



**strata**  
geoscience and environmental

**Onsite Wastewater System Design for**

# **51 Franklin Parade Flinders Island**

**October 2018**

*Site and Soil Evaluation and Onsite Wastewater System Design  
57 West Bay Road Rowella*

**Important Notes:**

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## **1. Introduction**

Strata Geoscience and Environmental Pty Ltd was commissioned to perform a limited scope geotechnical and environmental investigation for:

	<b>Client and Site Details</b>
Client Name	Andrew Thompson
Site Address	51 Franklin Parade Flinders Island
Proposed Development	Boundary Adjustment

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

## **2. Summary of Investigation**

The investigation's key findings were:

	<b>SSE and Design Outcomes</b>
Key Site and Soil Limitations to Wastewater System Design	Proximal receiving environments, Variable soils, slope
Summary of Proposed System Specification	Primary Treatment: Septic Tank Secondary Treatment: Trench Land Application: Trench

## **3. Project Specific Criteria**

Site plans (if available) are presented in Appendix 1.

## **4. Investigation**

Please refer to Appendix 4 for the results of field investigation including bore logs and other relevant data.

## 5. Interpretation

The site is underlain by variable sands and gravels developing from inferred Devonian aged Granite.

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 low to moderate permeability for the acceptance of wastewater flows and will show a moderate to high cation exchange complex for the absorption of nutrients from effluent.

**Environmental Sensitivities** – The development area is gently sloping with nearest surface water body located approximately 200+ m down slope of the proposed residence. Groundwater was not intersected throughout geotechnical investigation and is anticipated to be several meters beneath the existing ground surface.

**Climate** - the nearest weather station with long term data is the Whitemark Station with a mean annual rainfall of 715.4 mm (BOM 2018) and no evaporation data.

**Title Searches** – Searches of the Land Title did not show any easements or right of ways which have affected 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. Please refer to specific design notes and diagrams contained within this report for further information regarding the issues raised above.

## 6. Onsite Wastewater Flow and Land Application Area Modelling

### 6.1 Site and Soil Considerations

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

	Topsoils (A1-A3)	Subsoils (B1-B3)
Description	SAND (SP/SW/SM)	SAND (SP/SW/SM)
Soil Category (AS1547-2011)	2	2
Indicative Permeability (m/d)	2.0	2.0
Recommended DIR (mm/d)/DLR (L/D)	30	30
pH	6.1	6.1
EC	2.1	2.1
Emmerson Class	8	8

### 6.2 Risk Management of Site and Soil Constraints

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

Site/Soil Constraint	Risk Mitigation Measure
Proximal sensitive receiving environments and boundaries	<ul style="list-style-type: none"> <li>• Appropriate setbacks</li> </ul>
Runoff	<ul style="list-style-type: none"> <li>• Appropriate scaling of trench</li> </ul>

### 6.3 Proposed Wastewater System Concept Design

It is therefore recommended that the following system be adopted:

Treatment Train Component	Proposed Concept Design
Primary Treatment	<ul style="list-style-type: none"> <li>• Septic tank</li> </ul>
Secondary Treatment	<ul style="list-style-type: none"> <li>• trench</li> </ul>
LAA Design	<ul style="list-style-type: none"> <li>• trench</li> </ul>

### 6.4 Effluent Flow and Land Application Area Modelling

The development proposal is for the extension of the existing dwelling to create a 4 bedroom equivalent house 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 – Main Dwelling	
Number of Proposed Bedrooms	2
Number of Equivalent Persons	4
Water Source (Tank/Mains)	Tank
Daily Loading (L/per person/D)	120
Total Daily Loading (L/D)	480
Adopted Amended Soil Category (AS1547-2012)*	2
Indicative Permeability (m/d)	2
Adopted Amended DLR/DIR (mm/d OR L/m <sup>2</sup> /d)*	30
Required LAA (m <sup>2</sup> )	16

The absorption area could be catered for by one 15m x 1.2 m gravity dosed bed 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.

## **6.5 System Specification**

The system has the following specification (see Appendix 1-3 for further details):

- Min DN100 gravity fed sewer pipe
- Min 3000L Dual Purpose Septic Tank (with outlet filter)
- Min one 15m x 1.2m bed
- Provision for 100% reserve area (must remain free from development)

## **6.6 Performance Requirements**

Nutrient, bacterial and viral reduction performance should be inline with the prescriptions of AS1547-2012 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.

