strata
geoscience and environmental

Onsite Wastewater System Design

Tiny House 1
691 West End Road
Flinders Island

June 2023

Important Notes:

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1. Introduction

Strata Geoscience and Environmental Pty Ltd was commissioned to conduct an onsite wastewater system design for:

Client and Site Details	
Client Name	Addy Jones
Site Address	691 West End Road Flinders Island
Proposed Development	New system for 1bed equivalent Tiny Home

The investigation was conducted with reference to Australian Standards AS1547-2012 Onsite Domestic Wastewater Management and also follows the principles outlined in AS1726-1993 Geotechnical Site Investigations.

2. Summary of Site and Soil Evaluation and Design Outcomes

The investigation's key findings were:

SSE and Design Outcomes	
General Comments	Site suitable for disposal of primary treatment
Key Site and Soil Limitations to System Design	• Few
Summary of Proposed System Specification	Primary Treatment: 3000L Dual purpose septic tank Secondary Treatment: In ground Land Application: In ground

3. Investigation

Please refer to Appendix 4 for Site and Soil Evaluation results.

4. Interpretation

The site is situated on a slight to moderate slope underlain by inferred Quaternary aged sands.

With respect to the sustainability of long term disposal of wastewater within the site boundaries the following comments are made:

Soils – Natural soils will have a high permeability for the acceptance of wastewater flows and will show a moderate cation exchange complex for the absorption of nutrients from effluent. Soil depth is a significant limitation to conventional trench functioning.

Environmental Sensitivities – The development area is gently sloping with nearest surface water body located approximately 100+ m down slope of the proposed residence. Groundwater was not intersected throughout geotechnical investigation however it may flow over clayey subsoils as a perched watertable throughout wet periods.

Climate - the nearest weather station with long term data is the Whitemark Station with a mean annual rainfall of 749.8 m (BOM 2023) and no evaporation data.

Title Searches – Searches of the Land Title did not show any easements or right of ways which would affect the positioning of the wastewater land application system.

Given the above, the general environmental and public health risk associated with the site is regarded as low provided adequate setback distances and other controls are adopted.

5. Onsite Wastewater System Design

5.1 Site and Soil Considerations

Results of the SSE (Appendix 4) found the following typical soil profile on site:

	Topsoils (A1-A3)
Description	SAND (SM)
Soil Category (AS1547-2011)	1
Indicative Permeability (m/d)	2.0
Recommended DIR (mm/d)/DLR (L/D)	25
pH	6.9
EC	1.9
Emmerson Class	8

5.2 Risk Management of Site and Soil Constraints

Key site and soil constraints as well as their risk management:

Site/Soil Constraint	Risk Mitigation Measure
Soil depth	• Trench
Runoff	• Appropriate hydraulic scaling of LAA

5.3 Proposed Wastewater System Concept Design

It is therefore recommended that the following system be adopted:

Treatment Train Component	Proposed Concept Design
Primary Treatment	• Septic Tank
Secondary Treatment	• In Ground
LAA Design	• Mounded Trench

The development proposal is for the construction of a new wastewater system to service the proposed 1 bedroom equivalent dwelling on tank water with standard water savings fixtures. Therefore under AS1547-2012 the calculated effluent flows and required disposal area is as follows:

Wastewater System Modelling	
Number of Proposed Bedrooms	1
Number of Equivalent Persons	2
Water Source (Tank/Mains)	Tank
Daily Loading (L/per person/D)	120
Total Daily Loading (L/D)	240
Adopted Soil Category (AS1547-2012)	1
Indicative Permeability (m/d)	2
Adopted DLR/DIR (mm/d OR L/m^2/d)	15
Required LAA (m^2)	16

The absorption area could be catered for by one 16 m^2 mounded trench installed as shown on the site plan with adequate room for a 100% reserve if required (see Appendix 1). Refer to Appendix 2/3 for more detailed calculations as well as specific design and construction notes.

5.5 System Requirements

Nutrient, bacterial and viral reduction performance should be inline with the prescriptions of AS1546.3:2008 for primary treated effluent. It is noteworthy that the high CEC of the soils plus distances from ephemeral drainage lines will all serve to further reduce the risk of residual nutrients, bacterial or viruses entering any waterway.

5.6 Management Requirements

It is imperative that regular servicing of the treatment unit compliant with the prescriptions of the manufacturer and Council permit occur.

To ensure that the treatment system functions adequately and provides effective treatment and disposal of effluent over its design life, asset owners have the following responsibilities:

- Suitably qualified maintenance contractors must be engaged to service the system, as required by Council under the approval to operate.
- Keep as much fat and oil out of the system as possible; and
- Conserve water.

To ensure that the land application area (LAA) functions adequately and provides effective treatment and disposal of effluent over its design life, asset owners have the following responsibilities:

- LAA should be checked regularly to ensure that effluent is draining freely, including flushing of lines and cleaning of inline filters.
- All vehicles, livestock and large trees should be excluded from around the irrigation area.
- Low sodium/phosphorous based detergents should be used to increase the service life of irrigation area.
- Regularly harvest (mow) vegetation within the LAA and remove this to maximise uptake of water and nutrients;
- Not to erect any structures over the LAA;
- Ensure that the LAA is kept level by filling any depressions with good quality topsoil (not clay).

