
Site & soil evaluation and design report.

Proposed on-site wastewater management system at 3856 Bruny Island Main Road, Alannah, TAS 7150



Richard Mason, Onsite Assessments Tas

20 Adelong Drive, Kingston

richardmason@iprimus.com.au

Mobile 0418 589309

SITE AND SOIL EVALUATION REPORT

Background

This report and design information has been provided to assist the client in considering suitable options for a new on-site wastewater management system to service a residential development.

The information provided in this Report provides Design Information, Plans and Specifications suitable for inclusion in supporting documentation to enable the client to apply for a Plumbing Permit for an on-site wastewater management system.

Please note:

This design is provided as a Deemed to Satisfy proposal, consistent with Clause A2G3 NCC 2022 Vol 3.

Part 1. Site and soil evaluation (S&SE)

Location: 3856 Bruny Island Main Road, Alonnah TAS 7150

PID: 5060686

Title Ref: 209334/1

Developer: Luke Rasmussen

Project: New onsite wastewater management system.

Site area: approximately 3.6Ha.

Soil Category:

(as stated in AS/NZS 1547-2012)

Modified Emerson Test Required?

N

1,...2,...3,...4,...5,...**6**

If Yes, result:

Soil Profile:

A Christie Post Driver Soil Sampling Kit, comprising CHPD78 Christie Post Driver with Soil Sampling Tube (50mm OD x 1.6m) and a Seca Mighty Probe (1200mm) were used to obtain undisturbed soil cores or soil depth information in the proposed land application area; this being considered sufficient to provide a representative picture of soil conditions; similar soil profiles are seen throughout the site.

Soil profile

1. A Horizon: 0-50mm: sandy clay loam, brown 7.5YR 4/2; moderate structure; fine roots, moist, Category 4.
2. B Horizon: 50-1100mm: medium clay, yellowish brown 10YR 5/8, massive, moist. Category 6.

3. C Horizon: 1100-1400mm+: light clay, yellow 10YR 8/6, strong structure, damp. Category 5.

Refusal not struck to 1400mm.

Test core boreholes to 1400mm did not yield or demonstrate presence of groundwater.

Soil dispersion

Soil was not tested for dispersion but it is considered that it is possible that the clay components may have dispersive properties. Given prior experience with soils in this area, it is reasonably concluded that any dispersive tendencies in this soil profile can be successfully managed by observing the following precautions:

1. Application of gypsum to the base of the absorption bed/land application area prior to installation of distribution infrastructure, as per Part B5 of AS/NZS1547.2012 On-site domestic waste-water management.
2. Avoiding disturbing the soil whilst in a wet condition; raking/ripping should only occur when the soil is dry (i.e. during summer conditions) and should be treated with gypsum as soon as exposed and covered with imported sand as soon as possible; disturbed soil surfaces must not be left exposed to the elements during installation for any longer than is strictly necessary.

Measured or Estimated Soil Permeability (m/d)

Estimated from textural classification.

B Horizon <0.06m/day

Effluent Application Rates

(This is a recommendation to the designer advising how many litres of effluent should be applied to the soil for every square metre of absorption trench or other land application system.)

AWTS & irrigation 2^o treated effluent – 2mm/day

Absorption trench/bed - not suitable

Soil profile characteristics preclude the use of in-ground trenches or beds.

Topography

The slope within the proposed land application area varies between 1-2°, towards the SSW.

Drainage lines / water courses: Nearest downslope water is Barnes Creek which lies more than 200m downslope to the south. Shoreline of D'Entrecasteaux Channel is 400m to west.

Geology: Shown on LISTmap geological layer as Jurassic dolerite; this is supported by observations of soil profiles on site.

Site History (land use)

Site subdivided for medium density residential use; there are no known prior uses of the site which would compromise the installation and sustainable operation of an onsite wastewater management system.

Site Exposure and Climate.

Aspect: The site has an open aspect and all-day solar exposure for most of the year.

Pre-dominant wind direction:
North-west to south-westerly.

Climate: Annual rainfall averages 947mm/year (Great Bay), retained rain (RR) of 805mm/year with maximum daily average temperature of 18.3°C and minimum of 11.3°C (Cape Bruny)), giving an annual evapotranspiration (ET) of 613mm. Annual average RR on this site is predicted to exceed average annual ET by 192mm.

Environmental Issues

Location of sensitive vegetation, high water table, swamps, waterways etc.

The vegetation on this site has been somewhat altered, with all native vegetation having been cleared to pasture within the proposed land application area; the operation of an on-site wastewater management system on this site would not result in harm to natural flora values.

There are no active water bores depicted on the MRT Groundwater Information Portal within 500m this site.

Drainage/Groundwater

Site is affected by run-off from upslope land; the site is moderately well-drained but possibly vulnerable to waterlogging in winter. Efficient upslope drainage will be required to be installed around the land application area.

Depth to seasonal groundwater (m)

Shallow groundwater was not detected in test borings to 1400mm depth; presence of shallow groundwater is not anticipated at this site.

Site Stability

Given the slope of 2°, landslip/instability is not considered to be an issue for this site.

Part 2. On-site wastewater management system design (Deemed to satisfy).

On Site Wastewater Management System Options.

Given the soil profile constraints of the site, secondary treatment of wastewater is required prior to land disposal/absorption, by subsurface irrigation; an accredited aerated wastewater treatment system, producing disinfected, secondary treated effluent meets this requirement.

Aerated wastewater treatment system unit:

It is recommended that one of the accredited units as listed below be installed:

- Fujiclean ACE1200 - DOC/20/66067
- Taylex ABS 1500 – DOC/20/89089
- UBI Aqua 6000 MKII – DOC/22/103618
- EnviroTas AS - DOC/22/55457

Land Application Area

The proposed land application area will comprise a subsurface irrigation system, which will be located in the open paddock area between the proposed house and the front road boundary.

Water Supply

Rain water supply.

Loadings.

The on-site wastewater management system service a 3-bedroom house, with total design occupancy of 5 persons; per capita wastewater loading is assumed to be 120 litres per day, giving a total loading of 600 litres per day. This assumes mains water supply loadings as per AS/NZS1547.2012, Table H1.

Design Irrigation Rate

A DIR of 2mm per day appropriate for the Category 6 soil profile is applicable

Wastewater Land Application Area. (Single bedroom ancillary apartment only)

Surface irrigation area required:

$$= \text{daily wastewater loading} / \text{Design irrigation rate for Cat 6 soil.}$$

$$= 600 \text{ litres per day} / 2\text{mm day}$$

$$= \mathbf{300\text{m}^2}$$

Land application area will comprise a rectangle 25m x 12m and be located 5m from the boundary with Bruny Island; surface soil profile (A horizon) will be improved by the importation of 150mm depth of sandy loam.

