Wastewater Management System

For

K. Rappolt

At

31 Banabilla Road

Degarra

Postal address: Earth Test, PO Box 1042, Tolga, Qld 4882. Phone: 4095 4734
e-mail: info@earthtest.com.au

INTRODUCTION:

Earth Test has been engaged by K. Rappolt to design a Domestic Wastewater Management System at 31 Banabilla Road, Degarra.
Real Property Description:
Lot 7 on RP 861015
Local Authority: Douglas Shire Council

It is understood the intention is to construct a dwelling at the site.
A site and soil evaluation was carried out in February 2025.

SITE FACTORS:

The site was identified by its street address.
A photograph is included as part of this report to confirm the identity of the site.
The Lot has a total area of 7361 square metres. It is predominantly covered with grass.
The site has a slope of 9 degrees falling to the West South-West.
One soil permeability test was performed at location P1 as shown on the site plan.

Site testing at 31 Banabilla Road, Degarra.

SITE AND SOIL EVALUATION

31 Banabilla Road, Degarra.

The site and soil evaluation carried out on 19/02/2025 provided the following results.

Site Assessment

Site Factor	Result
Slope	9 degrees
Shape	Linear Planar
Aspect	West South-West
Exposure	Limited
Erosion/land slip	Not noted
Boulders/rock outcrop	Not noted
Vegetation	Grass
Watercourse	As shown on site plan
Water table	Not encountered during investigation.
Wells/Bores	As shown on site plan
Fill	Not in Land Application Area
Flooding	Not likely
Channelled run-off	Not found
Soil surface conditions	Moist, Soft.
Other site specific factors	Not noted

Soil Assessment

Soil Property	Result
Colour	Brown
Texture	Loam
Structure	Moderate
Coarse Fragments	<2%
Measured Permeability Ksat (m/d)	Indicative permeability 1.5-3.0
Dispersion	Slakes
Soil Category	3-4
Resultant Design Load Rating, DLR (mm/d)	20

WASTEWATER MANAGEMENT SYSTEM

An "All-Waste" septic tank discharging into an "Advanced Enviro-Septic" bed is considered suitable for this site.

This system has been designed to conform to the requirements of the following codes, acts, regulations and standards. All work to be carried out in accordance with the following codes.

- AS/NZ 1547:2012 On-site domestic-wastewater management.
- Queensland PLUMBING AND DRAINAGE ACT 2018.
- Queensland STANDARD PLUMBING AND DRAINAGE REGULATION 2019.
- Queensland PLUMBING AND WASTEWATER CODE.

SYSTEM SIZING FACTORS.

A population equivalent of two (2) persons has been chosen for the proposed dwelling.

The site is connected to a bore water supply system.

Standard water-reduction fixtures must be used to ensure the integrity of the system.
They shall include:-

- Dual flush 6/3 Litre water closets.
- Shower-flow restrictors.
- Aerator faucets (taps).
- Water-conserving automatic washing machines.

Note: - Garbage grinders are not permitted.

As per AS/NZ 1547:2012 Appendix H, Table H1 the "Typical wastewater design flow" for a "Reticulated water supply" gives a flow allowance of 150 L/Person/day.

The daily flow for the dwelling (2 persons @ 150 L/person/day) will be 300 L/day.

From AS/NZ 1547:2012 Table J1 the minimum capacity of the All-Waste septic tank required is 3000 L.

The tank must NOT be fitted with an outlet filter.

LAND-APPLICATION SYSTEM

DISPOSAL AREA SIZING

From AS/NZ 1547:2012 APPENDIX L, L4 DESIGN AREA SIZING, L4.2 Sizing

L = Q / (DLRxW)

Where:
L = length in m
Q = design daily flow in L/day
DLR = Design Loading Rate in mm/d
W = Width in m

L = 300/20*1.52
= 9.87m.

Use one 9.87m long by 1.52m wide advanced enviro septic bed.
See site plan and detail cross-section.

1kg gypsum per m² be applied to the scarified base before laying the sand

SYSTEM SAND

All Advanced Enviro-Septic systems require the use of "system sand" surrounding the pipe. This sand, typically washed coarse sand, must adhere to the following specification.

AS Sieve Size (mm)	Percent Passing %
9.50	100
4.75	95-100
2.36	80-100
1.18	50-85
0.600	25-60
0.300	5-30
0.150	0-10
0.075	0-2

If there is any doubt if the sand media proposed for use will meet the requirements please contact Earth Test for further advice.