Excessive surface dampness, smell or growth of vegetation around the LAA may indicate sub-optimal performance and professional advice should be sort.

6. Conclusions and Further Recommendations

In conclusion the following comments and recommendations are made:

- The maximum wastewater flow rate (MWWF) modelling conducted in this report shows that the generated flows are likely to be no more than 240 L/day.

- That such flows will require a land application area (LAA) comprising one 16 m^2 mounded trench.

- It is likely that peak flows associated with the development should be within the buffering capacity of the system both in terms of the system sizing as well as for their acceptance into the disposal area.

- If the hydraulic capacity of soils underlying disposal areas is exceeded by effluent water flows, the disposal area has the capacity to be increased by up to 100%.

- **If the prescriptions of this report are followed the likely human and environmental health risks associated with effluent disposal onsite is rated as low.**

S Nielsen MEngSc CPSS-2
Director
Strata Geoscience and Environmental Pty Ltd
E:sven@strataconsulting.com.au

7. References

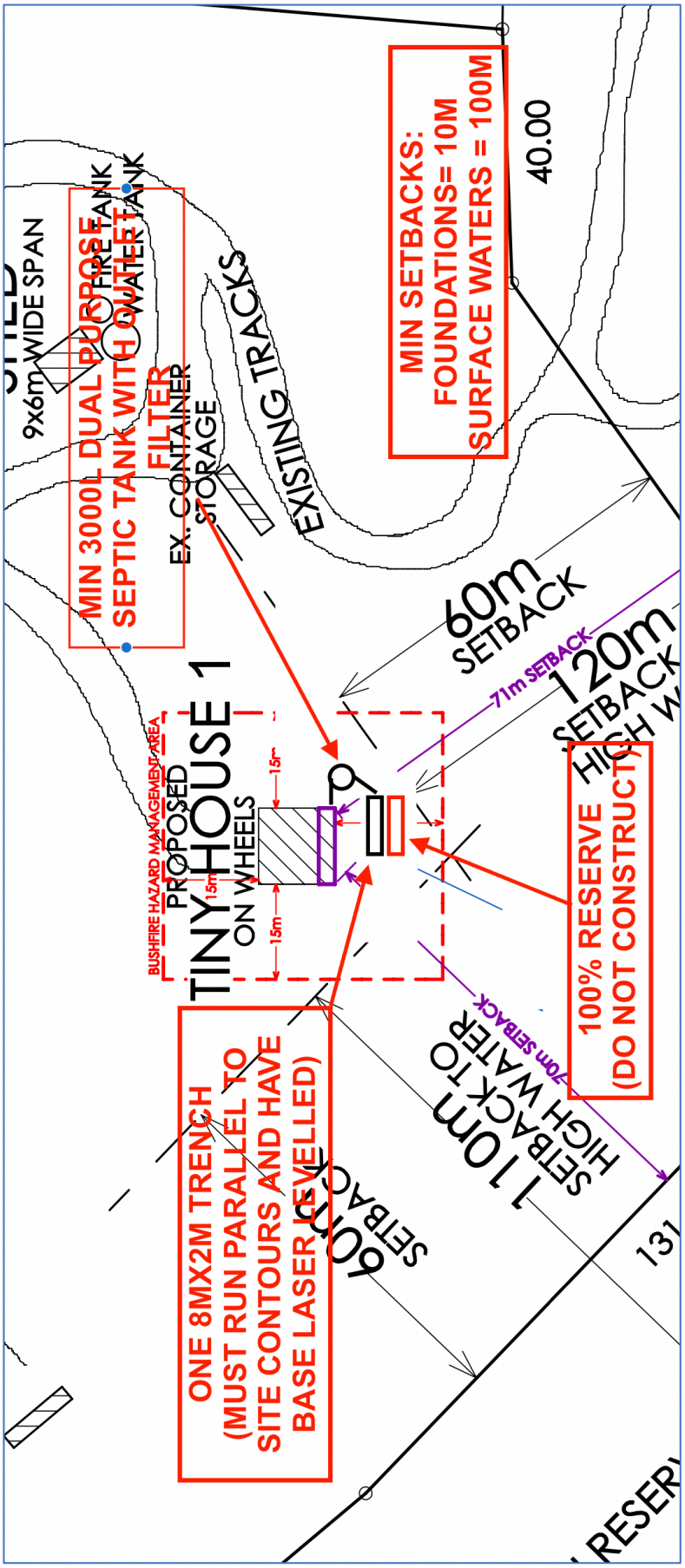
- AS1726-1993- Geotechnical Site Investigations
- AS1547-2012 Onsite Domestic Wastewater Management
- Bureau of Meteorology Website- Monthly Climate Statistics