## **6.7 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 (if fitted).
- 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.



## **5.7 Compliance with Building Act 2016**

Demonstration of compliance to Building Act (2016) scheme overleaf

**TASMANIAN BUILDING ACT 2016**

Acceptable Solutions	Performance Criteria	Compliance
<p><b>A1</b></p> <p>Horizontal separation distance from a building to a land application area must comply with one of the following:</p> <ul style="list-style-type: none"> <li>a. be no less than 6m:</li> <li>b. be no less than: <ul style="list-style-type: none"> <li>(i) 3m from an upslope or level building.</li> <li>(ii) If primary treated effluent to be no less than 4m plus 1m for every degree of average gradient from a downslope building</li> <li>(iii) If secondary treatment and subsurface application, no less than 2m plus 0.25m for every degree of average gradient from a downslope building</li> </ul> </li> </ul>	<p><b>P1</b></p> <p>a. The land application area is located so that the risk of wastewater reducing the bearing capacity of the buildings foundations is acceptably low</p>	<p><b>Complies with A1 b(i)</b></p>
<p><b>A2</b></p> <p>Horizontal separation distance from downslope water to a land application area must comply with (a) or (b).</p> <ul style="list-style-type: none"> <li>a) be no less than 100m</li> <li>b) be no less than the following: <ul style="list-style-type: none"> <li>i) If primary treated effluent to be no less than 15m plus 7m for every degree of average gradient from a downslope surface water, or;</li> <li>ii) if secondary treatment and subsurface application, no less than 15m plus 2 m for every degree of average gradient from a downslope surface water</li> </ul> </li> </ul>	<p><b>P2</b></p> <p>Horizontal separation distance from downslope water to a land application area must comply with all of the following:</p> <ul style="list-style-type: none"> <li>a) Setbacks must be consistent with AS/NZS 1547 Appendix R</li> <li>b) A risk assessment in accordance with Appendix A of AS/NZS 1547 has been completed that demonstrates that the risk is acceptable</li> </ul>	<p><b>Complies with A2 (b) i</b></p>
<p><b>A3</b></p> <p>Horizontal separation distance from a property boundary to a land application area must comply with either of the following:</p> <ul style="list-style-type: none"> <li>a) be no less than 40m from a property boundary</li> <li>b) be no less than the following: <ul style="list-style-type: none"> <li>i) If primary treated effluent 2m for every degree of average gradient from a downslope property boundary, or;</li> <li>ii) if secondary treatment and subsurface application, no less</li> </ul> </li> </ul>	<p><b>P3</b></p> <p>Horizontal separation distance from the boundary to a land application area must comply with all of the following:</p> <ul style="list-style-type: none"> <li>a) Setbacks must be consistent with AS/NZS 1547 Appendix R, and</li> <li>b) A risk assessment in accordance with Appendix A of AS/NZS 1547 has been completed that demonstrates that the risk is acceptable</li> </ul>	<p><b>Complies with A3 (b) (II)</b></p>

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than 1.5m plus 2 m for every degree of average gradient from a downslope surface water		
<p>A4</p> <p>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</p>	<p>P4</p> <p>Horizontal separation distance from a downslope bore to a land application area must comply with all of the following:</p> <ul style="list-style-type: none"> <li>a) Setbacks must be consistent with AS/NZS 1547 Appendix R, and</li> <li>b) A risk assessment in accordance with Appendix A of AS/NZS 1547 has been completed that demonstrates that the risk is acceptable</li> </ul>	<b>Complies with A4</b>
<p>A5</p> <p>Vertical separation distance between groundwater and a land application area must be no less than</p> <ul style="list-style-type: none"> <li>a) 1.5m if primary treated effluent; or</li> <li>b) 0.5m if secondary treated</li> </ul>	<p>P5</p> <p>Vertical separation distance between groundwater to a land application area must comply with all of the following:</p> <ul style="list-style-type: none"> <li>a) Setbacks must be consistent with AS/NZS 1547 Appendix R, and</li> <li>b) A risk assessment in accordance with Appendix A of AS/NZS 1547 has been completed that demonstrates that the risk is acceptable</li> </ul>	<b>Complies with A5 (b)</b>
<p>A6</p> <p>Vertical separation distance between a limiting layer and a land application area must be no less than</p> <ul style="list-style-type: none"> <li>a) 1.5m if primary treated effluent; or</li> <li>b) 0.5m if secondary treated</li> </ul>	<p>P6</p> <p>Vertical setback must be consistent with AS/NZS 1547 Appendix R,</p>	<b>Complies with A6(b)</b>