Irrigation area hydraulic design summary

Length dripperline (m)	Dripper spacing	Dripper flow rate (l/hr)	Number of drippers	Total dripper flow rate L/hr	Total dripper flow rate (L/min)	Head loss (m)
300	0.3	2.3	1000	2300	38.33333333	
Length supply pipe	Material supply pipe	ID pipe	Friction loss (m) at flow rate L/min			
40	LDPE	32	1.03			1.03

Friction loss from other pipe fittings						
25%			0.26			0.26
Type of filter	Make	Model	Friction loss (m) at flow rate L/min			
disc	Netafim	1" (25mm)	0.422			0.422
Type of indexing valve	Model		Friction loss (m) at flow rate L/min			
K Rain						0
					Total Friction head (m)	1.71
Differential elevation in (m)	(pump to irrigation area)					
2					Elevation head (m)	2
Operating head of dripperline (m)					Operating head (m)	
10					10	10
Total	Dynamic	Head	(TDH)	in m		13.71
Required	pump	capacity	(minimum)		@ 38L/min	13.71 TDH

Pump selection

Irrigation pump fitted in the aerated wastewater treatment system unit must be capable of supplying at least 40L/min at a minimum head of 15m.

Upslope drainage of land application area.

A cut-off drain, to divert all upslope surface and stormwater flows around the land application areas is to be installed.

Compliance with statutory/planning requirements.

The proposal meets the relevant provisions of the Director's Guidelines for on-site wastewater management systems as detailed below:

Compliance Table Directors Guidelines for OSWM		
Acceptable Solutions	Performance Criteria	Compliance achieved by
5.1 To ensure sufficient land is available for sustainable onsite wastewater management for buildings.		
A1 A new dwelling must be provided with a land application area that complies with Table 3.	P1 A new dwelling must be provided with a land application area that meets all of the following: a) The land application area is sized in accordance with the requirements of AS/NZS 1547; and b) A risk assessment in accordance with Appendix A of AS/NZS 1547 has been completed that demonstrates that the risk is acceptable.	A1 390m ² available for land application area.
5.2 To ensure sustainable onsite wastewater management for commercial and non-residential buildings (Class 3-9).		
A1 An onsite wastewater management system including the land application area for non-residential buildings must satisfy all of the following: (a) be sized based on the hydraulic and organic loadings contained in Table 4 and design loading or irrigation rates contained in AS/NZS 1547; (b) be located in accordance with clause 7.1	P1 An onsite wastewater management system including the land application area for non-residential building must satisfy all of the following: a) A site and soil evaluation and design report prepared by a suitably person determined by the Director demonstrating that the land application area is of sufficient size to treat and manage the wastewater generated from the proposed building within the property boundaries. b) The SSE report and system design demonstrates the design is consistent with AS/NZS 1547 and uses appropriate hydraulic and organic loading rates for the proposed activity. c) A risk assessment in accordance with Appendix A of AS/NZS 1547 has been completed that demonstrates that the risk is acceptable. d) The land application area is to be located in accordance with the acceptable solution or performance criteria specified in clause 7.1.	n/a
5.6 Area required for on-site wastewater management – building extensions, alterations or outbuildings (Building Class 1-10)		
A2 An outbuilding, addition or alteration to an existing building, or change of use of that building, must not encroach onto or be within 2m (if upslope) or 6m (if downslope) of an existing land	P2 An outbuilding addition or alteration to an existing building or change of use of that building, must be provided with a land application area (including land reserved for a future land application area) that	n/a

<p>application area (including land reserved for a future land application area) or a wastewater treatment unit and comply with at least one of the following:</p> <p>a) not increase the number of bedrooms (or rooms reasonably capable of being used as a bedroom) or otherwise increase the potential volume of wastewater generated onsite; and</p> <p>b) not increase the number of bedrooms (or rooms reasonably capable of being used as a bedroom) or otherwise increase the potential volume of wastewater generated onsite to greater than that allowed for in the design of the existing OWMS.</p>	<p>meets all of the following:</p> <p>a) The land application area is of sufficient size to comply with the either Appendix L, M or N and setback distances are consistent with Appendix R of AS/NZS 1547; and</p> <p>b) A risk assessment in accordance with Appendix A of AS/NZS 1547 has been completed that demonstrates that the risk is acceptable.</p>	
<p>7. Standards for Wastewater Land Application Areas</p>		
<p>A1 Horizontal separation distance from a building to a land application area must comply with one of the following:</p> <p>a) be no less than 6m;</p> <p>b) be no less than:</p> <p>(i) 3m from an upslope boundary or level building;</p> <p>(ii) If primary treated effluent to be no less than 4m plus 1m for every degree of average gradient from a downslope building;</p> <p>(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.</p>	<p>P1 The land application area is located so that the risk of wastewater reducing the bearing capacity of a building's foundations is acceptably low.</p>	<p>A1(a) Land application area is located minimum of 15m from nearest building.</p>
<p>A2 Horizontal separation distance from downslope surface water to a land application area must comply with (a) or (b)</p> <p>(a) be no less than 100m; or</p> <p>(b) be no less than the following:</p> <p>(i) if primary treated effluent 15m plus 7m for every degree of average gradient to downslope surface water; or</p> <p>(ii) if secondary treated effluent and subsurface application, 15m plus 2m for every degree of average gradient to down slope surface water.</p>	<p>P2 Horizontal separation distance from downslope surface water to a land application area must comply with all of the following:</p> <p>a) Setbacks must be consistent with AS/NZS 1547 Appendix R;</p> <p>b) A risk assessment in accordance with Appendix A of AS/NZS 1547 has been completed that demonstrates that the risk is acceptable.</p>	<p>A2(a) 200m from downslope surface water.</p>
<p>A3 Horizontal separation distance from a property boundary to a land application area must comply with either of the following:</p> <p>(a) be no less than 40m from a property boundary; or</p>	<p>P3 Horizontal separation distance from a property boundary to a land application area must comply with all of the following:</p> <p>(a) Setback must be consistent with</p>	<p>A3(b)(i) Land application area is 35m from cross-slope boundary.</p> <p>A3(b)(iii)</p>