Appendix 1 Detailed Design Calculations

Wastewater Loading Certificate*	
System Capacity	2EP at 120L/person/day = 240 L/D
Design Summary	
• Effluent Quality	Primary
• Adopted Soil category	1
• Amended Adopted Soil Category	Not amended
• Adopted DLR/DIR (mm/d OR L/m^2/d)	15
• LAA Design	Mounded trench
• Primary LAA Requirement	16m^2
• Reserve Area	Min 100% reserve LAA must be maintained in an undeveloped state near the primary system as identified on the site plan
Fixtures	Assumes std water saving fixtures inc 6/3L dual flush toilets, aerator forcets, Washing/dishwashing machines with min WELSS rating 4.5 star
Consequences of Variation in Effluent Flows	
• High Flows	The system should be capable of buffering against flows of up to 4 EP in a 24 hr period or 2EP over a 7 day period. System not rated for spa installation.
• Low Flows	Should not affect system performance
Consequences of Variation in Effluent Quality	Residence to avoid the installation of sink disposal systems (eg “sinkerators”), or the addition of large amounts of household cleaning products or other solvents. These can overload system BOD or affect effluent treatment by system biota.
Consequences of Lack of Maintenance and Monitoring Attention	Owners should maintain the system in compliance with systems Home Owners Manual and council permit. All livestock, vehicles and persons to be excluded from the LAA. Failure to ensure the above may lead to infection of waterways, bores or the spread of disease, as well as production of foul odours, attraction of pests and excessive weed growth.

