

geotechnical

environmental

Services completed for this site

Lot Classifications

Site Contamination Report

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⊠ Wastewater Management Report

DOMESTIC WASTEWATER REPORT

Prepared for:

Site Address:

MELLROSS HOMES LOT 24 DP 1066526 26 STEPHENS STREET BINALONG NSW 2584 Revision: 01/07/2021 Site Test: 22/08/2024 Lab Test: 27/08/2024 Customer Job: 4575 Job Number: 24114 Technician: JM



1.0 SUMMARY

Permeability is very good due to a silty topsoil. Soil depth is >800 mm. Coarse aggregate content is low to 800 mm bgsl. Primary effluent treatment for a 4BR house to a 3 kL septic tank can be distributed to two 1.3 m wide x 23 m long trenches.

Alternatively effluent can be directed to a 6-10 person AWTS and then to four above ground sprinkler lines of 3 m spray diameter, eight per line. The lead on each hose may be at least 15 m, provided radius is maintained. If not, then five lines of six sprinklers will suffice. Thirt-two roses of spray radius 1.5 m will achieve coverage for the total 224 m² required.

03/10/2024



3.0 SITE ANALYSIS

Geology	Geology is residual deposi	ts with near pocke	ts of ignimbrite.	Surface water in							
& Water	the form of creeks lie 280 i	the form of creeks lie 280 m N. There are 5 registered bores within 500 m of									
	the drain field. Depth to groundwater for three of these is between 4 and 9 m										
	bgsl.										
Constraints	The key constraints for the drain-field area SE of the proposed residence are:										
	1) residual soils 2) soil depth approaching 10 m; 3) small block; 4) 4 BR house.										
Advantages	The key advantages are: 1) permeable silty topsoil; 2) deep topsoil to 800 mm;										
	3) good evaporation;										
Soil Physico-	Average pH for the area is 6.7 ECe is < 0.1 dS/m which is non saline.										
chemistry	Emmerson Aggregate is slaking without dispersion.										
	Parameter BH01 0-0.8 m BH01 0.8-1.7 m										
	pH 6.2 ± 0.1 7.3 ± 0.1										
	Electrical Conductivity uS/cm (ppm)	57±2	34 ± 1								
	ECe mS/dm	Non saline 0.5	Non saline 0.3								
	Phosphorus Absorption mg/kg	Estimated : 300	Estimated : 300								
	Emerson Aggregate Test	slakes, minor dispersion	slakes, minor dispersio	on							

4.0 RESULTS



Job Number: 24114

Wide Bed Trench ETA Bed	Two 4 m x 7.5 m wide be Four 1.3 m double arch x	ds, 9 m ³ aggre 23 m-trenche kL septic Tank	gate, 0.4 m total di es, 3 m ³ aggregate, use Use	epth 0.4 m depth	Trench and bed configurations are sub- surface and can use primary (septic tank) effluent. Trench, double width uses least aggregate. Wide bed uses least space but requires more aggregate than trench. ETA beds usually occupy a slope >5% requiring as much aggregate as wide bed and 20% more sand than aggregate as well.						
Recommendation	Two 1.3 m x 23 m	double are	ch trenches								
SECONDARY	Secondary Effluent At	ove Ground	Sub-surface	Arleanum nesse salve Return h	Plath tales and the 2000 fires and the 2000 fires						
	Example	Sprinkler	LPED	2.m Spical free spacing							
	Field Number	2	2		- tiggen the - tiggen - to same						
	Area (m2)/field	113	125	Artvascum Inkase valve							
	Field Size Example	9 x 12	25		Provement of the second						
	Judgement A	mple buffer tback, Avoid mowers	Use oversize 40 mm lines, filters 38 mm, and flush valves	PISURE N2 SPINY WINACTION SYS	And A Constrainty of the second						
IRRIGATION:	Secondary treatme	nt is typic	ally by aerat	ed wastev	vater treatment system AWTS.						
ABOVE-	AWTS disposal to bed and trench effectively halves the area required by septic tank in moderately low K _{sat} environments. AWTS is usual when wastewater is irrigated either Above-Ground for flexibility of watering or Sub-Surface if regular										
& SUB- SURFACE SSI											
	watering of tree lots is proposed. A split system can mine phosphorus from										
	blackwater and/or utilizes moisture from arevwater, without the employ of AWTS										
	and the requisite chlorination. Composting toilets provide conditions where entering										
	pathogens are out	competed	by less harn	nful soil m	icroflora. Product is compost						
Above Ground		n SSI fields / li	by loos ham								
Irrigation or	Combined area 250 m ² e	g two fields of	f 5@ 25 m lines	State of	Secondary effluent treatment						
Sub-Surface	Four Above Ground Irrig 4 x 8 roses of area 7 m ²	ation (AGI) Fie having diame	elds - Total 224 m ² ter 3 m = 2 sprint	For example klers	good use of water in summer.						
Irrigation	0				In winter, rainfall run-off can						
	8	1634		100	be problematic. Large droplet						
	Le Day	2			Secondary treated effluent to						
	Service of the servic	0	11ma		sub-surface Irrigation (SSI)						
	000000				directing water to tree lots and						
	A PERSON	AWTS	OCON	000	orchard and garden.						
			(()) () () () () () () () ()	1000	movements can damage pipes						
		ABR ISE		in-	and compact the soil. AGI is						
	is harder to troubleshoot.										
Recommendation	AWTS secondary t	reated wa	astewater to	above-gro	und irrigation comprising four						
	alternating fields of 8 sprinklers of 1.5 m spray radius.										

