

Wastewater Management System

For

K. Rappolt

At

31 Banabilla Road

Degarra



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

<u>Site Factor</u>	<u>Result</u>
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	<u>Result</u>
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 <u>must</u> 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

 $\begin{array}{l} L = 300/20*1.52 \\ = 9.87m. \end{array}$

<u>Use one 9.87m long by 1.52m wide advanced enviro septic bed.</u> 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.

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Gavin Negri Earth Test



Consoil Solutions Pty. Ltd. T/A Earth Test QBCC #. 15092731 <u>SITE PLAN</u> <u>31 Banabilla Road, Degarra.</u>

Not to Scale.





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

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



AES Inspection point detail







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

Feature	Horizontal se	eparation distance	ce 🛈
	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

• 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 fac	ilities -
Protection of surface water and groundwater.	

Feature	Separation dist	tance 🛛	
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	1	
Top of bank of permanent water course			
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	10		
Open stormwater drainage channel or drain			
Bore or a dam			
Unsaturated soil depth to a permanent water table (vertically)	0.3		

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



Consoil Solutions Pty. Ltd. T/A Earth Test QBCC #. 15092731

ADV ENVI "Always Th	ANCED RO-SEPTIC [™] Advanced te First Option"	d Envir	0-S	eptic D	esign C	Calculator	• V9.0 ©
- runuys m	AES The World Leader in	Passive S	olu	tions ©			
Site Address 31 Bar	abilla Road, Degarra			State	QLD	Post Code	
Client Name K. Rap	ppolt					Date of Site Visit	
Designers Earth	Fest	Designers Ph		07 4095 4	4734	Designer Lic	15092731
Name Lic Plumber TBA		Number Plumber Ph		TBA		(e.gQBCC) Plumb / Drainer	TBA
Constitute Dand	e Chine Courseil	Number Designers AES		1164		Lic Number	
This Cal		Cert Number		1104		Date	
Iniscal	culator is a guide only, receiving sou classification, surface w	ater, water taol	es an o	i all otner site	Constraints a	aaressea by the qu	anned designer.
Inter AES L/m loadin	ag rate, "30" for ADV Secondary or "38" Secondary	30	>>	This design	is for an A	DVANCED SEC	CONDARY system
	Is this a new installation Y or N	Y	>> D	/linimun single	e vent size is 8	0mm or 2 x 50mm	house vents
	Number of Bedrooms	1	>> 1	his is not used	l in ANY Calo	ulation. If not kno	wn use N/A or 0.
	Number of persons	2	>> A	a septic tank o	utlet filter is l	NOT RECOMMEN	NDED
	Daily Design Flow Allowance Litre/Person/Day	150					
	Number of rows required to suit site constraints	2	>> 1	'he maximum	length of a si	ngle AES pipe run	is 30m or 10 PIPES
Infiltra	tion Soil Category from site/soil evaluation. CATEGORY	3	1				
Design Load	ing Rate based on site & soil evaluation DLR (mm/day)	20	>> S	oil conditionir	ıg may be nec	essary. Ref AS154	7 & Comments.
	Bore log depth below system Basal area	1.5m	>> D	/lin depth 1.5n	1. Check wate	er table/restrictive	layer
Is this d	esign a GRAVITY system with no outlet filter? Y or N $$	Y	>> (FRAVITY. A I	House Vent &	LOW VENT requ	iired on this system
PLEASE CHECK YO	DU HAVE FALL FROM TANK TO AES SYSTEM PIPES		·				
OMMENTS :- " <i>The c</i> Ripping of receiving	outcome must be important to everyone. * surface required in clay soil structures in Cat 4,5,6. In additi	on refer to AS 1	547. 2	Always excava	te & rip para	llel to the site slope	/AES pipe.
Designers need to be	familar with special requirements of Local Authorities. ie - N	dinimum falls f	rom S	eptic tank out	lets to Land a	pplication areas et	¢
Plumbers are remind	led to practice good construction techniques as per AS 1547 a	& as provided o	n AE	S installation i	nstructions su	pplied with compo	nents.
	AES System Calculator Outcomes					AES dimensio	ns
	Total System load - litres / day (Q).	300	1/d			AES System	Extension Area
	Min Length of AES pipe rows to treat loading	5.25	lm		Length:(L)		
	Number of FULL AES Pipe lengths per row	2	lths		Width:(W) Sand Depth	0.55	015
	Total Capacity of AES System pipe in Litres	848	ltr.		: Aream?	0.75m 8.9 m^2	0.15m
USE	CUT LENGTHS OF PIPE IN THIS DESIGN? (ENTER Y)		>>\$	lope percenta	ge must be 0%	% & infiltration for	tprint must be level for
IF Y	OU WISH TO USE A TRENCH EXTENSION DESIGN OPTI	ONENTER "Y		у	Enter Custor	n Width in metre	1.52
AES INFIL TRATI	ION FOOT PRINT AREA - $L = O / (DLR x W)$	Length		Width	Minin	um AES foot prin	required
						· ·	1
The length & width	of according acquired for this design is >>	9.87		1.52m	_	15.0	m2 total
AES n	ines are best centered in the trench narallel to the site slone	9.87m	~	1.5210	-	15.0	III.2 total
Code	AES System Bill of Materials.				Ch	ankar Environmer	ital Use Only
AES-PIPE	AES 3 metre Lengths required	4	lths				
AESC	AES Couplings required	2	ea				
ESO	AES Offset adaptors	4	ea		1		CED ≻SEPTIC [™]
ESODV	AES Oxygen demand vent	1	ea			"Nature' <mark>s W</mark> aste	ewater Solutions"
ES-IPB	AES 100mm Inspection point base	2	ea				
D Kit 4	4 Hole Distribution Box Kit		ea		Digital	v signed by	Kane Dickson
DKit 7	7 Hole Distribution Box Kit		ea		DN: cn=	=Kane Dicks	on, o=Chankar
/843-4	Sweet Air Filter VS43-4		ea		Enviror	mental Pty	Ltd ,
ES DESO	Double Offset Adaptors		ea		ou=Ad	anced Envi	ro-Septic , 🤎
TOTA	L SYSTEM SAND REQUIRED (Estimate Only)	9	m3		septic c	designreviev om.au. c=∆l	w@enviro- U
Please em ail you	r AES Calculator (EXCEL FORMAT), Site Layout & AES	Design to			Date: 2	025.06.09 08	- 3:05:37 +10'00'
> The AES Calculator :	<u>designreview@enviro-septic.com.au</u> is a design aid to allow checking of the AES components, config	puration and is a	guide	only. Site and	soil condition	<u>designreview@env</u> s referencing ASI 5	tiro-septic.com.au 47 are
calculated and desig	ned by a Qualified Wastewater Designer.	laulation Di	р	and have a	annan dari dar	almilator	
- Chankar Environmer > AES pipes can be cut > AES ONLY supply Ai	nun uccepus no responsionity jor the soil evaluation, loading ca (to length on site. They are supplied in 3 meter lengths only. ES components as detailed in the Bill of Materials. In commonstri including (SMD will used to be coursed from oth	n manons or DI er sumnliers. Rej	.c. enti fer to i	n ea oy ine des our WEBSITE v	_{isner} jor this o www.enviro-se	.uscusator. ptic.com.au OR 07	5474 4055