***** In accordance with Clause 7.4.2(d) of AS/NZS 1547.2012.

Appendix 2 Land Application Design and Construction Notes



Septic Tank and Trench Design and Construction Notes

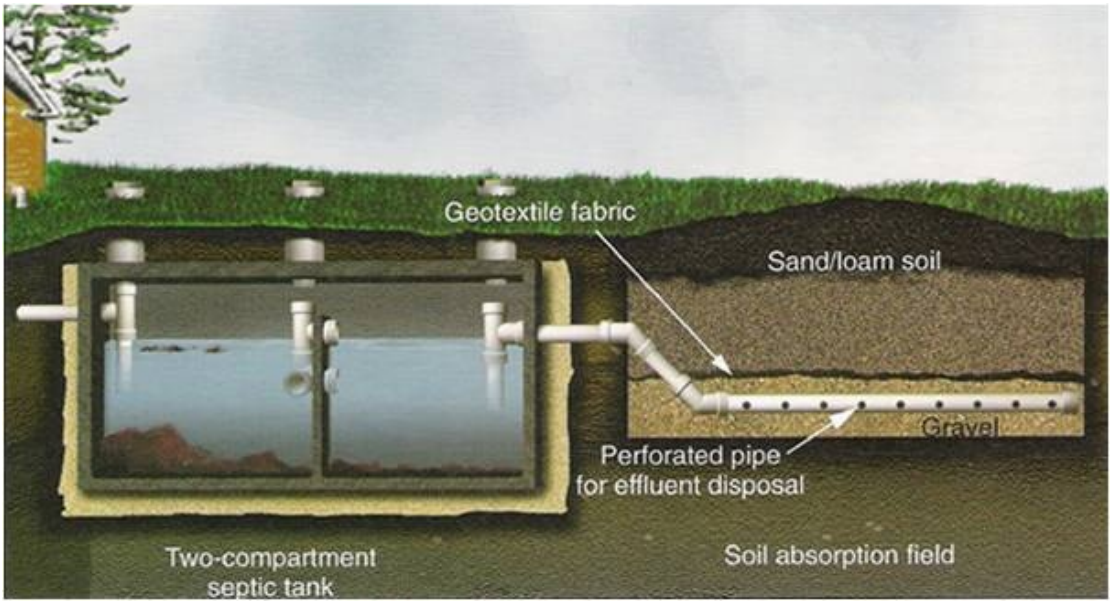


Figure 1 Septic Tank and Trench cross section

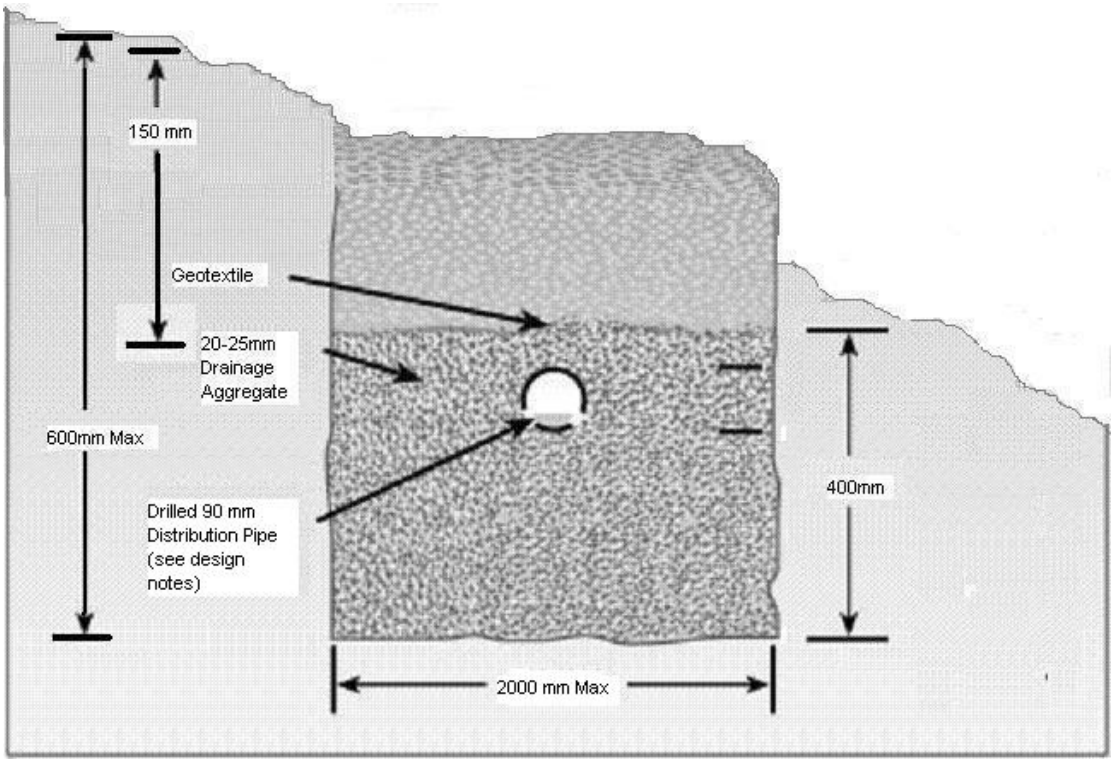


Figure 2 Gravity dosed septic trench cross section

Septic Tank Installation

1. Septic Tanks should be installed in firm ground and/or on a uniform layer of sand of minimum thickness 100mm.
2. Septic Tanks should be surrounded by sand or compacted soil by watering and tamping to the firmness of the surrounding soil.
3. The influent pipe should be installed with a minimum grade of 1.65% or 1 in 60.
4. It is recommended that septic tanks are installed a mimimum of 3 meters from foundations and for systems utilising a pump well, away from bedrooms.
5. Fiberglass or plastic tanks set in urban or Aboriginal Housing in Remote Area Communities shall be fitted with concrete lids or collars.
6. All vehicles and livestock should be excluded from septic tank areas.
7. The Septic Tank **MUST** be a dual purpose design with a minimum capacity compliant with the stipulations of AS1547-2000 Appendix 4.3 A
8. An outflow filter shall be connected to the outflow of the septic tank.

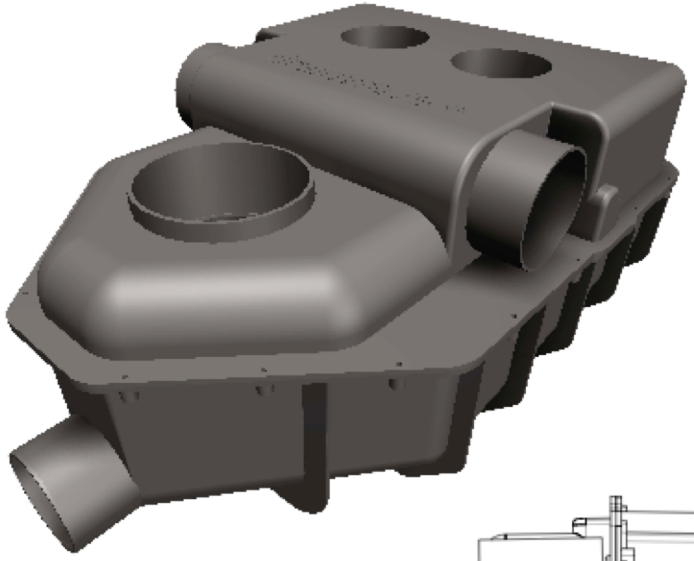
Septic Trench Design and Construction Notes

1. Each trench has the dimensions of 8.0 m X 2.0 m X 0.5 m.
2. There is one trench in total as located on site plan giving a total basal area of 16 m^2.
3. The base of the trench **MUST** be excavated evenly and level. In clay soils smearing of walls and floors of bed **MUST** be avoided.
4. Gypsum **MUST** be added to the base of the excavated trench at a rate of 1Kg/5m^2. This should be applied directly to the soil and **SHOULD NOT** be tilled in.
5. The lower 400mm is to be filled with 20-25mm aggregate.
6. 100mm PVC pipes **with a single 8mm de-burred hole drilled at 500mm centres** along the bottom of the pipes to be placed on top of aggregate as shown.
7. Each pipe must be dosed via a **"Drainwave"** dosing box (specs overleaf). These devices are stand-alone units which should be plumbed to ensure the outlet is level with the trench pipe. Elbows, t-sections or flow restrictors **MUST NOT** be used as this will inhibit the correct functioning of this device.
8. The distribution pipe **MUST** be level to ensure flow of effluent to all areas of the trench. Failure to ensure this may cause preferential overloading of the trench and the potential for bed overflow.
9. A further 50mm of aggregate can be added around/over the grid before overlaying with geo-textile to prevent soil from clogging gravels/lateral slots. For sandy soils the sides of the trench should also be lined.
10. Backfilling of the bed to 50 - 75mm above original ground surface level with endemic topsoil (if a sand/loam) or imported loam should proceed. Do not mechanically compact this layer.