03/10/2024

DESIGN CALCULATIONS		
Annual Bainfall (mm)	650	Yas
Annual Evaporation (mm)	1535	Estimate
Hydraulic Loading	900L/day	Rainwate
Soil Classification	Average	Subsoil class 3
Permeability K _{zat}	mł day	0.6
DIR	litres mm/day	3.
RECOMMENDATION	Primary Effluent	to Double Arch Trench
Design Load Rate DLR	mmłday	15 primary 30 secondar
Double Arch Trench	Number	
Trench Dimensions (m)	L×W×D	1.3m x 23 r
Minimum Input Quality	Primary	septic tan
Tank Size (kL) Table J1	KL	3.
Design Irrigation Area : Meterol.	m²	23
Design Irrigation Area : Nutrient	m²	31
Design Irrigation Area : Hydrau	SSI/AGI m²	250/22
RECOMMENDATION	Secondary Effluent	to Above Ground Irrigation
Design Load Rate DIR	mmłday	3.
Lines	No.	
Area per sprinkler (spray rose)	m²	
Sprinklers per line	No.	
Spray diameter	m	
Spacing between roses	m	
Minimum Input Quality	Secondary	AWTS - 6 perso
Retentinon time 2.5 kL	days	2

5.0 CONCLUSION & RECOMMENDATIONS

Although the primary treatment solution is appealing and workable, the geology of residual soils favours secondary treatment by AWTS with distribution to above ground sprinklers. This will enable use of the lawn area for recreational use. The total sprinkler area of 224 m² as four hoses with 8 roses of spray radius 1.5 m, is optimistic. If the pressure range is less than that delivering a 3 m diameter the number of lines can be increased to five with six sprinklers per line. If you don't mind the ongoing costs associated with electric pump maintenance and performance testing.



5.1 FIELD LOG

Date:

Customer Job:

Job Number:

Site Address:

22/08/2024

LOT 24 DP 1066526 26 STEPHENS

STREET BINALONG NSW 2584

4575

24114

Borehole:

Surface RL: Latitude: Longitude: **BE1** 477.3 m -34°67.181 148°62.929

Water	Depth (m)	DCP (blows per 150 mm	S PP (kPa)	San	nple	Classification Code	Material Description				Moisture	Linear Shrinkage (%)	Liquid Limit (%)	Density Consistency	Fill
	0.15	7					Clayey gravelly	Fine sandy silt, o silt co.ag. 1-9 mm	dark grey 20% dark yellowish l	orown	М			F	
	0.30	5													
	0.45	4					Silty clay, rolls roc	l 1 mm x 100 mm o	dark yel.red, Brownisl	n yellow	М			St	
	0.60	5													
	0.75	6													
	0.9	12													
	1.05	400													
	1.20														
	1.35														
	1.50	_													
	1.05														
	1.00														
	2.10														
	2.25														
	2.40														
	2.55														
	2.70														
	2.85														
	3.00														
	3.15														
	3.30														
	3.45														
	3.60														
	3.75														
	3.90														
	4.05														
	4.20														
	4.35														
	4.50														
			WT –	Water -	Table	UTP -	- Unable to pernit	rate D (Penetro	CP – 9kg Dynami ometer	c Cone F	enetror	neter		PP- Poo	ket
Α	ND – Den	sity Index	vs Approx	Penetro	ometer r	esults	SILTS	& CLAY – Cu vs /	Approx. Penetromete	r results					
DENSITY De In		Densi Inde	ty c	DCP BI Count (bloAS/	ow 100mm)	CONSISTENCY	Undrained Shear Strength (kPa)	DCP Blow Count (bloAS/100mm)	PP Indie	Dial cator		MOI	STURE		
V	L - Very Lo	oose	< 15 9	6	<	:1	VS – Very Soft	0 – 12	<1	0 -	0.2		Da-	– Dry Damp	
МП	L – Loos	e	15 - 35	%	1	- 3	S – Soft	12 - 25	1-2	0.2	- 0.5		M -	- Moist	
- UIV –	D – Dens	ê	65 - 85	%	9-	- 15	St – Stiff	50 - 100	2-3	1.0	- 2.0		W _P - PL	AStic Limit	
V	J - Very De	ense	> 65 – 8	5 %	>	15	VSt – Very Stiff H – Hard	100 – 200 > 200	5-8 >8	3.0 >	-4.0 40		WL-L	iquid Limit	