## 7. 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 from the main dwelling and auxiliary units are likely to be no more than 480 L/day respectively
- Modelled flows will require a land application area comprising 16 m<sup>2</sup>. Such flows should be treated to primary levels through trenches.
- It is likely that peak flows associated with the modelled development should be within the buffering capacity of proposed system both in terms of the system sizing as well as for their acceptance into the disposal area if the above recommendations are adopted.
- 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 for the proposed development is rated as low.**



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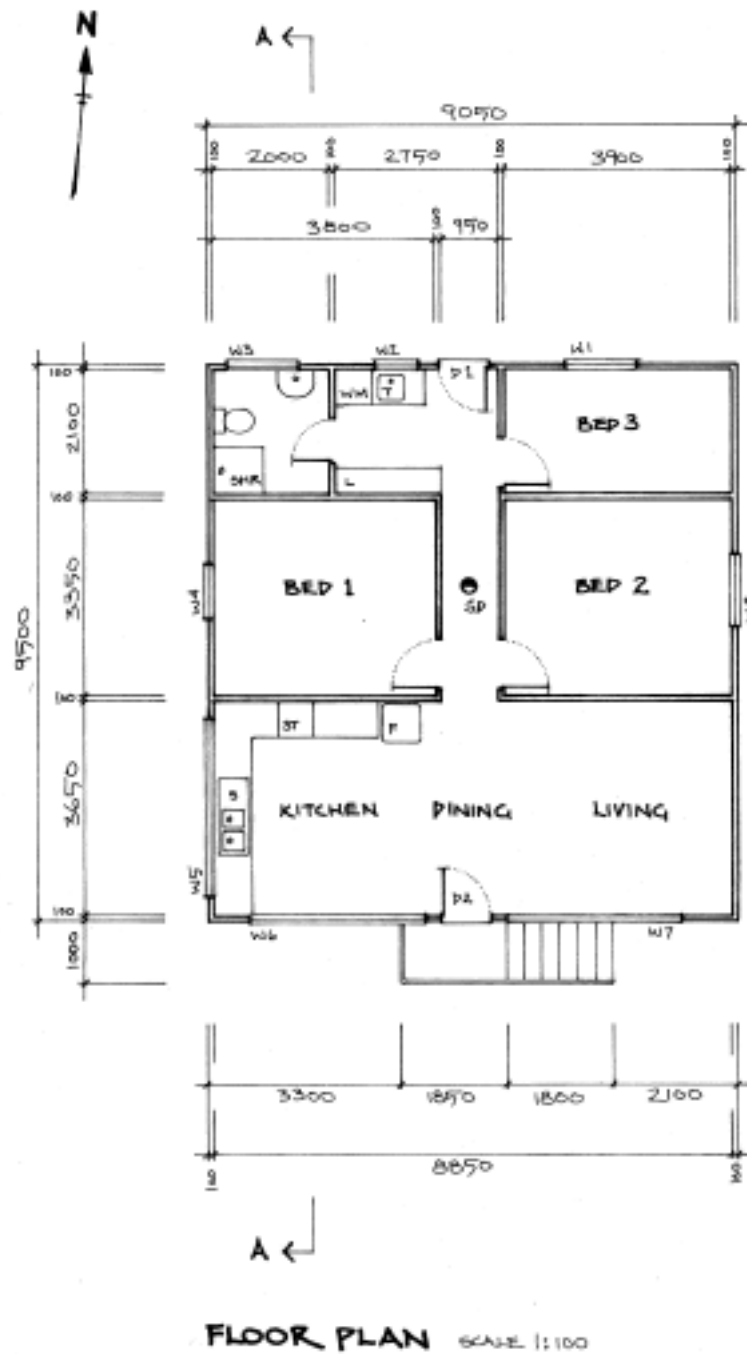