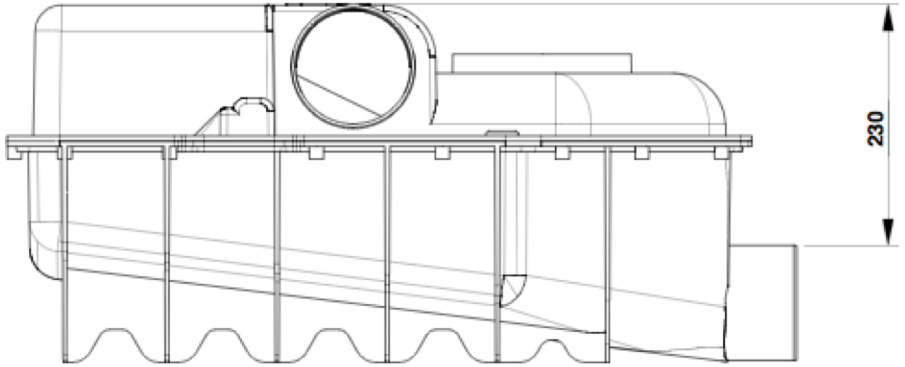
11. An inspection outlet and a “Drainwave” or similar device should be placed on each distribution pipe.
12. Slight adjustments to the location of Septic Tank/Flow Diverter/Trenches are permitted to achieve correct fall to levelled trench bases.
13. Vehicles and livestock should be excluded from trench area.

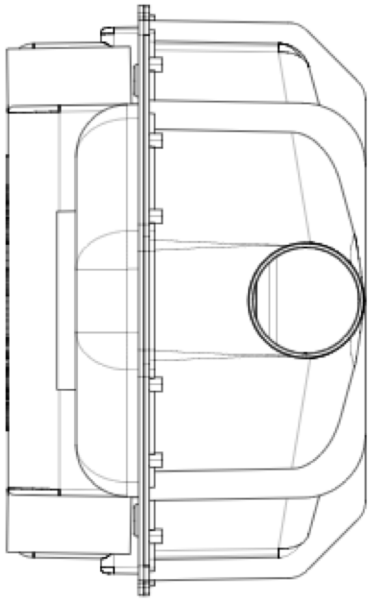
RevNo	Revision note	Date	Signature	Checked

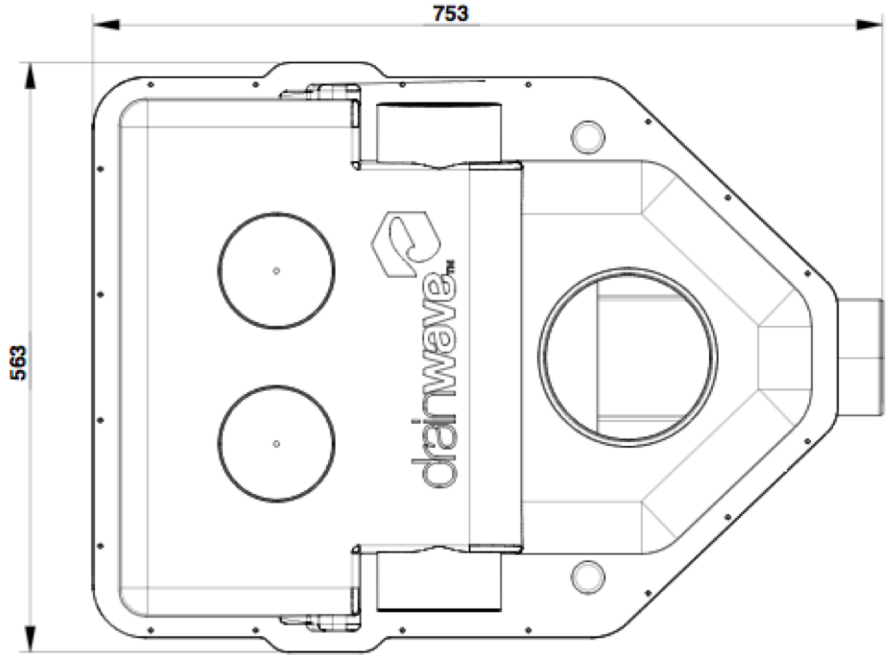
RAINWAVE ISOMETRIC VIEW



PATENTS PENDING AND DESIGNED IN ACCORDANCE WITH SEVERAL REGISTERED DESIGNS







drainwave™

ALL DIMMENSIONS IN mm

Itemref	Quantity	Title/Name, designation, material, dimension etc		Article No./Reference	
Drawn by	Checked by	Approved by - date	File name	Date	Scale
D FISHER			06D048	03/12/2009	1 / 5