Date:

22/08/2024

Borehole:

BE2

Customer Job: Job Number: Site Address: 4575 24114 LOT 24 DP 1066526 26 STEPHENS STREET BINALONG NSW 2584

Surface RL: Latitude: Longitude: 476.6 m -34°67.175 148°62.924

Water	Depth (m)	DCP (blows per 150 mm	PP (kPa)	Sample	Classification Code	Material Description					Linear Shrinkage (%)	Liquid Limit (%)	Density Consistency	Fill
	0.15					Fi Clayey grave	ne sandy silt dark o elly silt co.ag 1-8 m	greyish brown nm 20% yellowish bro	wn	M M			Ŀ	
	0.30													
	0.45													
	0.60													
	0.75													
	1.05													
	1.20													
	1.35													
	1.50													
-	1.65													
	1.80													
	1.95													
	2.10													
	2.25													
	2.40													
	2.55													
	2.70													
	2.85													
	3.00													
	3.15													
	3.30													
	3.45													
	3.60													
	3.75													<u> </u>
	4.05													
	4.20													
	4.35													
	4.50													
			WT – V	Vater Table	UTP	Unable to pernit	rate D	CP – 9kg Dynami	c Cone F	Penetro	meter		PP- Poo	cket
A	ND – Densi	ty Index ve	s Approx. I	Penetrometer I	esults	SILTS	& CLAY – Cu vs /	Approx. Penetromete	r results					
DENSITY Density Index DCP Blow Count (bloAS/100mm)		CONSISTENCY	Undrained Shear Strength (kPa)	DCP Blow Count (bloAS/100mm)	PP Indi	Dial cator		MOI	STURE					
V	L - Very Loo	se	< 15 %		< 1	VS – Very Soft	0 – 12	< 1	0 -	0.2		D Da-	– Dry Damp	_
MD – VI	L – Loose Medium Dei D – Dense D - Very Der	nse nse	15 - 35 9 35 - 65 9 65 - 85 9 > 65 - 85	% 1 % 3 % 9 % >	- 3 - 9 - 15 • 15	S – Soft F – Firm St – Stiff VSt – Very Stiff H – Hard	12 - 25 25 - 50 50 - 100 100 - 200 > 200	1 - 2 2 - 3 3 - 5 5 - 8 > 8	0.2 0.5 1.0 3.0	- 0.5 - 1.0 - 2.0 - 4.0 4.0		M - W W _P - PI W _L – L	- Moist – Wet AStic Limit iquid Limit	

CONDITIONS OF THE RECOMMENDATIONS

- This on-site domestic wastewater report generally in accordance with AS NZS 1547 2012 guidance on and should be sufficient for a qualified person to ascertain the consequence of its findings.
- This domestic wastewater report was completed by an experienced soil technician and does not make any allowance for the lot outside of the proposed drainage field situated near the BE.
- The advice given in this report assumes that the test results are representative of the overall
 subsurface conditions. However, it should be noted that actual conditions in some parts of the site
 may differ from those found in the boreholes. If excavations reveal soil conditions significantly
 different from those shown in our attached Borehole Log(s), enviroseer should be consulted and
 excavations stopped immediately.
- Any sketches in this report should be considered AS only approximate pictorial evidence of our work. Therefore, unless otherwise stated, any dimensions or slope information should not be used for any building cost calculations and/or positioning of the building. Dimensions on logs are correct.

REPORT LIMITATIONS

The investigations addressed in this report are the minimum required to facilitate both regulatory oversight and effective trade installation for a designated area. They are not intended nor designed to locate all possible ground conditions on the site. It is not possible to identify all possible ground conditions. Further, while anomalies are usually detected by site visit and historical searches, the potential for undisclosed hotspots of CoPC arising from undisclosed spillage or dumping cannot be entirely removed.

The advice and recommendations contained in this report are based on analyses obtained from the samples tested, and on the assumption that those test results are representative of the overall ground conditions of the entire building envelope and house yard. The actual conditions in some parts of the site might differ from those tested.

The scope and relevance of the advice provided in the report is subject to restrictions and limitations. enviroseer did not perform a complete assessment of all possible conditions, contaminants or circumstances that may exist on the site. If a service is not expressly indicated that means it has not been provided, and the reader should not assume that it has been. If a matter is not specifically addressed then enviroseer has not decided in relation to it, and the reader should not assume that it has.

Where data and information has been supplied by the client or a third party, the accuracy of the advice and recommendations in this report is dependent upon the accuracy of that data and information. enviroseer is not responsible for verifying the accuracy of data or information provided to it by third parties. enviroseer is not liable nor responsible for inaccurate advice provided upon reliance of incomplete or inaccurate data supplied by third parties.