## **8. References**

- AS1726-1993- Geotechnical Site Investigations
- AS 1547-2012 Onsite Wastewater Disposal
- Bureau of Meteorology Website- Monthly Climate Statistics

## Appendix 1 Floor Plans

□

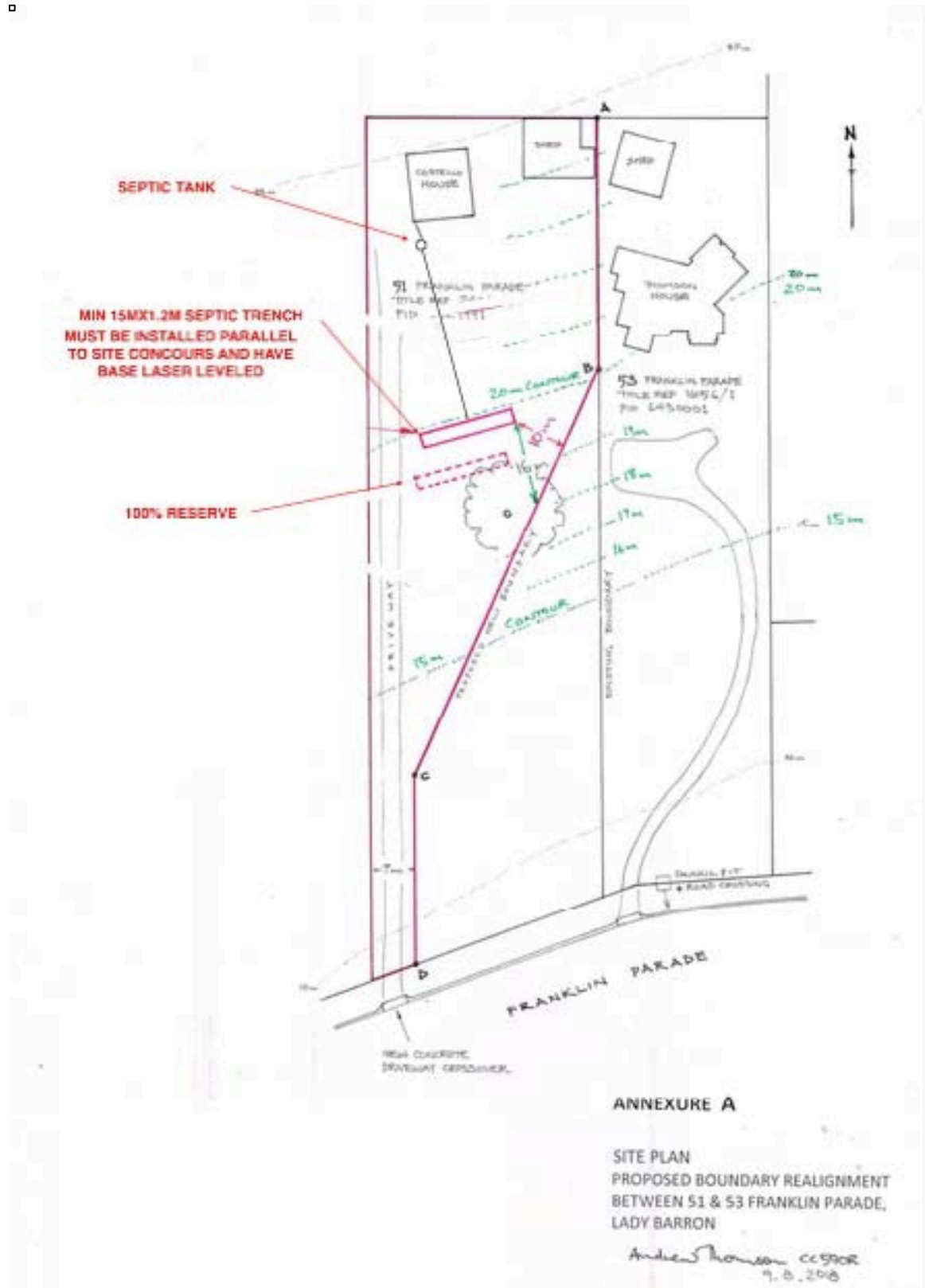


## Appendix 2 Detailed Wastewater Design Calculations

<b>Wastewater Loading Certificate* - Main Dwelling</b>	
<b>System Capacity</b>	4 EP at 120L/person/day = 480 L/D
<b>Design Summary</b>	
• Effluent Quality	Primary
• Adopted Soil category	2
• Amended Adopted Soil Category	NA
• Adopted DLR/DIR (mm/d OR L/m <sup>2</sup> /d)	30
• LAA Design	Bed
• Primary LAA Requirement	16 m <sup>2</sup>
• Reserve Area	Min 100% reserve LAA must be maintained in an undeveloped state near the primary system as identified on the site plan
<b>Fixtures</b>	Assumes Std Water saving fixtures inc 6/3L dual flush toilets, aerator forccets, Washing/dishwashing machines with min WELS rating 4.5 star
<b>Consequences of Variation in Effluent Flows</b>	
• High Flows	The system should be capable of buffering against flows of up to 10% above modelled in a 24 hr period. System not rated for spa/bath installation.
• Low Flows	Should not affect system performance
<b>Consequences of Variation in Effluent Quality</b>	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.
<b>Consequences of Lack of Maintenance and Monitoring Attention</b>	<p>Owners should maintain the system in compliance with Home Owners Manual.</p> <p>All livestock, vehicles and persons to be excluded from the LAA.</p> <p>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.</p>