SYSTEM INSTALLATION

The entire bottom of the bed should be scarified a minimum of 200mm deep parallel to the AES pipes.

Avoid compaction by keeping people and machinery off the finished trench or bed floor. The system shall be installed by a licensed plumber in accordance with the manufacturer's recommendations and the relevant Australian Standards.

Operation and Maintenance

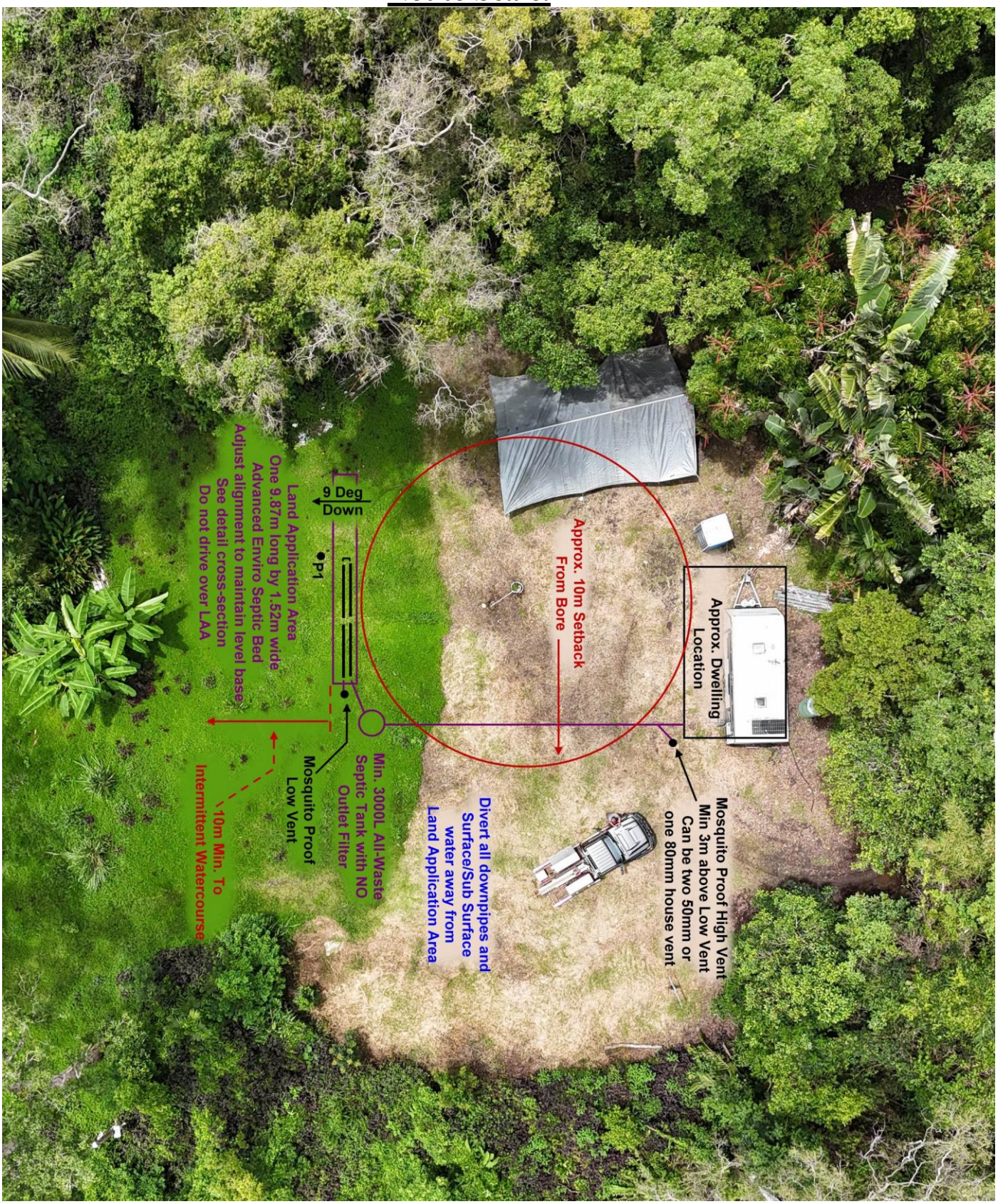
Homeowners should be fully informed of the proper operation and maintenance requirements of the on-site wastewater system.

