SITE AND SOIL EVALUATION SUMMARY
Proposed Doggie Day Care Centre

Client

Name	**Keri & DeanThurley**
Site Address	**48 Blessington Road, St Leonards 7250**
Postal Address	**gingerkat2015@gmail.com**

Site and Soil Assessment

Soil Category	Category 4 (Clay Loams)
Soil Permeability	0.2m/day
LTAR[1]	16L/m^2/day
Slope/ Aspect	The proposed disposal area has slopes of 3 degrees with an open sunny and northerly aspect.
Site Factors	The wastewater loading is moderate. There is plenty of available space for wastewater disposal.

Wastewater System Design

The design is for a proposed Doggie Day Center Care. The wastewater will include wastewater from the kennel wash down areas, dog hydro baths and washing of bedding.

The wastewater loadings have been based on figures derived from the owners other dog boarding kennels at Breadalbane.

The loadings have been based on:

- 100L per day for washing of bedding (4 cyclers each 25L)
- 300L per day for hydro baths (15 baths each 20L)
- 110L per day Yard Wash down – (after dropping collection)
- 240L per day – for on site Managers residence

Therefore the total amount of wastewater generated from all areas is expected to be 750L per day.

Proposed Treatment Method: Septic Tank with Evapo-Transpiration bed

All the wastewater will be treated in a 3000L dual purpose septic tank. A second 3000 L tank at the other dog shed is recommended to allow for adequate pre treatment time in the tank for the dog waste.

The wastewater will then gravity feed into two evapo-transpiration beds 22m x 1.2m x 0.5m. A cut off drain will need to be installed upslope of the disposal field.

SEE FULL REPORT FOR FURTHER DETAILS

[1] LTAR refers to the Long Term Absorption Rate based on water balance modelling

BACKGROUND

Site and Soil Evaluation Reports must be submitted with all applications for on-site wastewater management systems. Suitably qualified persons such as – soil scientists, engineering geologists, engineers, environmental health officers or other persons must complete evaluation reports. Designers of the on-site wastewater systems are to use their professional judgement to determine if issues outlined in the Report are relevant or if additional information is required. Also designers are to consider applicable legislation, Codes and Standards in relation to the design of the system.

For further information on site evaluation please consult AS/NZS 1547 – 2012 on-site domestic wastewater management.

This report includes the necessary information for a SSE report.

REPORT

Municipality	Launceston Council
Location	**48 Blessington Road, St Leonards 7250**
Lot Area	approx. 37 acres
Owner	Keri & Dean Thurley
Site Plan	see attached
Date of inspection	20th June 2019
Date of this Report	19th July 2019
Water Supply	Design flow 750L/day based on:

- 100L per day for washing of bedding (4 cyclers each 25L)
- 300L per day for hydro baths (15 baths each 20L)
- 110L per day Yard Wash down – (after dropping collection)
- 240L per day – for on site Managers residence

SITE INFORMATION

Topography and Drainage

The soils consist of loamy clays, the soils appear to drain well. The proposed disposal area has slopes of approximately 3 degrees with an open and sunny northerly aspect.

Vegetation

The site is covered with grassland (pasture), with some trees and shrubs scattered throughout.

Land Use

Rural - Residential

Climate

Climate data for the site has been taken from the Australian Bureau of Meteorology web site. Mean monthly rainfall, and mean daily maximum temperature for each month has been taken directly from the Launceston (Kings Meadows) weather station data. To allow for wetter than average weather, the adopted rainfall for each month has an additional 10% added to the mean. A summary of this climate information, as well as monthly retained rain, evapo-transpiration, and evapotranspiration less the retained rain is in the Trench 3™ assessment report. Trench 3™ uses this data when calculating the monthly water balance for the site, which helps determine the system sizing.

Soils

Test Hole 1

0 – 450mm	Dark Brown Clay Loam (Cat 3)
450 – 700mm	Pale brown loamy clay (Cat 4)
700 – 800mm+	Compacted light clay (Cat 5)

Test Hole 2

0 – 480mm	Dark Brown Clay Loam (Cat 3)
480 – 700mm	Pale brown loamy clay (Cat 4)
700 – 1000mm+	Compacted light clay (Cat 5)

- AS 1547 Soil Category 4 to be used for disposal
- Emerson Test No. 7
- Soil permeability - Estimated permeability is 0.2m/day.
- Long Term Acceptance Rate (LTAR) = 16L / m2 /day
- Design Irrigation Rate (DIR) = 3.5mm/day

Groundwater

Groundwater is not expected to be an issue and was not discovered in any of the test holes.