## Appendix 3 Septic Trench Design and Construction Notes

### Site Plan





## Septic Trench Design and Construction Notes

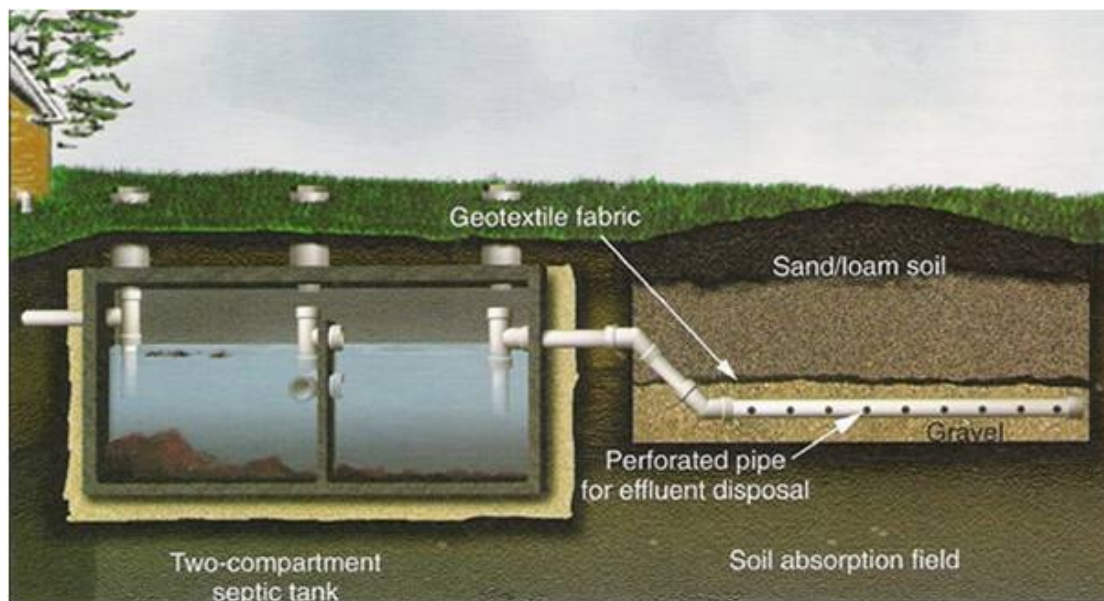


Figure 1 Septic Tank and Trench cross section

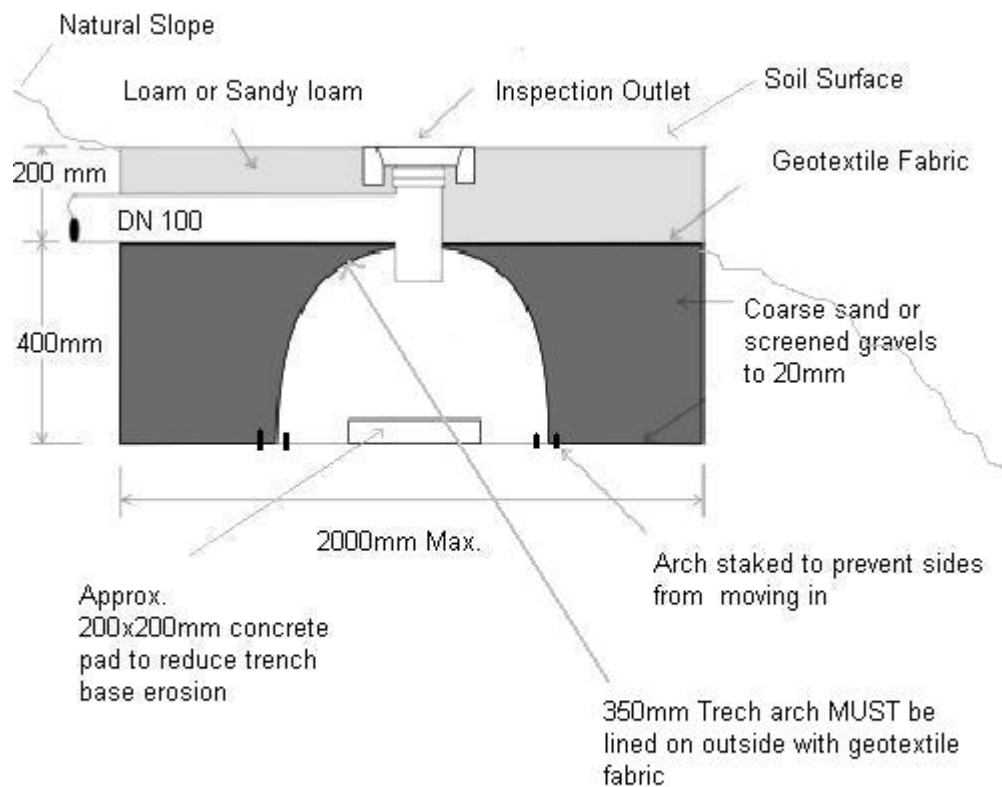