<p>(b) be no less than:</p> <p>(i) 1.5m from an upslope or level property boundary; and</p> <p>(ii) If primary treated effluent 2m for every degree of average gradient from a downslope property boundary; or</p> <p>(iii) If secondary treated effluent and subsurface application, 1.5m plus 1m for every degree of average gradient from a downslope property boundary.</p>	<p>AS/NZS 1547 Appendix R; and</p> <p>(b) A risk assessment in accordance with Appendix A of AS/NZS 1547 has been completed that demonstrates that the risk is acceptable.</p>	<p>Secondary treatment etc, 2° slope minimum separation 3.5m.</p> <p>Land application area is 6m from downslope (SW) boundary.</p>
<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 downslope bore, well or similar water supply to a land application area must comply with all of the following:</p> <p>(a) Setback must be consistent with AS/NZS 1547 Appendix R; and</p> <p>(b) A risk assessment completed in accordance with Appendix A of AS/NZS 1547 demonstrates that the risk is acceptable.</p>	<p>A4</p> <p>200m+ to nearest active borehole. (None known).</p>
<p>A5</p> <p>Vertical separation distance between groundwater and a land application area must be no less than:</p> <p>(a) 1.5m if primary treated effluent; or</p> <p>(b) 0.6m if secondary treated effluent</p>	<p>P5</p> <p>Vertical separation distance between groundwater and a land application area must comply with the following:</p> <p>(a) Setback must be consistent with AS/NZS 1547 Appendix R; and</p> <p>(b) A risk assessment completed in accordance with Appendix A of AS/NZS 1547 that demonstrates that the risk is acceptable</p>	<p>A5(b)</p> <p>Groundwater not struck in test cores to refusal at 1400mm and is considered unlikely to be present.</p> <p>Land application area design provides 1400mm separation to this depth.</p>
<p>A6</p> <p>Vertical separation distance between a limiting layer and a land application area must be no less than:</p> <p>(a) 1.5m if primary treated effluent; or</p> <p>(b) 0.5m if secondary treated effluent.</p>	<p>P6</p> <p>Vertical setback must be consistent with AS/NZS1547 Appendix R.</p>	<p>A6(b)</p> <p>Refusal not struck to 1400mm.</p> <p>Subsurface irrigation system provides minimum vertical separation of 1400mm to this depth.</p>
<p>A7</p> <p>Nil</p>	<p>P7</p> <p>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</p>	<p>Aerated wastewater treatment system unit will not normally cause odour or noise or nuisance.</p>

Risk assessment

This proposal meets all relevant Acceptable Solutions under the Guidelines, separate risk assessment process below as per Clause 5.5.3.2 of AS/NZS1547.2012 is therefore not required.

Date of Site Visit: 14/5/2024.

Weather Conditions:

Fine and mild; 103mm of rainfall at Cape Bruny since 01/05/2024

Further Information.

For further detailed assessment and design information, together with operation and maintenance advice, please refer to the Appendices.

Statement.

I certify that this Site and Soil Evaluation and Design for an on-site wastewater management system for the proposed residential development at 3856 Bruny Island Main Road, Alonnah has been undertaken in accordance with the relevant provisions of AS/NZS 1547:2012. Onsite Domestic Wastewater Management, with respect to the design of on-site wastewater management systems requiring a Plumbing Permit.

The design of this on-site wastewater system is suitable for the residence referred to in this report.

This report is copyrighted to me as the author. I authorise Luke Rasmussen, Kingborough Council and their respective agents and/or employees to make copies or extracts of this report for the purposes of Planning and/or Building Applications etc for the above-mentioned project on this site by or on behalf of Luke Rasmussen or their associates.

It is not to be published or reproduced for the benefit of third parties unconnected with this development on this site by this developer without my explicit permission as author.

Please Note:

It is generally understood that the successful operation of an on-site wastewater disposal system is dependent upon a number of complex, interacting factors and that the operating life of in-ground absorption systems in particular may be limited. This system may require future maintenance or modification to ensure its continued satisfactory operation. The client is advised that such works are the responsibility of the property owner.

CONDITIONS OF INVESTIGATION

This report remains the property of Onsite Assessments Tas. (OAT). It must not be reproduced in part or full, or used for any other purpose without written permission of OAT. The investigations have been conducted, & the report prepared, for the sole use of the client or agent mentioned on the cover page. Where the report is to be used for any other purpose OAT accepts no responsibility for such other use. Forms 55 and 35 are not transferable to another body, developer or landowner without consultation (reissue) from OAT. The information in this report is current and suitable for use for a period of two years from the date of production of the report, after which time it cannot be used for Building, Plumbing or Development Application without further consent of OAT.

This report should not be used for submission for Building or Development Application until OAT has been paid in full for its production. OAT accepts no liability for the contents of this report until full payment has been received.

The results & interpretation of conditions presented in this report are current at the time of the investigation only. The investigation has been conducted in accordance with the specific client's requirements &/or with their servants or agent's instructions.

This report contains observations & interpretations based often on limited subsurface evaluation. Where interpretative information or evaluation has been reported, this information has been identified accordingly & is presented based on professional judgement. OAT does not accept responsibility for variations between interpreted conditions & those that may be subsequently revealed by whatever means.

Due to the possibility of variation in subsurface conditions & materials, the characteristics of materials can vary between sample & observation sites. OAT takes no responsibility for changed or unexpected variations in ground conditions that may affect any aspect of the project. The classifications in this report are based on samples taken from specific sites. The information is not transferable to different sites, no matter how close (ie if the development site is moved from the original assessment site an additional assessment will be required).

It is recommended to notify the author should it be revealed that the sub-surface conditions differ from those presented in this report, so additional assessment & advice may be provided.

Investigations are conducted to standards outlined in relevant Australian Standards, codes and guidelines, including:

- AS1547-2012: Onsite Domestic Wastewater Management
- AS3959.2009: Construction of Buildings in Bushfire Prone Areas
- Director's Guidelines for on-site wastewater management systems. (CBOS)
- Director's Determination – Requirements for Building in Bushfire-Prone Areas. (CBOS)

All new developments should subject to strict site maintenance. Attention is drawn to the relevant appendices of this report.

Any assessment that has included an onsite wastewater system design will require a further site visit once the system has been installed if certification of an installation/works is required (to verify that the system has been installed as per OAT's design). An additional fee may apply for the site visit & issuing the certificate.

OAT is not responsible for the correct installation of wastewater systems. Any wastewater installation is the sole responsibility of the owner/agent and certified plumber. Any variation to the wastewater design must be approved by OAT, and an amended Special Plumbing Permit obtained, if required from the relevant council. The registered plumber must obtain a copy and carefully follow the details in the council issued Plumbing Permit. Certification of completion of works will be based on surface visual inspection only, to verify the location of the system. All underground plumbing works are the responsibility of the certified plumber.

Copyright: The concepts & information contained in this report are the Copyright of Onsite Assessments Tas.

Please Note:

It is generally understood that the successful operation of an on-site wastewater disposal system is dependent upon a number of complex, interacting factors and that the operating life of in-ground absorption systems in particular may be limited. This system may require future maintenance or modification to ensure its continued satisfactory operation. The client is advised that such works are the responsibility of the property owner.

SITE ASSESSOR AND SYSTEM DESIGNER

NAME: Richard Mason, Environmental Health Professional & Accredited Building Services Hydraulic Designer.

NAME OF ORGANISATION: Onsite Assessment Tas.