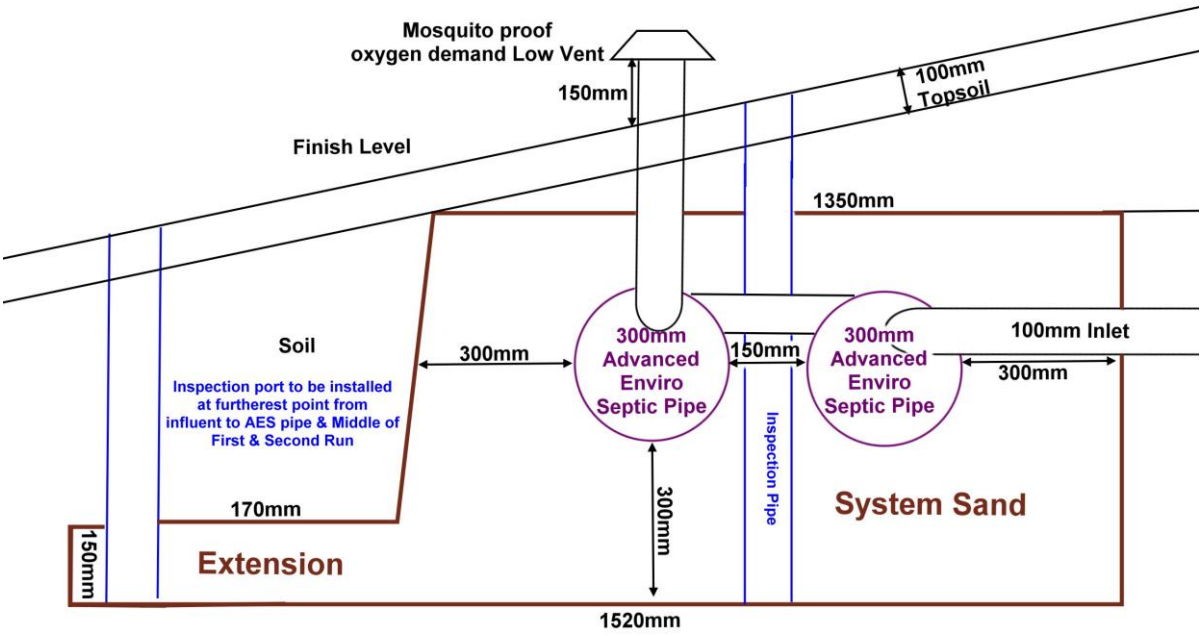
Gavin Negri
Earth Test

SITE PLAN

31 Banabilla Road, Degarra.

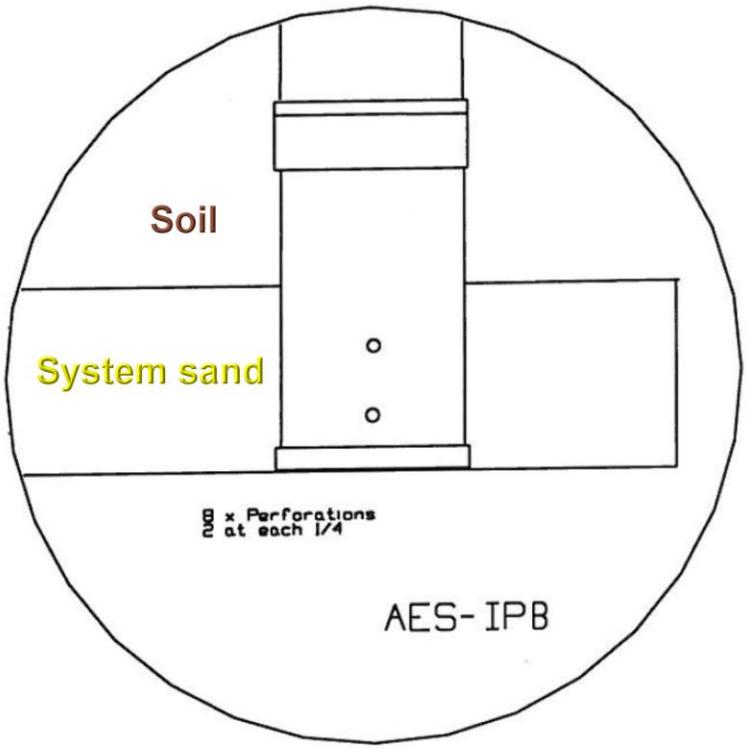
Not to Scale.