DRAINWAVE 9 L

Edition	Sheet
REV01	1

Appendix 4 Site and Soil Evaluation

Table 3 Site Features	
Climate	The nearest weather station with long term data is Whitemark Station with a mean annual rainfall of 749 mm (BOM 2023) and no evaporation data. The region has a near Mediterranean climate with maximum temperatures and minimum rainfall in the summer.
Exposure	The site is relatively unshielded with exposure to winds which predominate from the NW/SW directions
Vegetation	Remnant Native
Landform	Back dunes
Slope	Slight slopes
Fill	No fill evident
Rocks and Rock Outcrops	None evident
Erosion Potential	None known
Surface Water	100m+
Flood Potential	<1:100 AEP
Stormwater Run-on and Upslope Seepage	The dwelling and land application areas are expected to receive on minor amounts of stormwater run-on or groundwater recharge.
Groundwater	No groundwater was encountered throughout site reconnaissance and is likely to be several meters under the ground surface contained within rock.
Site Drainage and Subsurface Drainage	Localised site drainage is known to be an issue and as such a raised bed design has been employed
Recommended Buffer Distances	Given the significant land area, all buffer distances are achievable.
Available Land Application Area	There is surplus space to land application area requirements (including reserves).

Appendix 5 Form 35B

CERTIFICATE OF THE RESPONSIBLE DESIGNER

Section 94
Section 106
Section 129
Section 155

To: ADDY JONES *Owner name*

Address

Suburb/postcode

Form **35**

Designer details:

Name:	S NIELSEN	Category:	HYDRAULIC SERVICES
Business name:	STRATA GEOSCIENCE AND ENVIRONMNETAL P/L	Phone No:	0413545358
Business address:	72-74 LAMBECK DRIVE		
	TULLAMARINE 3043	Fax No:	
Licence No:	CC6113K	Email address:	sven@strataconsulting.com.au

Details of the proposed work:

Owner/Applicant	AS ABOVE	Designer's project reference No.	SR05200
Address:	691 WEST END ROAD	Lot No:	
	LEEKA		

Type of work: Building work ☐ Plumbing work X *(X all applicable)*

Description of work:

WASTEWATER OVERFLOW SYSTEM MODELLING

(new building / alteration / addition / repair / removal / re-erection water / sewerage / stormwater / on-site wastewater management system / backflow prevention / other)

Description of the Design Work (Scope, limitations or exclusions): *(X all applicable certificates)*

Certificate Type:	Certificate	Responsible Practitioner
	☐ Building design	Architect or Building Designer
	☐ Structural design	Engineer or Civil Designer
	☐ Fire Safety design	Fire Engineer
	☐ Civil design	Civil Engineer or Civil Designer
	☐X Hydraulic design	Building Services Designer
	☐ Fire service design	Building Services Designer
	☐ Electrical design	Building Services Designer

	☐ Mechanical design	Building Service Designer
	☐ Plumbing design	Plumber-Certifier; Architect, Building Designer or Engineer
	☐ Other (specify)	

Deemed-to-Satisfy: ☐X	Performance Solution: ☐ (*X the appropriate box*)
Other details:	

Design documents provided:

The following documents are provided with this Certificate –

Document description:

Drawing numbers:	Prepared by:	Date:
Schedules:	Prepared by:	Date
Specifications:	Prepared by: SN	Date 1/6/23
Computations	Prepared by: SN	Date 1/6/23
Performance solution proposals:	Prepared by:	Date
Test reports:	Prepared by:	Date

Standards, codes or guidelines relied on in design process:

AS1547

Any other relevant documentation:

TERMS AND CONDITIONS IN DESIGN REPORT

Attribution as designer:

I SVEN NIESLEN..... am responsible for the design of that part of the work as described in this certificate;

The documentation relating to the design includes sufficient information for the assessment of the work in accordance with the *Building Act 2016* and sufficient detail for the builder or plumber to carry out the work i accordance with the documents and the Act;

This certificate confirms compliance and is evidence of suitability of this design with the requirements of the National Construction Code.

Name: (print)SVEN NIELSEN *SN*

Designer:	SVEN NIELSEN		1/6/23

Licence No: CC6113K

Assessment of Certifiable Works: (TasWater)

Note: single residential dwellings and outbuildings on a lot with an existing sewer connection are not considered to increase demand and are not certifiable.

If you cannot check ALL of these boxes, LEAVE THIS SECTION BLANK.

TasWater must then be contacted to determine if the proposed works are Certifiable Works.

I confirm that the proposed works are not Certifiable Works, in accordance with the Guidelines for TasWater CCW Assessments, by virtue that all of the following are satisfied:

- [X] The works will not increase the demand for water supplied by TasWater
- [X] The works will not increase or decrease the amount of sewage or toxins that is to be removed by, or discharged into, TasWater's sewerage infrastructure
- [X] The works will not require a new connection, or a modification to an existing connection, to be made to TasWater's infrastructure
- [X] The works will not damage or interfere with TasWater's works
- [X] The works will not adversely affect TasWater's operations

X	The work are not within 2m of TasWater's infrastructure and are outside any TasWater easement
X	I have checked the LISTMap to confirm the location of TasWater infrastructure
X	If the property is connected to TasWater's water system, a water meter is in place, or has been applied for to TasWater.