Advanced Enviro-septic Design Calculator V9.0 ©

Site Address	21 Denskills Based Da			C: :	OLD	D. C. C.	
	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 4	734	(e.gQBCC)	15092731
Lic Plumber	ТВА	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 w	ater, water tabl	es and	all other site	constraints ad	idressed by the qua	alified designer.
	System Designers site and soil calculation data entry				IMPORT	ANT NOTES	
Cnter AES L/	m loading rate, "30" for ADV Secondary or "38" Secondary	30	>>	This design	is for an A	DVANCED SEC	CONDARY system
	Is this a new installation Y or N	Y	>> N	1inimun single	vent size is 8	0mm or 2 x 50mm	house vents
	Number of Bedrooms	1	>> T	his is not used	in ANY Calc	ulation. If not know	wn use N/A or 0.
	Number of persons	2	>> A	septic tank o	ıtlet filter is N	NOT RECOMMEN	NDED
	Daily Design Flow Allowance Litre/Person/Day	150					
	Number of rows required to suit site constraints	2	>> T	he maximum	length of a sir	ngle AES pipe run i	is 30m or 10 PIPES
	Infiltration Soil Category from site/soil evaluation. CATEGORY	3					
Des	ign Loading Rate based on site & soil evaluation DLR (mm/day)	20	>> S	oil conditionir	g may be nec	essary. Ref AS154	7 & Comments.
	Bore log depth below system Basal area	1.5m	>> N	1in depth 1.5n	n. Check wate	er table/restrictive l	layer
	Is this design a GRAVITY system with no outlet filter? Y or N	Y	>> G	GRAVITY. A I	Iouse Vent &	LOW VENT requ	iired on this system
PLEASE CH	ECK YOU HAVE FALL FROM TANK TO AES SYSTEM PIPES						
OMMENTS	:- " The outcome must be important to everyone. "						
	AES System Calculator Outcomes					AES dimension	ns
	Total System load - litres / day (Q).	300	1/d			AES System	E
			<i>b</i> u				Extension Area
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