Figure 2 Septic Trench cross section showing key dimensions

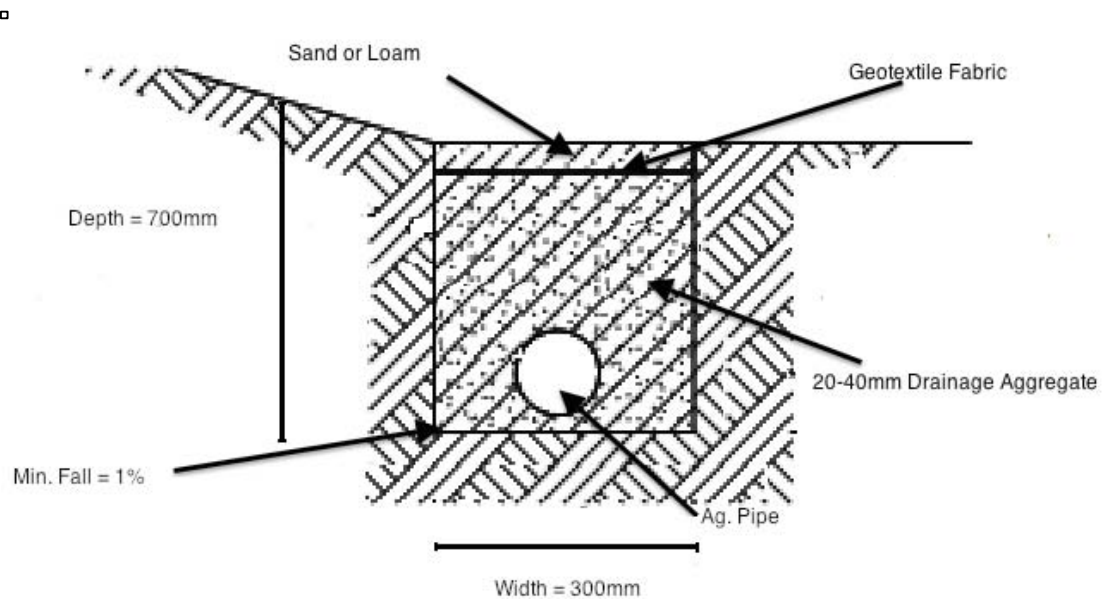
### Septic Tank Installation

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 minimum 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.