Base must be scarrified 200mm deep. Parallel to AES Pipes

1520mm Wide Two Pipe
Advanced Enviro-Septic Cross-Section



AES Inspection point detail

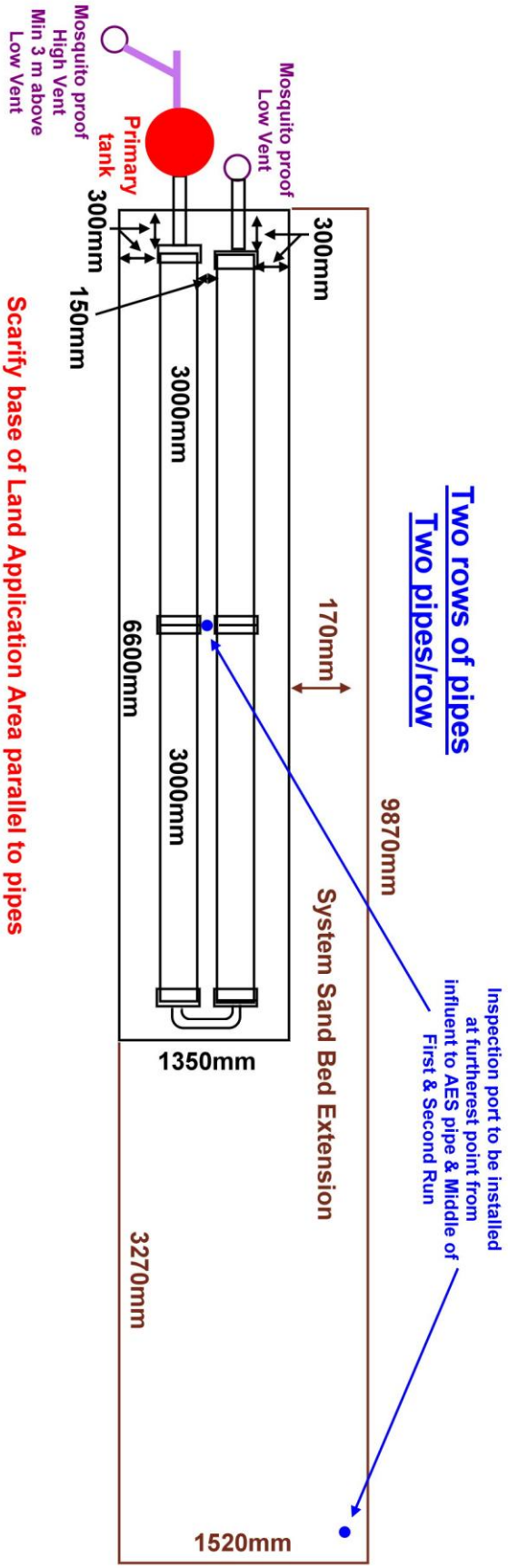

Mosquito proof
High Vent
Min 3 m above
Low Vent
Primary tank
Mosquito proof
Low Vent
300mm
150mm
300mm
3000mm
6600mm
3000mm
170mm
1350mm
Two rows of pipes
Two pipes/row
9870mm
System Sand Bed Extension
3270mm
1520mm
Inspection port to be installed
at furtherest point from
influent to AES pipe & Middle of
First & Second Run
Scarify base of Land Application Area parallel to pipes

Table T2 – Setback distances for subsurface land application area for a greywater treatment plant or an on-site sewage treatment plant

Feature	Horizontal separation distance❶		
	Up slope	Down slope	Level
Property boundaries, pedestrian paths, walkways, recreation areas, retaining wall, and footings for buildings and other structures.	2	4	2
Inground swimming pools	6	6	6
Inground potable water *tank* not exposed to primary effluent	6	6	6
Inground potable water *tank* exposed to primary effluent	15	15	15

❶ Distances are given in metres and are measured from the edge of trench/bed excavation or subsurface irrigation distribution pipework to the nearest point of the feature

Table T5 - Setback distances for on-site sewerage facilities and greywater use facilities - Protection of surface water and groundwater.

Feature	Separation distance ❶		
For onsite – see Table 2.1 in AS 1546.3	**Advanced Secondary**		
For *greywater* – see Table 2.1 in AS 1546.4	**Level 1 and Level 2**		
Top of bank of permanent water course	10		
Top of bank of intermittent water course			
Top of bank of a lake, bay or estuary			
Top water level of a surface water source used for agriculture, aquaculture or stock purposes			
Open stormwater drainage channel or drain			
Bore or a dam			
Unsaturated soil depth to a permanent water table (vertically)	0.3		

❶ Distances are given in metres and are measured from the edge of the irrigated wetted area to any point of the feature.