Certification:

I .....SVEN NIELSEN..... being responsible for the proposed work, am satisfied that the works described above are not Certifiable Works, as defined within the *Water and Sewerage Industry Act 2008,* that I have answered the above questions with all due diligence and have read and understood the Guidelines for TasWater CCW Assessments.

Note: the Guidelines for TasWater Certification of Certifiable Works Assessments are available at: www.taswater.com.au

	Name: (print)	*Signed*	*Date*
Designer:	SVEN NIELSEN		Date: 1/6/23

Appendix 6 Terms and Conditions

Scope of Work
These Terms and Conditions apply to any services provided to you ("the Client") by Strata Geoscience and Environmental Pty Ltd ("Strata"). By continuing to instruct Strata to act after receiving the Terms and Conditions or by using this report and its findings for design and/or permit application processes and not objecting to any of the Terms and Conditions the Client agrees to be bound by these Terms and Conditions, and any other terms and conditions supplied by Strata from time to time at Strata's sole and absolute discretion. The scope of the services provided to the Client by Strata is limited to the services and specified purpose agreed between Strata and the Client and set out in the correspondence to which this document is enclosed or annexed ("the Services"). Strata does not purport to advise beyond the Services.

Third Parties
The Services are supplied to the Client for the sole benefit of the Client and must not be relied upon by any person or entity other than the Client. Strata is not responsible or liable to any third party. All parties other than the Client are advised to seek their own advice before proceeding with any course of action.

Provision of Information
The Client is responsible for the provision of all legal, survey and other particulars concerning the site on which Strata is providing the Services, including particulars of existing structures and services and features for the site and for adjoining sites and structures. The Client is also responsible for the provision of specialised services not provided by Strata. If Strata obtains these particulars or specialised services on the instruction of the Client, Strata does so as agent of the Client and at the Client's expense. Strata is not obliged to confirm the accuracy and completeness of information supplied by the Client or any third party service provider. The Client is responsible for the accuracy and completeness of all particulars or services provided by the Client or obtained on the Client's behalf. Strata is not liable, and accepts no responsibility, for any claim, demand, charge, loss, damage, injury or expense whatsoever suffered by the Client or any other person or entity resulting from the failure of the Client or third party to provide accurate and complete information. In the event additional information becomes available to the Client, the Client must inform Strata in writing of that information as soon as possible. Further advice will be provided at the Client's cost. Any report is prepared on the assumption that the instructions and information supplied to Strata has been provided in good faith and is all of the information relevant to the provision of the Services by Strata. Strata is not liable, and accepts no responsibility, for any claim, demand, charge, loss, damage, injury or expense whatsoever if Strata has been supplied with insufficient, incorrect, incomplete, false or misleading information.

Integrity
Any report provided by Strata presents the findings of the site assessment. While all reasonable care is taken when conducting site investigations and reporting to the Client, Strata does not warrant that the information contained in any report is free from errors or omissions. Strata is not liable, and accepts no responsibility, for any claim, demand, charge, loss, damage, injury or expense whatsoever resulting from errors in a report. Any report should be read in its entirety, inclusive of any summary and annexures. Strata does not accept any responsibility where part of any report is relied upon without reference to the full report.

Project Specific Criteria
Any report provided by Strata will be prepared on the basis of unique project development plans which apply only to the site that is being investigated. Reports provided by Strata do not apply to any project other than that originally specified by the Client to Strata. The Report must not be used or relied upon if any changes to the project are made. The Client should engage Strata to further advise on the effect of any change to the project. Further advice will be provided at the Client's cost. Strata is not liable, and accepts no responsibility, for any claim, demand, charge, loss, damage, injury or expense whatsoever where any change to the project is made without obtaining a further written report from Strata. Changes to the project may include, but are not limited to, changes to the investigated site or neighbouring sites, for instance, variation of the location of proposed building envelopes/footprints, changes to building design which may impact upon building settlement or slope stability, or changes to earthworks, including removal (site cutting) or deposition of sediments or rock from the site.

Classification to AS2870-2011
It must be emphasised that the site classification to AS2870-2011 and recommendations referred to in this report are based solely on the observed soil profile at the time of the investigation for this report and account has been taken of Clause 2.1.1 of AS2870 - 2011. Other abnormal moisture conditions as defined in AS2870 – 2011 Clause 1.3.3 (a) (b) (c) and (d) may need to be considered in the design of the structure. Without designing for the possibility of all abnormal moisture conditions as defined in Clause 1.3.3, distresses will occur and may result in non "acceptable probabilities of serviceability and safety of the building during its design life", as defined in AS2870 - 2011, Clause 1.3.1. Furthermore the classification is preliminary in nature and needs verification at the founding surface inspection phase . The classification may be changed at this time based upon the nature of the founding surface over the entire footprint of the project area. Any costs associated with a change in the site classification are to be incurred by the client. Furthermore any costs associated with delayed works associated with a founding surface inspection or a change in classification are to be borne by the client. Where founding surface inspections are not commissioned the classifications contained within this report are void.