### Septic Trench Design and Construction Notes (cont)

1. Each trench has the dimensions of 15 m X 1.2m X 0.6 m.
2. There is one trench in total as located on site plan giving a total trench area of 16 m<sup>2</sup> (See Appendix 1)
3. Trenches must be positioned parallel with the contours of the land and the base of the trench **MUST** be excavated evenly and level. In clay soils smearing of walls and floors of bed **MUST** be avoided and should be scoured to a depth of 5-10 mm to reduce base and sidewall sealing after applying Gypsum at a rate of 0.5Kg/m<sup>2</sup>.
4. Effluent should be loaded as close as possible to the mid point of the trench.
5. A 200mmx200mm concrete pad should be constructed immediately below the trench inlet to reduce the potential for trench base erosion.
6. A self supporting trench arch of minimum dimensions 350mm high and 450mm high should be inserted into the trench and secured to prevent inwards movement.
7. The lower 400mm is to be filled with coarse sand OR clean gravels to 20mm
8. Geo-textile to be overlain on the top of the gravel/arch to prevent soil from clogging gravels/arch slots. For sandy soils the sides of the trench should also be lined.
9. Backfilling of the trench 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.
10. An inspection outlet should be placed above the inlet pipe.
11. Slight adjustments to the location of Septic Tank/Flow Diverter/Trenches are permitted to achieve correct fall to levelled trench bases.
12. Vehicles and livestock should be excluded from trench area.

### Interceptor Drain Design and Construction Notes




**Figure 3 Ag drain cross section showing key dimensions**

1. Ag drain should be located upslope of the proposed irrigation area/trenches/beds as shown in site plan.
2. Ag drain should be 300mm wide and 700mm deep. The base of the trench **MUST** be excavated evenly with a minimum fall to the discharge point of 1%. In clay soils smearing of walls and floors of bed **MUST** be avoided.
3. Ag drains are best employed for areas where significant subsurface groundwater recharge is anticipated.
4. Ag. drains should be constructed to ensure adequate fall to appropriate stormwater discharge points or other suitable areas provided that any water is not disposed of over site boundaries.

## Appendix 4 Site and Soil Evaluation

Table 3 Site Features	
Climate	The nearest weather station with long term data is the Whitemark Station with a mean annual rainfall of 715 mm (BOM 2014) 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	Grass/natives
Landform	Slope
Slope	Slight slopes
Fill	No fill evident
Rocks and Rock Outcrops	None
Erosion Potential	None known
Surface Water	200m+
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	The site receives minimal run on and does not show signs of springs or other areas of ephemeral subsurface water retention. Given clay subsoils perched watertable may exist in some areas of the site
Recommended Buffer Distances	Given the significant land area, all buffer distances as stipulated in EPA (2013) are achievable.
Available Land Application Area	There is surplus space to land application area requirements (including reserves).

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 <b>strata</b> geoscience and environmental															Bore Log										BH1	
Client: See Section 1															Coords											
Project: Proposed Construction															Bearing: Dip:											
Drill Type: Dynamic Probe Drilling Rig															R.L: SEE WS											
Drilling Met Fluid Nil															Logged by: SN											
															Date:											
RL	Depth (mm)	Graphic Log	Material Description	Soil				Rock				Weathering				Frac. Spacing (n)				Sampling and Insitu Testing						
				V Soft/V Loose	Soft/Loose	Firm/M Dense	Stiff/Dense	V Stiff/V Dense	Ex Low	Very Low	Low	Medium	High	Very High	Extremely High	EW	MW	SW	FS	FR	0.01	0.05	0.1	0.5	1	TYPE
			Greyish Brown SAND (SP) loose																							
	500		Trending Grey SAND (SW) MD, NP, LBU																							
	1000																									
	1500																									
	2000																									
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	3500																									
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	5500																									
	6000																									

BORE TERMINATED 1.5M

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## Appendix 5 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. Classification is based upon a range of expected ground surface movement as indicated in AS2870-2011. Where the range of movement exceeds the stipulations for the nominated classification 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.