ADDRESS: 20 Adelong Drive, Kingston, Tasmania, 7050

CONTACT DETAILS: 0418 589 309; richardmason@iprimus.com.au

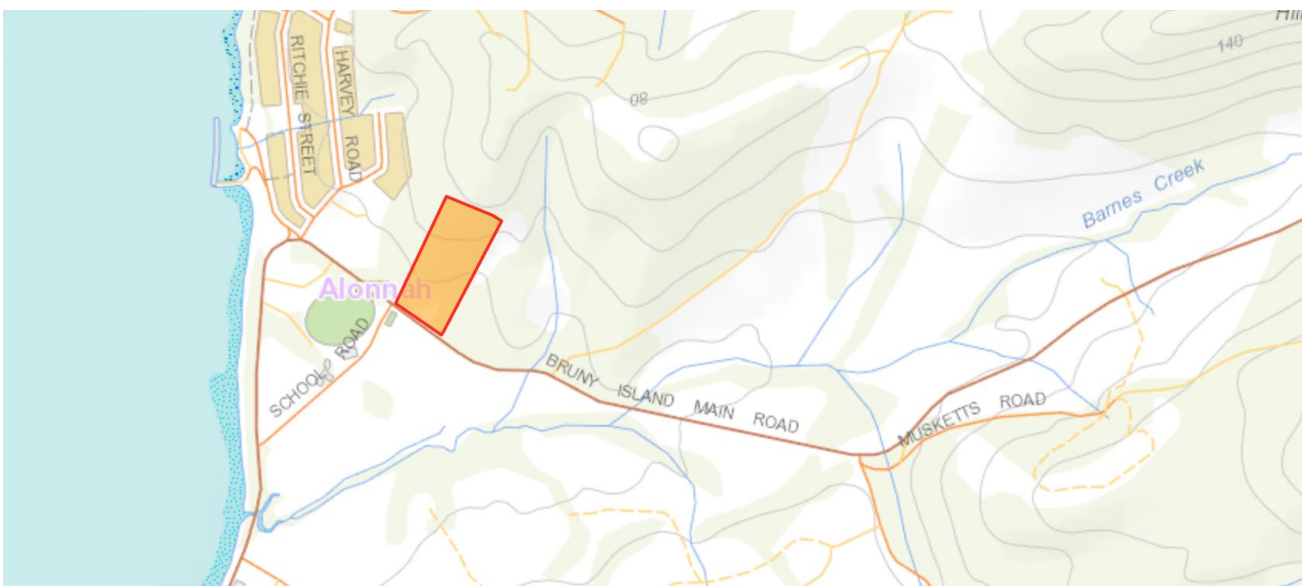
SIGNED: 

DATED: 20/06/2024

APPENDICES

1 - Site Location	14
2 – Site Photos	15
3 – Soil testing	16
4 – Design plans	17
5 – Design specifications	24
6 – Advice to project manager and installer	26
7 - Loading Certificate and O & M requirements	27
8 – Form 35	32
9 – Form 55	34

Appendix 1. Site Location



Appendix 2 - Site photos



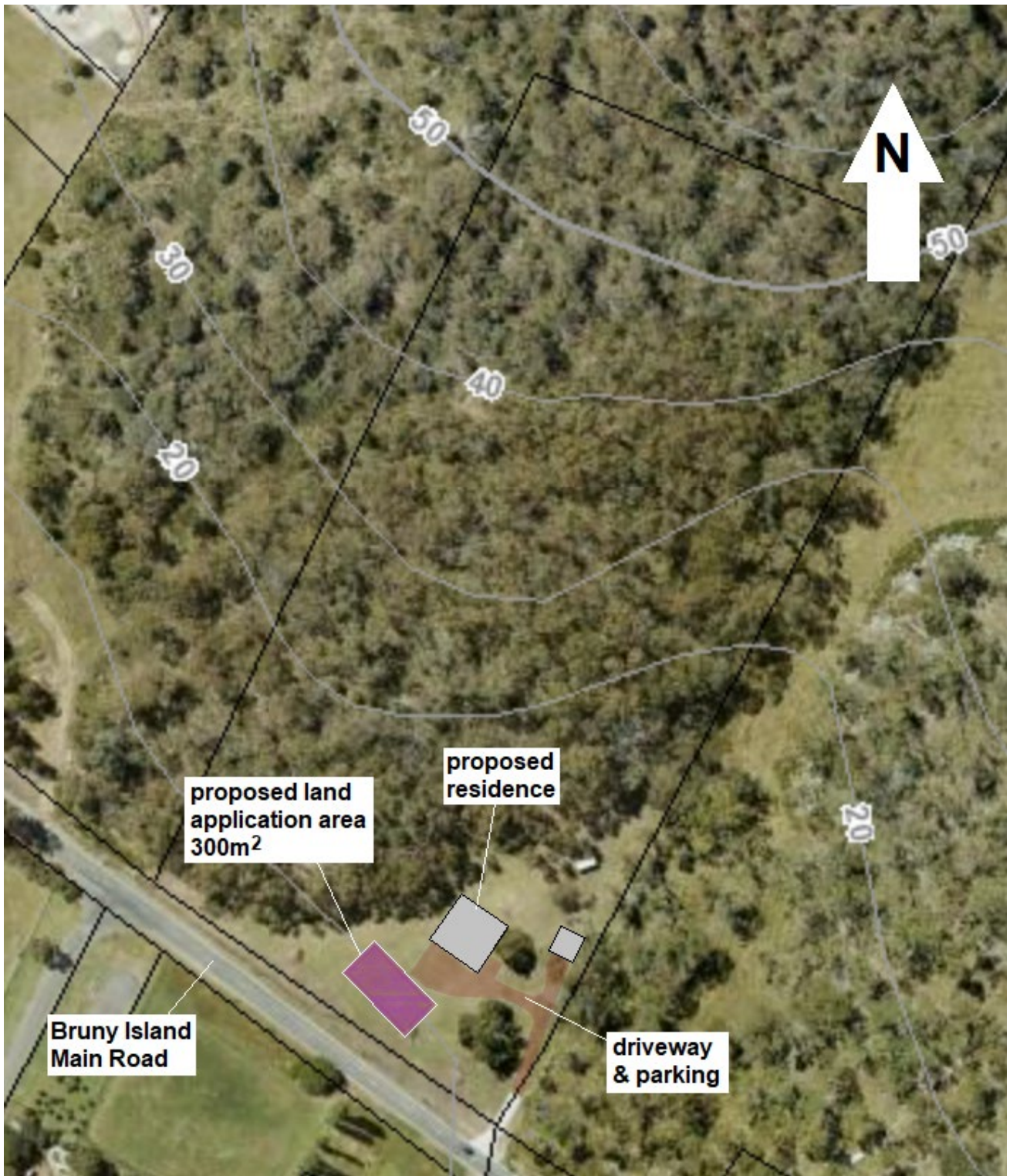
(above) Views of proposed land application area

Appendix 3 – Soil testing



(above) – test cores from proposed land application area.

