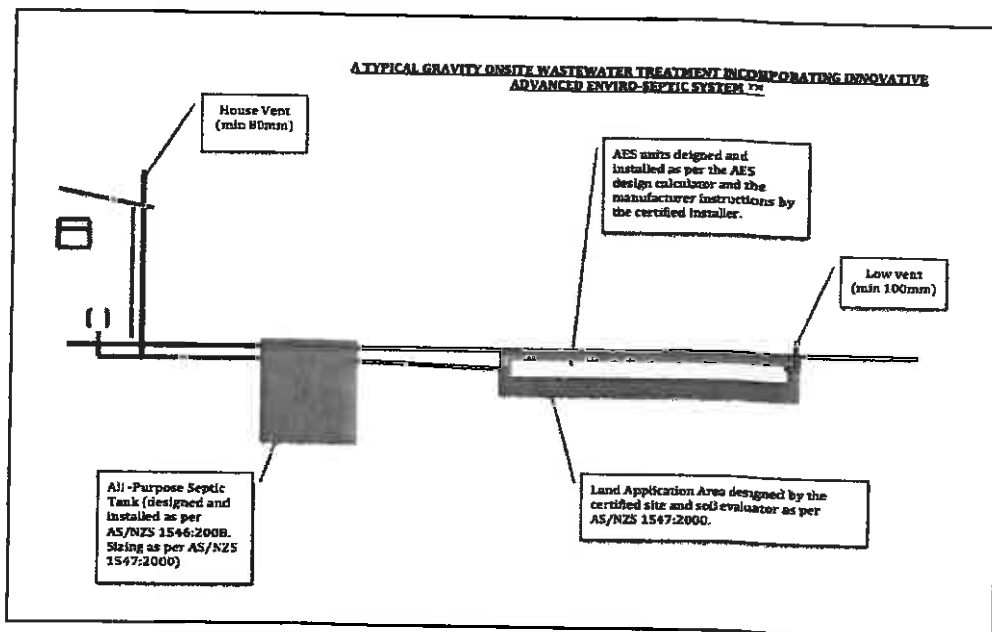


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## Schematic showing components

A typical gravity on-site wastewater treatment system using Advanced Enviro-Septic technology has the following components in its treatment chain.

1. All Purpose Septic Tank
2. Advanced Enviro-Septic system
3. Land application area



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**Attachment 3**

**Sample AES Design Calculator Report**



**ADVANCED ENVIRO-SEPTIC™**  
"Always The First Option"

## 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	Plumber Ph Number	Plumb / Drainer Lic Number
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 Designer's 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 Basal 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**

- >> CHECK THE OPERATION & CAPACITY OF THE EXISTING SEPTIC TANK AS PART OF THIS DESIGN. Remove outlet filters, if you DO NOT REMOVE them it may result in a blocked 90mm sand and LOW VENTS on the AES system.
- >> The maximum lth of a single AES pipe run is 30 meters
- >> Category may require design considerations. Ref AS1547
- >> Soil conditioning may be necessary. Ref AS1547 & Comments.
- >> Min depth below basal area is 600 mm to establish water table or restrictive layer
- >> Consideration required for Sloping sites. Ref AS1547, refer comment.
- >> A House Vent & LOW VENT required on this system

COMMENTS :- " The outcome must be important to everyone. "

- Ripping of receiving surface is required in clay soil structures in Cat 4,5,6. In addition refer to AS 1547. Always excavate an trench parallel to the site slope/AES pipe.
- Specialist soils advice and special design techniques will be required for clay dominated soil having dispersive or shrink/swell behaviour. Refer AS1547
- Designers need to be familiar with special requirements of Local Authorities. IE - Minimum falls from Septic tank to Land application areas. etc
- Plumbers are reminded that good construction techniques as per AS1547 are especially important in trench types. Refer AS1547 & AES installation instructions

### AES System Calculator Outcomes

Total System load - litres / day	600	l/d
Min Length of AES pipe rows to suit load	10.0	lm
Number of FULL AES Pipe length per row	4	lths
Total Capacity of AES System in Litres	1696	ltr.

### AES dimensions

	AES System	System Extension
Lth m : (L)	12.6	12.6
Width m:(W)	1.35	1.03
Sand Depth :	0.75	0.15
Area m2	17.0	13.0

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"

Enter Custom Width m >

AES INFILTRATION FOOT PRINT AREA -  $L = Q / (DLR \times W)$

for this Basic Serial design is

Length	Width	Minimum AES foot print required .
12.6	x	2.38 = 30.0 m2 total

### Cost

### AES System Bill of Materials

Chankar Environmental Use Only

AES-PIPE	AES 3 mtr Lths required	8	lths
AESC	AESC Couplings required	6	
AESO	AESO Offset adaptors	4	
AESODV	AES Oxgen demand vent	1	
AES-IPB	AES 90mm Inspection port base		
AES Equ	AES Speed Flow Equaliser		
TOTAL SYSTEM SAND REQUIRED (Guide Only)		18	m3

PLEASE email your AES CALC and Drawings to  
DESIGNREVIEW@ENVIRO-SEPTIC.COM.AU

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

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