Site Stability

Not assessed in detain, wastewater disposal is not expected to cause any issues, however this is beyond the scope of the SEAM report.

Site Capability Issues for On-site Wastewater Management

Sustainable Environmental Assessment & Management (SEAM)
Land suitability and system sizing for on-site wastewater management
Trench 3.0 (Australian Institute of Environmental Health)

Site Capability Report
Proposeddog day care

Assessment for	Keri & Dean Thurley	Assess. Date	
	gingerkat2015@gmail.com	Ref. No.	19054
Assessed site(s)	48 Blessington Road, St Leonards 7250	Site(s) inspected	23-May-19
Local authority	Launceston Council	Assessed by	Jamie Wood

This report summarises data relating to the physical capability of the assessed site(s) to accept wastewater. Environmental sensitivity and system design issues are reported separately. The 'Alert' column flags factors with high (A) or very high (AA) site limitations which probably require special consideration in site acceptability or for system design(s). Blank spaces indicate data have not been entered into TRENCH.

Alert	Factor	Units	Value	Confid level	Limitation: Trench	Limitation: Amended	Remarks
	Expected design area	sq m	10,000	V. high	Very low		
	Density of disposal systems	/sq km	5	Mod.	Very low		
	Slope angle	degrees	3	V. high	Very low		
	Slope form		Straight simple	V. high	Low		
	Surface drainage		Mod. good	High	Low		
	Flood potential		Site floods <1:100 yrs	Mod.	Very low		
	Heavy rain events		Infrequent	Mod.	Moderate		
	Aspect (Southern hemi.)		Faces N	V. high	Very low		
	Frequency of strong winds		Common	High	Low		
	Wastewater volume	L/day	750	Mod.	Moderate	No change	
	SAR of septic tank effluent		2.0	Mod.	Low	No change	
	SAR of sullage		2.5	Mod.	Moderate	No change	
	Soil thickness	m	1.2	High	Very low	Moderate	
	Depth to bedrock	m	2.0	Mod.	Low	No change	
	Surface rock outcrop	%	0	V. high	Very low		
	Cobbles in soil	%	2	V. high	Very low		
	Soil pH		7.0	Guess	Very low		Other factors lessen impact
	Soil bulk density	gm/cub. cm	1.5	Guess	Low		
	Soil dispersion	Emerson No.	7	High	Very low		
	Adopted permeability	m/day	0.2	High	Very low		
	Long Term Accept. Rate	L/day/sq m	16	Mod.	Very low	Moderate	Other factors increase impact

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Environmental Sensitivity Issues for On-site Wastewater Management

Sustainable Environmental Assessment & Management (SEAM)
Land suitability and system sizing for on-site wastewater management
Trench 3.0 (Australian Institute of Environmental Health)

Environmental Sensitivity Report
Proposeddog day care

Assessment for	Keri & Dean Thurley	Assess. Date	
	gingerkat2015@gmail.com	Ref. No.	19054
Assessed site(s)	48 Blessington Road, St Leonards 7250	Site(s) inspected	23-May-19
Local authority	Launceston Council	Assessed by	Jamie Wood