Appendix 4 - Design plans.



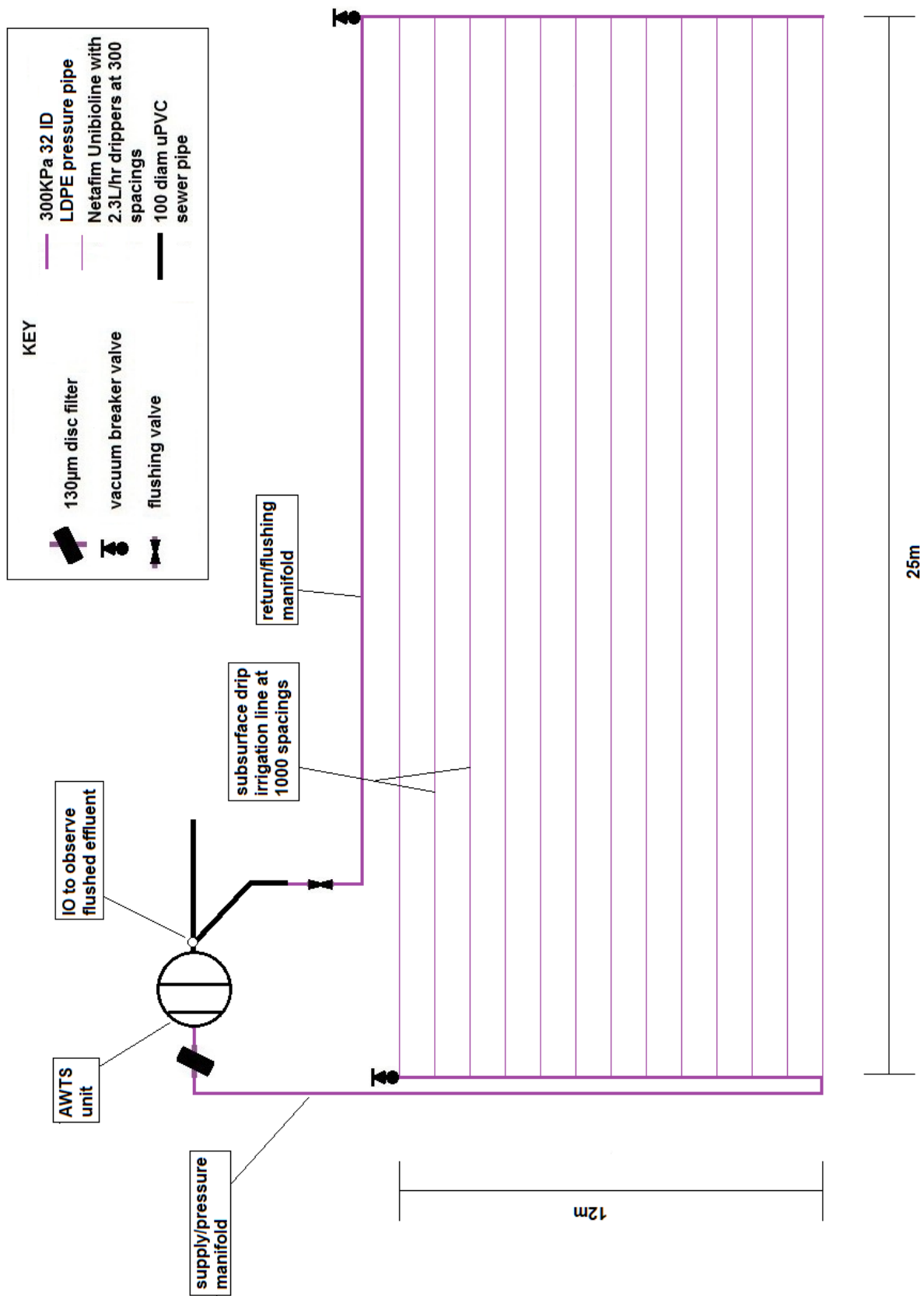
Site plan 1



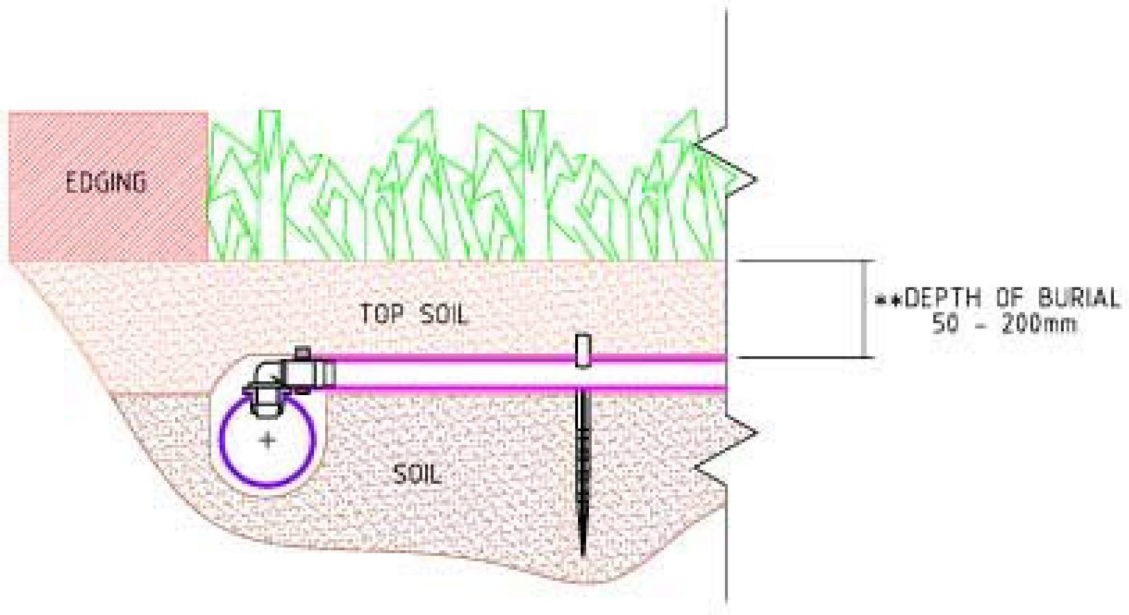
Site plan 2



Drainage plan

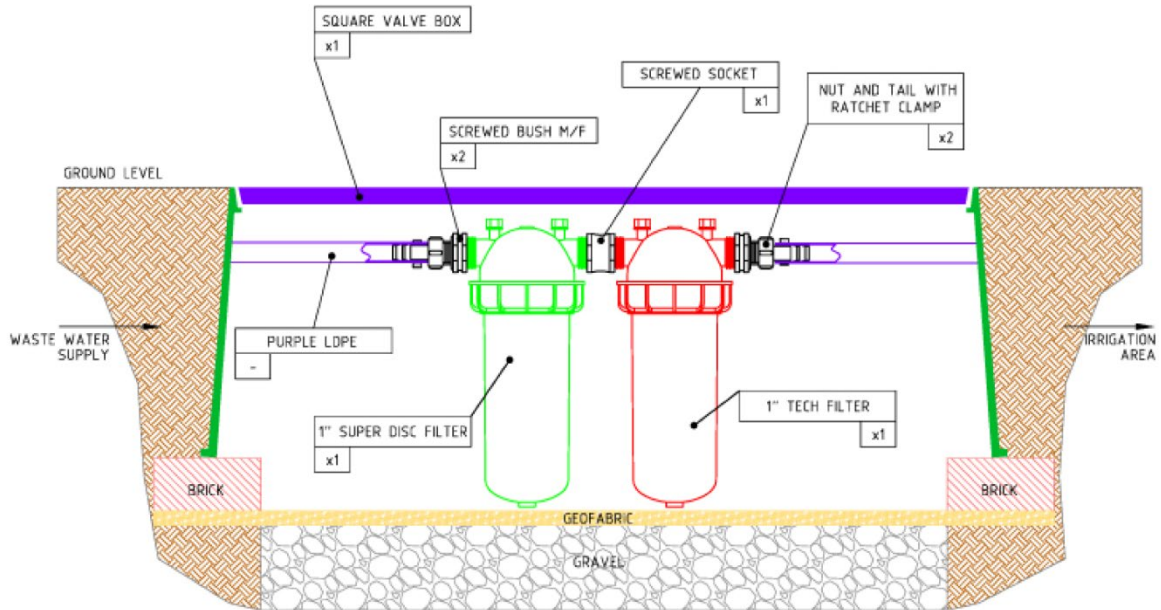


(above) On-site wastewater management system schematic

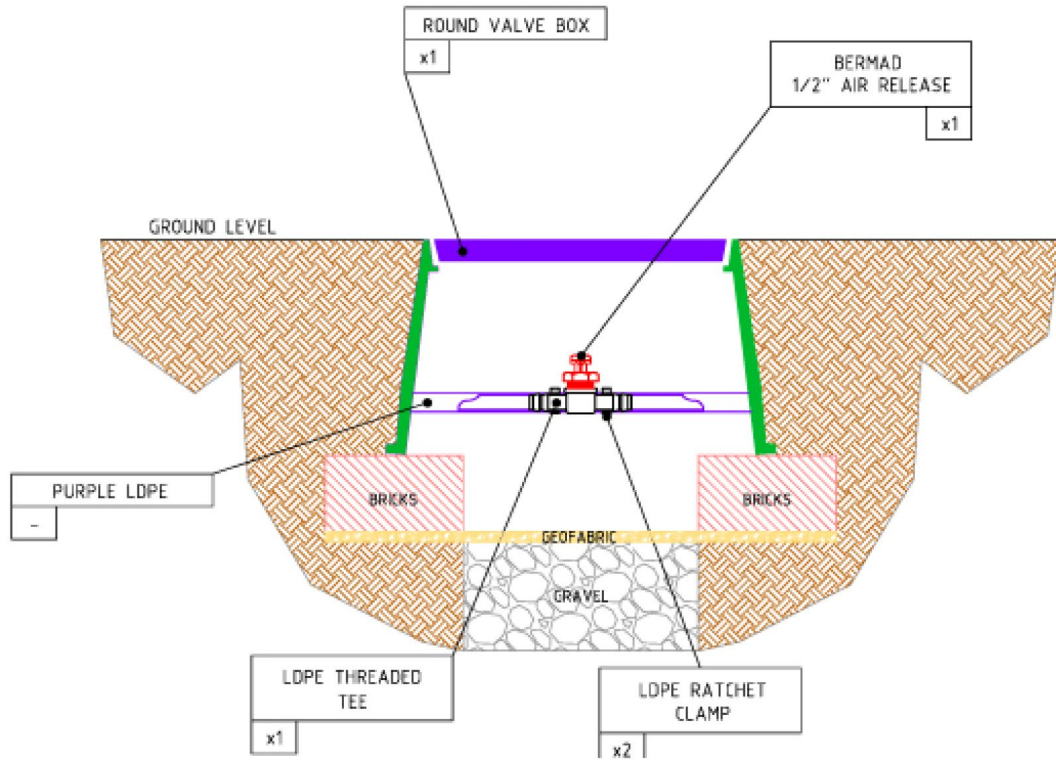


SUB-SURFACE UNIBIOLINE 17

Cross section through subsurface irrigation area



(above) Filter details

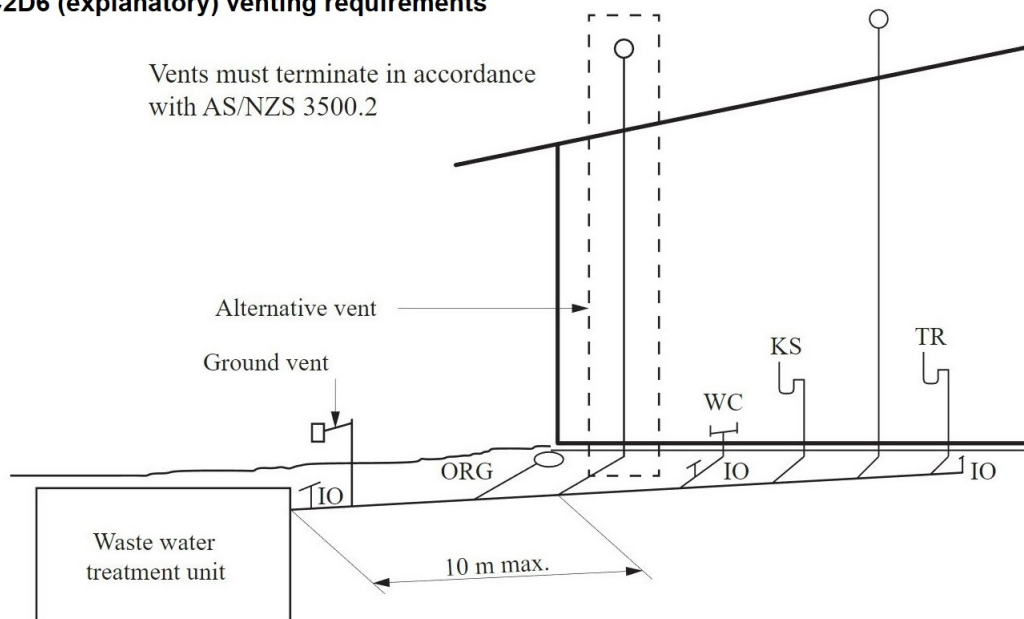


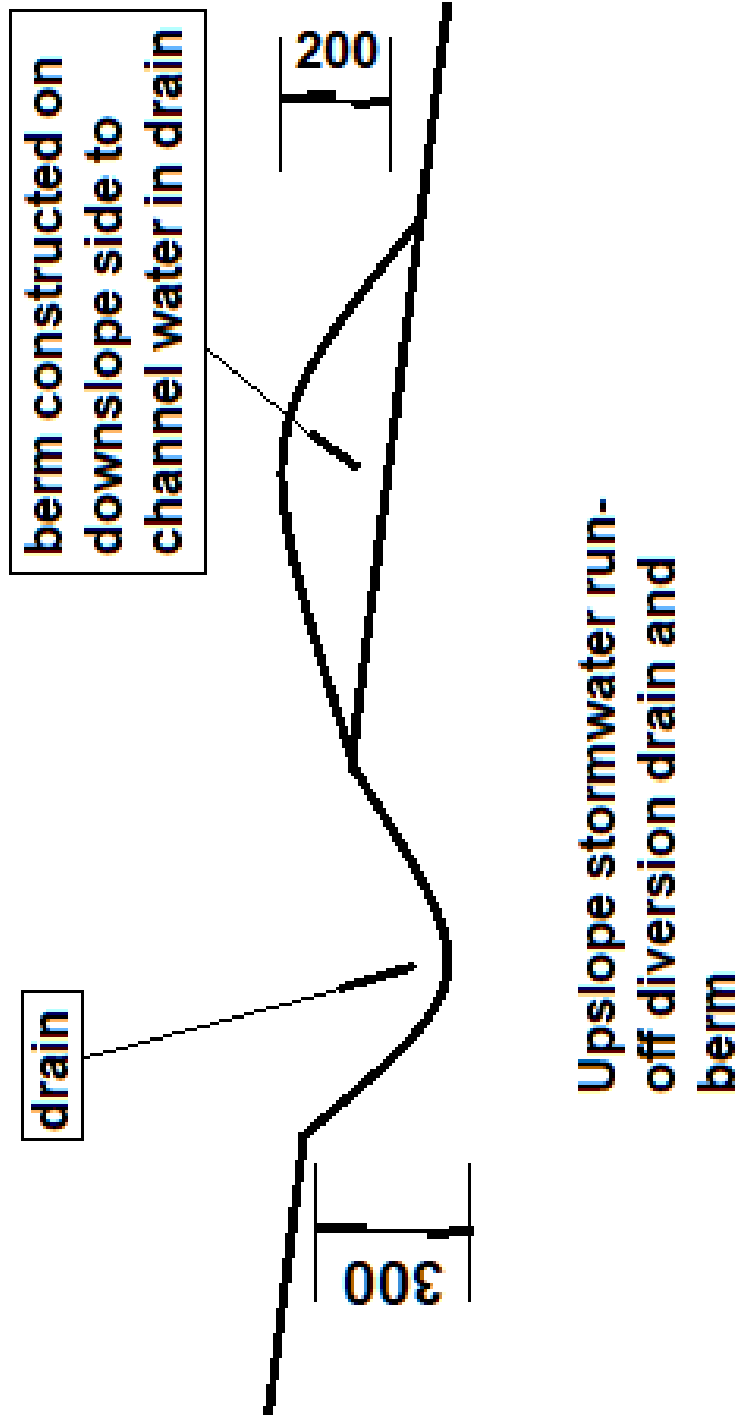
(above) Vacuum breaker valve details

Note: Installation and venting to be in accordance with NCC 2022 Vol 3 TAS C2D6 Venting requirements.

Tas Figure C2D6 (explanatory) venting requirements

Vents must terminate in accordance with AS/NZS 3500.2





(above) Cut-off drain detail

Appendix 5 – Onsite wastewater management system design specifications.

1. Aerobic wastewater treatment system will be located as per site & drainage plans in Appendix 4 above.
2. Land application area will comprise a single zone of 300m² wetted area (25m x 12m), located as per site plan in Appendix 4 above.
3. Aerobic wastewater treatment unit to be vented in accordance with NCC 2022 Vol 3, Tas C2D6.
4. Supply manifold from aerobic wastewater treatment system to be fitted with a 130µm disc filter.