Subsurface Variations with Time
Any report provided by Strata is based upon subsurface conditions encountered at the time of the investigation. Conditions can and do change significantly and unexpectedly over a short period of time. For example groundwater levels may fluctuate over time, affecting latent soil bearing capacity and ex-situ/insitu fill sediments may be placed/removed from the site. Changes to the subsurface conditions that were encountered at the time of the investigation void all recommendations made by Strata in any report. Strata is not liable, and accepts no responsibility, for any claim, demand, charge, loss, damage, injury or expense whatsoever resulting from any change to the subsurface conditions that were encountered at the time of the investigation. In the event of a delay in the commencement of a project or if additional information becomes available to the Client about a change in conditions becomes available to the Client, the Client should engage Strata to make a further investigation to ensure that the conditions initially encountered still exist. Further advice will be provided at the Client's cost. Without limiting the generality of the above statement, Strata does not accept liability where any report is relied upon after three months from the date of the report, (unless otherwise provided in the report or required by the Australian Standard

which the report purports to comply with), or the date when the Client becomes aware of any change in condition. Any report should be reviewed regularly to ensure that it continues to be accurate and further advice requested from Strata where applicable.

Interpretation
Site investigation identifies subsurface conditions only at the discrete points of geotechnical drilling, and at the time of drilling. All data received from the geotechnical drilling is interpreted to report to the Client about overall site conditions as well as their anticipated impact upon the specific project. Actual site conditions may vary from those inferred to exist as it is virtually impossible to provide a definitive subsurface profile which accounts for all the possible variability inherent in earth materials. This is particularly pertinent to some weathered sedimentary geologies or colluvial/alluvial clast deposits which may show significant variability in depth to refusal over a development area. Rock incongruities such as joints, dips or faults may also result in subsurface variability. Soil depths and composition can vary due to natural and anthopogenic processes. Variability may lead to differences between the design depth of bored/driven piers compared with the actual depth of individual piers constructed onsite. It may also affect the founding depth of conventional strip, pier and beam or slab footings, which may result in increased costs associated with excavation (particularly of rock) or materials costs of foundations. Founding surface inspections should be commissioned by the Client prior to foundation construction to verify the results of initial site characterisation and failure to insure this will void the classifications and recommendations contained within this report. Strata is not liable, and accepts no responsibility, for any claim, demand, charge, loss, damage, injury or expense whatsoever resulting from any variation from the site conditions inferred to exist.

Strata is not responsible for the interpretation of site data or report findings by other parties, including parties involved in the design and construction process. The Client must seek advice from Strata about the interpretation of the site data or report.

Report Recommendations
Any report recommendations provided by Strata are only preliminary. A report is based upon the assumption that the site conditions as revealed through selective point sampling are indicative of actual conditions throughout an area. This assumption cannot be substantiated until earthworks and/or foundation construction is almost complete. Where variations in conditions are encountered, Strata should be engaged to provide further advice. Further advice will be provided at the Client's cost. Strata is not liable, and accepts no responsibility, for any claim, demand, charge, loss, damage, injury or expense whatsoever if the results of selective point sampling are not indicative of actual conditions throughout an area or if the Client becomes aware of variations in conditions and does not engage Strata for further advice.

Geo-environmental Considerations
Where onsite wastewater site investigation and land application system designs are provided by Strata, reasonable effort will be made to minimise environmental and public health risks associated with the disposal of effluent within site boundaries with respect to relevant Australian guidelines and industry best practise at the time of investigation. Strata is not liable, and accepts no responsibility, for any claim, demand, charge, loss, damage, injury or expense whatsoever resulting from:

(i) changes to either the project or site conditions that affect the onsite wastewater land application system's ability to safely dispose of modelled wastewater flows; or
(ii) seepage, pollution or contamination or the cost of removing, nullifying or clearing up seepage, polluting or contaminating substances; or
(iii) poor system performance where septic tanks have not been de-sludged at maximum intervals of 3 years or AWTS systems have not been serviced in compliance with the manufacturers recommendations; or
(iv) failure of the client to commission both interim and final inspections by the designer throughout the system construction; or
(v) the selection of inappropriate plants for irrigation areas; or
(vi) damage to any infrastructure including but not limited to foundations, walls, driveways and pavements; or
(vii) land instability, soil erosion or dispersion; or
(viii) design changes requested by the Permit Authority.

Furthermore Strata does not guarantee septic trench and bed design life beyond 2 years from installation.

Strata does not consider site contamination, unless the Client specifically instructs Strata to consider the site contamination in writing. If a request is made by the Client to consider site contamination, Strata will provide additional terms and conditions that will apply to the engagement.

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(i) the Client must not use, infringe or otherwise appropriate the same other than for the purpose of the project without first obtaining the written consent of Strata; and

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