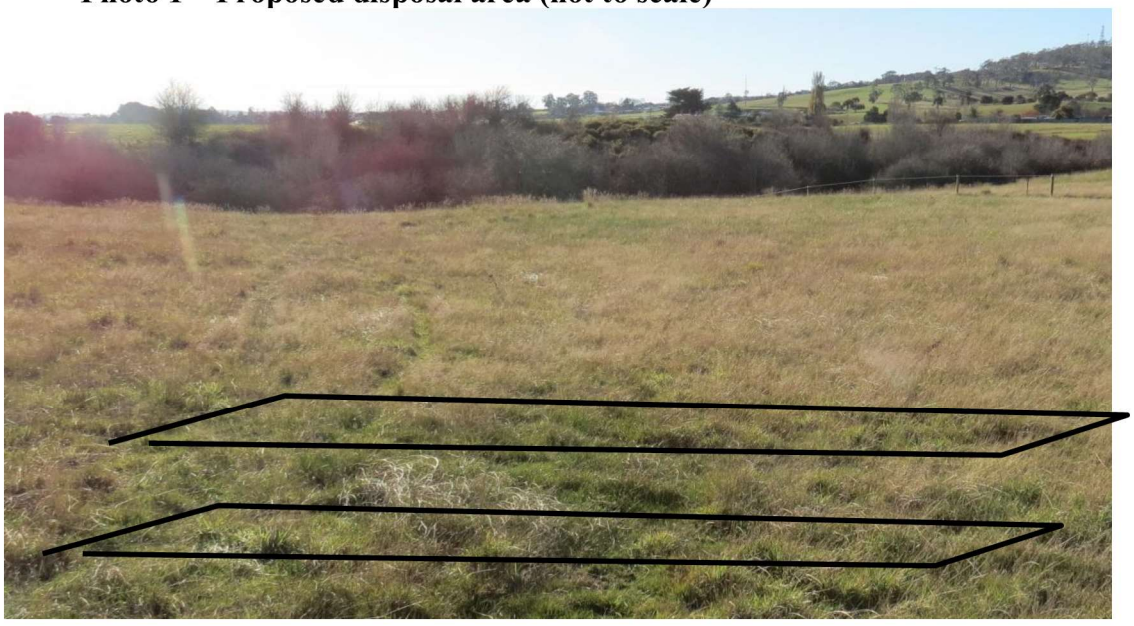
This report summarises data relating to the environmental sensitivity of the assessed site(s) in relation to applied wastewater. Physical capability and system design issues are reported separately. The 'Alert' column flags factors with high (A) or very high (AA) limitations which probably require special consideration in site acceptability or for system design(s). Blank spaces indicate data have not been entered into TRENCH.

Alert	Factor	Units	Value	Confid level	Limitation Trench	Limitation Amended	Remarks
A	Cation exchange capacity	mmol/100g	50	Mod.	High	No change	
	Phos. adsorp. capacity	kg/cub m	0.8	Mod.	Moderate		
	Annual rainfall excess	mm	-99	High	Very low		
	Min. depth to water table	m	2	High	Low		
	Annual nutrient load	kg	8.3	Guess	Low	Moderate	
	G'water environ. value	Agric sensit/dom irrig		High	Moderate		
	Min. separation dist. required	m	5	High	Very low	Low	Other factors increase impact
	Risk to adjacent bores						Factor not assessed
	Surf. water env. value	Agric sensit/dom drink		High	Moderate		
A	Dist. to nearest surface water	m	70	High	High		
	Dist. to nearest other feature	m	100	High	Low		
	Risk of slope instability	Very low		High	Very low		
	Distance to landslip	m	1000	High	Very low		

Cation exchange capacity has been noted in the design.

Despite nearest surface water being flagged (creek) the viral dieback distance is only 5m. With the creek being 70m away this is not expected to be a problem.

Photo 1 – Proposed disposal area (not to scale)



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Assessment Report from Trench 3™ modelling program

Sustainable Environmental Assessment & Management (SEAM)

Land suitability and system sizing for on-site wastewater management

Trench 3.0 (Australian Institute of Environmental Health)

Assessment Report
Proposeddog day care

Assessment for	Keri & Dean Thurley	Assess. Date	
	gingerkat2015@gmail.com	Ref. No.	19054
Assessed site(s)	48 Blessington Road, St Leonards 7250	Site(s) inspected	23-May-19
Local authority	Launceston Council	Assessed by	Jamie Wood

This report summarises wastewater volumes, climatic inputs for the site, soil characteristics and system sizing and design issues. Site Capability and Environmental sensitivity issues are reported separately, where 'Alert' columns flag factors with High (A) or very High (AA) limitations which probably require special consideration for system design(s). Blank spaces on this page indicate data have not been entered into TRENCH.