5. Drip irrigation system is “UniBioline” by Netafim or Toro; 16-17mm OD polypipe with inbuilt 2.0- 2.3L/hr drip emitters, (or similar) laid at 1000mm spacings.
6. Irrigation area to be ripped/scarified to a depth of 300mm and treated with gypsum at a rate of 1 kg/m², prior to dripper installation and placement of imported sandy loam.
7. Install irrigation dripper line on ripped/scarified soil surface.
8. Land application area to be filled over dripper line, with imported sandy loam to minimum depth of 150mm.
9. Dripper line to be laid between Supply and Return manifolds, each comprising 32mm internal diameter lilac LD polyethylene pipe, as per irrigation area details in Appendix 4.
10. Vacuum breakers cut into highest points on each irrigation area as per attached plan in Appendix 4.
11. All valves and breakers to be placed in valve boxes with lilac screw-down covers flush to finished ground surface.
12. Supply manifold connected to lowest point on irrigation area, return manifold runs from highest point on irrigation area.
13. Manual or automatic flushing valve to be provided in return line, discharging back to secondary settlement chamber of Aerated Wastewater Treatment unit.
14. Spread lawn grass seed over finished soil surface or install “instant lawn” turf.
15. Condition and performance of wastewater land application area to be monitored and reported during routine quarterly maintenance inspections.

Exclusion of surface/stormwater

16. Cut-off drain as detailed in Appendix 4 to be installed to intercept groundwater and divert from land application area.

L7 CONSTRUCTION TECHNIQUES (AS/NZS1547.2012 On-site domestic wastewater management.)

L7.1 Good construction technique

The following excavation techniques shall be observed so as to minimise the risk of damage to the soil:

- (a) Plan to excavate only when the weather is fine;
- (b) Avoid excavation when the soil has a moisture content above the plastic limit. This can be tested by seeing if the soil forms a 'wire' when rolled between the palms;
- (c) During wet seasons or when construction cannot be delayed until the weather becomes fine, smeared soil surfaces may be raked to reinstate a more natural soil surface, taking care to use fine tines and only at the surface;
- (d) When excavating by machine, fit the bucket with 'raker teeth' if possible, and excavate in small 'bites' to minimise compaction; and
- (e) Avoid compaction by keeping people off the finished trench or bed floor.

In particular for trenches and beds:

- (f) If rain is forecast then cover any open trenches, to protect them from rain damage;
- (g) Excavate perpendicular to the line of fall or parallel to the contour of sloping ground; and
- (h) Ensure that the inverts are horizontal.