### Slope Instability Risks

Where comment, modelling or treatment options are suggested to limit the risk of slope instability Strata is not liable, and accepts no responsibility, for any claim, demand, charge, loss, damage, injury or expense whatsoever resulting from actual slope instability or mass movement over the site at any point over the design life of any structures or neighbouring structures.

### 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



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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 anthropogenic 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 5 years from installation, given the influence various household chemicals have on soil structural decline and premature trench failure in some soil types

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.

### **Copyright and Use of Documents**

Copyright in all drawings, reports, specifications, calculations and other documents provided by Strata or its employees in connection with the Services remain vested in Strata. The Client has a licence to use the documents for the purpose of completing the project. However, the Client must not otherwise use the documents, make copies of the documents or amend the documents unless express approval in writing is given in advance by Strata. The Client must not publish or allow to be published, in whole or in part, any document provided by Strata or the name or professional affiliations of Strata, without first obtaining the written consent of Strata as to the form and context in which it is to appear.

If, during the course of providing the Services, Strata develops, discovers or first reduces to practice a concept, product or process which is capable of being patented then such concept, product or process is and remains the property of Strata and:

- (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
- (ii) the Client is entitled to a royalty free licence to use the same during the life of the works comprising the project.

### **Digital Copies of Report**

If any report is provided to the Client in an electronic copy except directly from Strata, the Client should verify the report contents with Strata to ensure they have not been altered or varied from the report provided by Strata.

# CERTIFICATE OF THE RESPONSIBLE DESIGNER

Section 94  
Section 106  
Section 129  
Section 155

To: ANDREW THOMPSON

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:

GC6113K

Email address:

sven@strataconsulting.com.au

## Details of the proposed work:

Owner/Applicant

AS ABOVE

Designer's project  
reference No.

Address:

51 FRANKLIN PARADE

Lot No:

ROWELLA

Type of work:

Building work ☐Plumbing work ☒

(X all applicable)

Description of work:

WASTEWATER SYSTEM SPECIFICATION

(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
	<input type="checkbox"/> Building design	Architect or Building Designer
	<input type="checkbox"/> Structural design	Engineer or Civil Designer
	<input type="checkbox"/> Fire Safety design	Fire Engineer
	<input type="checkbox"/> Civil design	Civil Engineer or Civil Designer
	<input checked="" type="checkbox"/> Hydraulic design	Building Services Designer
	<input type="checkbox"/> Fire service design	Building Services Designer
	<input type="checkbox"/> Electrical design	Building Services Designer
	<input type="checkbox"/> Mechanical design	Building Service Designer
	<input type="checkbox"/> Plumbing design	Plumber-Certifier; Architect, Building Designer or Engineer
	<input type="checkbox"/> Other (specify)	
Deemed-to-Satisfy: <input checked="" type="checkbox"/>	Performance Solution: <input type="checkbox"/>	(X the appropriate box)



Other details:
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<b>Design documents provided:</b>	
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The following documents are provided with this Certificate –

*Document description:*

Drawing numbers:	Prepared by: SN	Date: 16/10/18
Schedules:	Prepared by: SN	Date: 16/10/18
Specifications:	Prepared by: SN	Date: 16/10/18
Computations:	Prepared by: SN	Date: 16/10/18
Performance solution proposals:	Prepared by: SN	Date: 16/10/18
Test reports:	Prepared by: NA	Date: NA

<b>Standards, codes or guidelines relied on in design process:</b>	
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AS1547-2012

<b>Any other relevant documentation:</b>	
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STRATA REPORT 03097

<b>Attribution as designer:</b>	
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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 in 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

SN

Date:  
16/10/18

Licence No:

GC6113K

**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:**

- ☒ The works will not increase the demand for water supplied by TasWater
- ☒ 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
- ☒ The works will not require a new connection, or a modification to an existing connection, to be made to TasWater's infrastructure
- ☒ The works will not damage or interfere with TasWater's works
- ☒ The works will not adversely affect TasWater's operations
- ☒ The work are not within 2m of TasWater's infrastructure and are outside any TasWater easement
- ☒ I have checked the LISTMap to confirm the location of TasWater infrastructure
- ☒ 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](http://www.taswater.com.au)

Name: (print)

Signed

Date

Designer:

SVEN NIELSEN

SN

Date:  
16/10/18