Wastewater Characteristics

Wastewater volume (L/day) used for this assessment = 750 (using a method independent of the no. of bedrooms)
Septic tank wastewater volume (L/day) = 240
Sullage volume (L/day) = 510
Total nitrogen (kg/year) generated by wastewater = 5.3
Total phosphorus (kg/year) generated by wastewater = 3.0

Climatic assumptions for site (Evapotranspiration estimated using mean max. daily temperatures)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean rainfall (mm)	42	39	38	55	64	66	82	83	63	59	49	50
Adopted rainfall (R, mm)	46	43	42	60	70	74	90	91	69	65	54	55
Retained rain (Rr, mm)	41	39	38	54	63	67	81	82	62	59	49	50
Max. daily temp. (deg. C)	25	25	23	19	16	13	13	14	16	18	21	23
Evapotrans (ET, mm)	93	80	73	56	47	47	48	52	58	67	76	86
Evapotr. less rain (mm)	**52**	**41**	**35**	**2**	**-16**	**-20**	**-33**	**-30**	**-5**	**8**	**27**	**36**

Annual evapotranspiration less retained rain (mm) = 99

Soil characterisitics

Texture = Clay Loam Category = 4 Thick. (m) = 1.2
Adopted permeability (m/day) = 0.2 Adopted LTAR (L/sq m/day) = 16 Min depth (m) to water = 2

Proposed disposal and treatment methods

Proportion of wastewater to be retained on site:	All wastewater will be disposed of on the site
The preferred method of on-site primary treatment:	In dual purpose septic tank(s)
The preferred method of on-site secondary treatment:	In-ground
The preferred type of in-ground secondary treatment:	Evapotranspiration bed(s)
The preferred type of above-ground secondary treatment:	None
Site modifications or specific designs:	Not needed

Suggested dimensions for on-site secondary treatment system

Total length (m) =	44
Width (m) =	1.2
Depth (m) =	0.5
Total disposal area (sq m) required =	530
comprising a Primary Area (sq m) of:	265
and a Secondary (backup) Area (sq m) of:	265

Sufficient area is available on site

Comments

See full report for details

- System capacity (number of persons and daily flow)

The system has been based on the figures outline on page 1 - 750L per day.

- Summary of design criteria

This report is to calculate and design a wastewater disposal system that can dispose of all the effluent generated by a Doggie Day Care facility at **48 Blessington Road, St Leonards 7250.**

- The location of and use of the 'reserve area'

There is adequate space for a 100% reserve area within the site.

- Use of water efficient fittings, fixtures, or appliances

The report has been based on figures using town water without any water saving devises. Figures used have been estimated using the 750L derived from the owners existing dog day care & kennel business at Breadalbane.

- Allowable variation from design flows (peak loading events)

The wastewater figures used for this report have been based on the maximum projected daily loading for the Doggie Day Care facility.

- Consequences of changes in loading (due to varying wastewater characteristics)

With the system designed for the maximum wastewater loading, there is expected to be no issues with wastewater disposal for the site.

- Consequences of overloading the system

If the system is continuously overloaded (e.g. higher than 750L per day for many days) then there is a chance that the disposal area could fail. If this is the case the disposal area could be enlarged by 50% (i.e. one more ET bed 22m x 1.2m x 0.5m)

- Consequences of underloading the system

The design has used a conventional septic tank and raised evapo-transpiration bed based system. The benefit of this is, that if the system is only used infrequently, there are no detrimental effects to either the septic tank or the disposal area. There are no consequences expected for the underloading of the system.

- Consequences of lack of operation, maintenance, and monitoring attention

The septic tank should be pumped out as per the standard. Inspection Openings will be fitted to the system at the time of installation so that the system can be checked for blockages as required. The owners should familiarise themselves with the maintenance schedule attached to the site & soil report.