Advanced Enviro-septic Design Calculator V9.0 ©

AES The World Leader in Passive Solutions ©

Site Address	31 Banabilla Road, Degarra		State QLD	Post Code	
Client Name	K. Rappolt			Date of Site Visit	
Designers Name	Earth Test	Designers Ph Number	07 4095 4734	Designer Lic (e.gQBCC)	15092731
Lic Plumber	TBA	Plumber Ph Number	TBA	Plumb / Drainer Lic Number	TBA
Council Area	Douglas Shire Council	Designers AES Cert Number	1164	Date	

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

System Designers site and soil calculation data entry		IMPORTANT NOTES
Enter AES L/m loading rate, "30" for ADV Secondary or "38" Secondary	30	>> *This design is for an ADVANCED SECONDARY system*
Is this a new installation Y or N	Y	>> Minimun single vent size is 80mm or 2 x 50mm house vents
Number of Bedrooms	1	>> This is not used in ANY Calculation. If not known use N/A or 0.
Number of persons	2	>> A septic tank outlet filter is NOT RECOMMENDED
Daily Design Flow Allowance Litre/Person/Day	150	
Number of rows required to suit site constraints	2	>> The maximum length of a single AES pipe run is 30m or 10 PIPES
Infiltration Soil Category from site/soil evaluation. CATEGORY	3	
Design Loading Rate based on site & soil evaluation DLR (mm/day)	20	>> Soil conditioning may be necessary. Ref AS1547 & Comments.
Bore log depth below system Basal area	1.5m	>> Min depth 1.5m. Check water table/restrictive layer
Is this design a GRAVITY system with no outlet filter? Y or N	Y	>> GRAVITY. A House Vent & LOW VENT required on this system
PLEASE CHECK YOU HAVE FALL FROM TANK TO AES SYSTEM PIPES		

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

- Ripping of receiving surface required in clay soil structures in Cat 4,5,6. In addition refer to AS 1547. Always excavate & rip parallel to the site slope/AES pipe.

- Designers need to be familar with special requirements of Local Authorities. ie - Minimum falls from Septic tank outlets to Land application areas etc

- Plumbers are reminded to practice good construction techniques as per AS 1547 & as provided on AES installation instructions supplied with components.

AES System Calculator Outcomes		
Total System load - litres / day (Q).	300	l/d
Min Length of AES pipe rows to treat loading	5.25	lm
Number of FULL AES Pipe lengths per row	2	lths
Total Capacity of AES System pipe in Litres	848	ltr.

AES dimensions	AES System	Extension Area
Length:(L)		
Width:(W)		
Sand Depth :	0.75m	0.15m
Area m2	8.9 m^2	6.1 m^2

USE CUT LENGTHS OF PIPE IN THIS DESIGN? (ENTER Y)		>>Slope percentage must be 0% & infiltration footprint must be level for this design			
IF YOU WISH TO USE A TRENCH EXTENSION DESIGN OPTION ENTER "Y"	y	Enter Custom Width in metre	1.52		
AES INFILTRATION FOOT PRINT AREA - L = Q / (DLR x W)	Length		Width	Minimum AES foot print required	
The length & width of excavation required for this design is >>	9.87m	x	1.52m	= 15.0	m2 total

AES pipes are best centered in the trench parallel to the site slope

Code	AES System Bill of Materials		
AES-PIPE	AES 3 metre Lengths required	4	lths
AESC	AES Couplings required	2	ea
AESO	AES Offset adaptors	4	ea
AESODV	AES Oxygen demand vent	1	ea
AES-IPB	AES 100mm Inspection point base	2	ea
TD Kit 4	4 Hole Distribution Box Kit		ea
TD Kit 7	7 Hole Distribution Box Kit		ea
VS43-4	Sweet Air Filter VS43-4		ea
AES DESO	Double Offset Adaptors		ea
	TOTAL SYSTEM SAND REQUIRED (Estimate Only)	9	m3

Please email your AES Calculator (EXCEL FORMAT), Site Layout & AES Design to

designreview@enviro-septic.com.au

Chankar Environmental Use Only

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designreview@enviro-septic.com.au

> The AES Calculator is a design aid to allow checking of the AES components, configuration and is a guide only. Site and soil conditions referencing AS1 547 are calculated and designed by a Qualified Wastewater Designer.
> Chankar Environmental accepts 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 lengths only.
> AES ONLY supply AES components as detailed in the Bill of Materials.
> SEPTIC Tank & other components including SAND will need to be sourced from other suppliers. Refer to our WEBSITE www.enviro-septic.com.au OR 07 5474 4055

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