Acceptable Solutions	Performance Criteria	Compliance
A1 Horizontal separation distance from a building to a land application area must comply with one of the following: - be no less than 6m; or - be no less than: (i) 3m from an upslope building or level building; (ii) If primary treated effluent to be no less than 4m plus 1m for every degree of average gradient from a downslope building; (iii) If secondary treated effluent and subsurface application, no less than 2m plus 0.25m for every degree of average gradient from a downslope building.	P1 a) The land application area is located so that: (i) the risk of wastewater reducing the bearing capacity of a building's foundations is acceptably low; and (ii) is setback a sufficient distance from a downslope excavation around or under a building to prevent inadequately treated wastewater seeping out of that excavation.	**Complies with A1** **Disposal area is <6m from (upslope) building.**
A2 Horizontal separation distance from downslope surface water to a land application area must comply with (a) or (b) (a) be no less than 100m; or (b) be no less than the following: (i) if primary treated effluent 15m plus 7m for every degree of average gradient to downslope surface water; or (ii) if secondary treated effluent and subsurface application, 15m plus 2m for every degree of average gradient to down slope surface water.	P2 Horizontal separation distance from downslope surface water to a land application area must comply with all of the following: a) Setbacks must be consistent with AS/NZS 1547 Appendix R; b) A risk assessment in accordance with Appendix A of AS/NZS 1547 has been completed that	**Complies with A2(b, i)** **Disposal Area is 60m from the nearest downslope surface water** **(minimum requirement: 15m plus 7m x 3 degree slope (21m) = 36m)**
A3 Horizontal separation distance from a property boundary to a land application area must comply with either of the following: (a) be no less than 40m from a property boundary; or (b) be no less than: (i) 1.5m from an upslope or level property boundary; and (ii) If primary treated effluent 2m for every degree of average gradient from a downslope property boundary; or	P3 Horizontal separation distance from a property boundary to a land application area must comply with all of the following: (a) Setback must be consistent with AS/NZS 1547 Appendix R; and (b) A risk assessment in accordance with Appendix A of AS/NZS 1547 has been completed that demonstrates that the risk is acceptable.	**Complies with A3 (a)** **The disposal area is located <40m from all boundaries** **This has been illustrated on the site plan.**

(iii) If secondary treated effluent and subsurface application, 1.5m plus 1m for every degree of average gradient from a downslope property boundary.		
A4 Horizontal separation distance from a downslope bore, well or similar water supply to a land application area must be no less than 50m and not be within the zone of influence of the bore whether up or down gradient.	P4 Horizontal separation distance from a downslope bore, well or similar water supply to a land application area must comply with all of the following: (a) Setback must be consistent with AS/NZS 1547 Appendix R; and (b) A risk assessment completed in accordance with Appendix A of AS/NZS 1547 demonstrates that the risk is acceptable	**Complies with A4** **There is no bore within 50m of the proposed disposal area.**
A5 Vertical separation distance between groundwater and a land application area must be no less than: (a) 1.5m if primary treated effluent; or (b) 0.6m if secondary treated effluent	P5 Vertical separation distance between groundwater and a land application area must comply with the following: (a) Setback must be consistent with AS/NZS 1547 Appendix R; and (b) A risk assessment completed in accordance with Appendix A of AS/NZS 1547 that demonstrates that the risk is acceptable	**Complies with A5** **There is no ground water within 1.5m (vertical) of the proposed disposal area.**
A6 Vertical separation distance between a limiting layer and a land application area must be no less than: (a) 1.5m if primary treated effluent; or (b) 0.5m if secondary treated effluent.	P6 Vertical setback must be consistent with AS/NZS1547 Appendix R.	**Complies with A6** **There is no limiting layer within 1.5m (vertical) of the proposed disposal area.**
A7 nil	P7 A wastewater treatment unit must be located a sufficient distance from buildings or neighbouring properties so that emissions (odour, noise or aerosols) from the unit do not create an environmental nuisance to the residents of those properties *Note: Part 6 of the Building Act 2016 specifies requirements for protection work which apply to plumbing work including a wastewater treatment unit.*	**Complies with A7**

Wastewater System Design

The design is for a proposed Doggie Day Care Centre. The wastewater will include wastewater from the kennel wash down areas, dog hydro baths and washing of bedding.

The wastewater loadings have been based on figures derived from the owners other dog boarding kennels at Breadalbane.

The loadings have been based on:

- 250L per day for washing
- 500L per day for hydro baths

Therefore the total amount of wastewater generated from all areas is expected to be 750L per day.

Proposed Treatment Method: Septic Tank with Evapo-Transpiration bed
All the wastewater will be treated in a 3000L dual purpose septic tank. A second 3000 L tank at the other dog shed is recommended to allow for adequate pre treatment time in the tank for the dog waste.

The wastewater will then gravity feed into two evapo-transpiration beds 22m x 1.2m x 0.5m. A cut off drain will need to be installed upslope of the disposal field.

Specifications:

- An outlet filter is to be fitted to the septic tank
- 230mm Trench Arch to be used
- The base of the beds are to be level
- The beds are to be excavated parallel to the contours of the land
- Avoid compaction and smearing of the base and walls of the beds
- One distribution box to be used
- **A surface water cut off drain is to be installed above the trenches**
- Disposal area to be kept free of vehicular access
- Disposal area to be kept free of animals
- **ET beds to be backfilled with sand and top-dressed with sandy loam & planted out with either grass or shallow rooted approved shrubs**

Notes:

- If the soil varies significantly than that illustrated in this report please contact the designer immediately
- If bedrock is encountered during the excavation of the beds the designer is to be contacted immediately
- If ground water is encountered during the excavation of the beds the designer is to be contacted immediately

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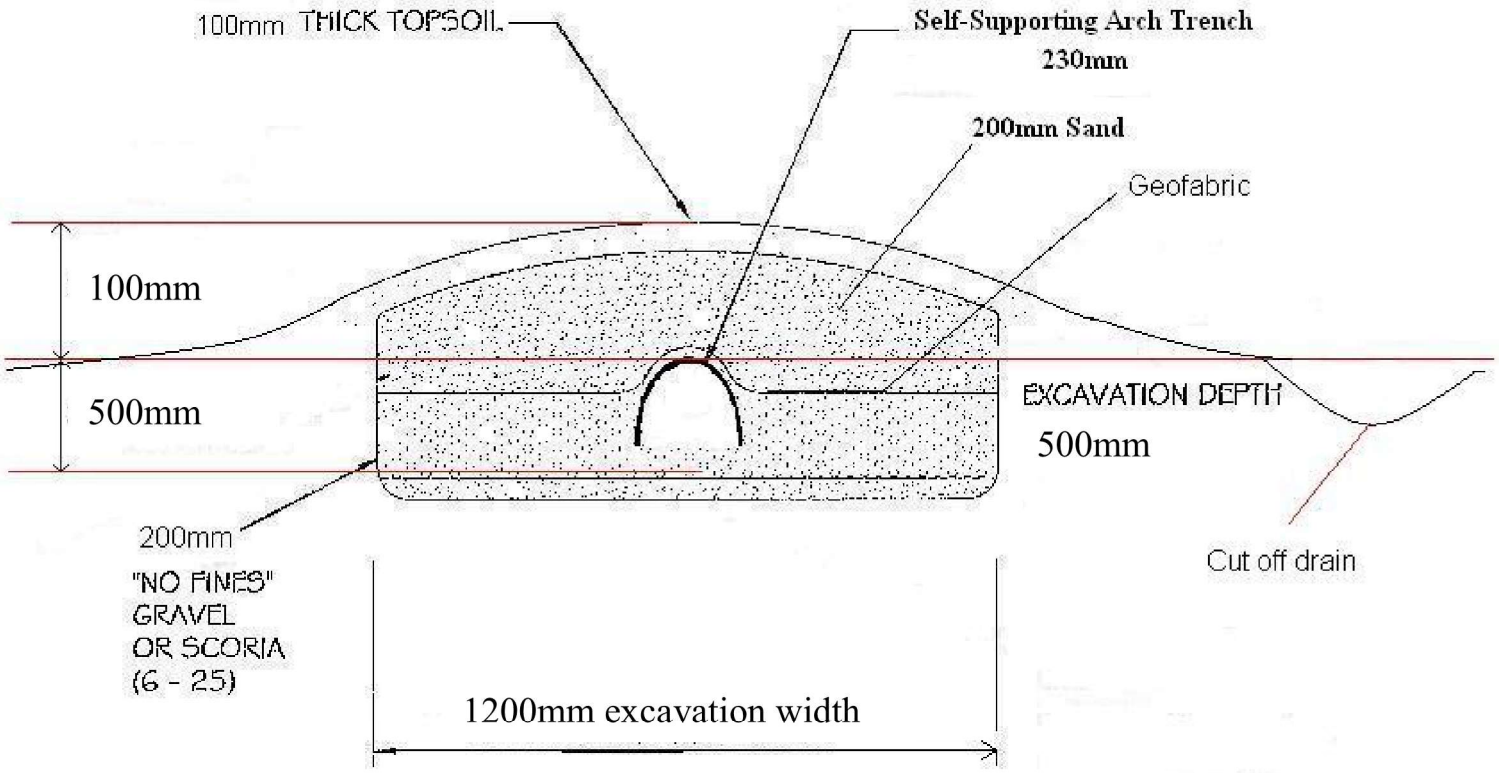
Absorption Trench bed Cross Section

AS/NZS 1547:2000



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Location Plan

See detail over page