CL7.1

Damage can be done by:

(a) Smearing, where the soil surface is smoothed, filling cracks and pores;

(b) Compacting, where the soil porosity is reduced; and

(c) Puddling, where washed clay settles on the base of the trench to form a relatively impermeable layer.

In particular, cohesive soils, or soils containing a significant quantity of clay, are susceptible to damage by excavation equipment during construction.

Appendix 6 – Advice to Project manager.

Important notes for Project Manager.

It is vitally important to the future of the on-site wastewater management system to avoid damage to soil structure on the site, which would reduce soil permeability, leading to possible early failure of the effluent absorption trenches.

Actions that may damage soil structure include:

- Compaction, which reduces soil porosity;
- Smearing, where soil surfaces are smoothed, filling pores and cracks; and,

The Effluent Irrigation Area must be carefully constructed to ensure its optimal operation.

Project Manager Responsibilities.

The Project Manager must ensure that:

1. Before project construction work commences, the Effluent Absorption Area is properly identified on site and barricaded, fenced, roped or taped to prevent unauthorised access. This action should be documented both on the site plan and with the local Council.
2. Vehicles, earth-moving plant etc do not park or manoeuvre on the Effluent Absorption Area.
3. The Effluent Absorption Area is not used for the stockpiling of construction materials, excavated fill or other materials.
4. All water runoff resulting from the construction of driveways, cut & fill and other excavations is directed to discharge well away from and downslope of the Effluent Absorption Area.

Appendix 7 – Loading Certificate and Operation & Maintenance Requirements

A copy of the relevant aerobic wastewater treatment system Certificate of Accreditation and Owners' Manual is to be provided by the supplier; the home owner is advised to print two hard copies of the Accreditation publication, one of which should be submitted to the Council in support of the Special Plumbing Permit Application, and one copy of the Owners' Manual.

Both should be retained and read for familiarisation purposes and the recommendations therein carefully followed in order to ensure optimal, nuisance free operation of the system with minimal environmental health impacts.

This loading certificate is provided in accordance with Clause 7.4.2(d) of AS/NZS 1547.2012.

Loading Certificate for proposed aerobic wastewater treatment system with surface irrigation, servicing proposed ancillary apartment at 3856 Bruny Island Main Road, Alonnah.

- i. **System capacity** (medium-long term) – 5 persons / 600 litres/day.
- ii. **Design criteria summary:**
 - Effluent quality – secondary with disinfection
 - Soil category - Category 6 (2mm/day DIR)
 - Land application system - Subsurface irrigation (see Appendix M of AS/NZS1547.2012)
- iii. **Reserve area.**

Effluent treated to secondary standard and irrigated subsurface, ample additional land remains available for use as a reserve land application area.
- iv. **Water efficient fittings etc**

Design assumes use of water efficient fixtures and fittings, eg 3L/6L flush toilets, 9L/min (max) showerheads, aerator fittings on taps and clothes washing machines/dishwashers with WELSS star ratings of 4.5 stars or above. (see <http://www.waterrating.gov.au/>)
- v. **Variation from design flows etc.**

The system should successfully manage additional peak loadings which may result from occasional social gatherings provided that this does not exceed use by more 30 persons in an 8-hour period or a total of 2 additional visitors temporarily resident (i.e. total of 7 persons) for a period not exceeding 14 days with return period of no less than 42 days. Visitors should be advised of the requirement to minimise time spent in showers; avoid running taps whilst cleaning teeth and other common-sense water conservation measures.
- vi. **Consequences of changing wastewater characteristics.**

The home owner should avoid disposing of wastes which would be additional to those normally disposed in a household sewerage system; in particular increases, in organic loadings such as from the use of sink-waste disposal units are to be avoided.

Use of household disinfectants or bactericides in anything more than small amounts and at recommended rates of dilution should also be avoided, as should the disposal of solvents and other chemicals or pharmaceuticals such as antibiotics or antimicrobials which may kill bacteria and other microorganisms required for effective wastewater treatment.

vii. Consequences of overloading the system.

Long term use by more than 7 residents or equivalent may result in hydraulic overloading of the irrigation system, run-off of effluent, public and environmental health nuisances, pollution of surface waters etc. Overloading may also result from such uses as residential childcare, home-catering and other wastewater-intensive home-based businesses etc.

viii. Consequences of underloading the system.

The system will work effectively with as few as one person in residence, however long periods of zero-occupancy may result in poor functioning of the system when normal use recommences.

If you plan to leave the building unoccupied for more than one month, please advise the maintenance contractor.

Similarly, if occupancy levels are suddenly changed such as if family or friends move in with you, or if usage changes markedly such as when changing from full time occupancy to part time usage, the maintenance contractor should also be advised.

ix. Consequences of lack of operation, maintenance and monitoring attention.

The AWTS requires regular 3 monthly maintenance by an authorised, trained technician, undertaken in accordance with a written maintenance contract. (Or at intervals specified in the aerobic wastewater treatment system unit's Certificate of Accreditation.)

Consequences of failure to observe the regular maintenance requirements may include any of the following:

- Spread of infectious diseases to your family and neighbours.
- Nuisance and unpleasant odours.
- Pollution of waterways, streams, beaches and shellfish beds.
- Contamination of bores, wells and groundwater.
- Excessive and unsightly weed growth.
- Alteration of local ecology

• Operation & Maintenance Requirements

- Aerated wastewater treatment system unit and irrigation area etc to be subject to a maintenance agreement with quarterly maintenance visits by a suitably qualified and experienced person, in accordance with the Director's Determination - Accreditation and Maintenance of Plumbing Installations 2016
- Ensure that the AWTS unit is desludged by an authorised contractor at five yearly intervals. Failure to do this at the required frequency may result in carry-over of solids into the aerobic wastewater treatment and irrigation systems, causing failure of the land application area, which may then require expensive reconstruction works.

- Discourage access by visitors or pets to the land application area.
- Livestock should not be allowed on or near the irrigation area; if such animals are kept, the land application area should be fenced off to prevent system damage and/or soil compaction.
- Do not allow vehicles on or near the land application area.
- Keep the surface and sub-surface cut-off drain above the land application area open and clear of debris to prevent rainwater flowing into the effluent absorption area.
- Surface cover mulch should be replaced when it decomposes or is blown away.
- Problems may occur with systems which have not been properly maintained and where absorption areas have become blocked or clogged. The warning signs are obvious and include:
 - Effluent land application area is wet or soggy with wastewater ponding on the surface of the ground.
 - “Sewage” smells near the aerobic wastewater treatment system.



A GUIDE TO PURCHASING, INSTALLING & MAINTAINING AERATED WASTE WATER TREATMENT SYSTEMS

PROCESS IN BRIEF

- Property owner requires an aerated waste water treatment system solution. →
- Property owner engages an accredited designer to design a system to suit the owner's land. →
- Owner decides what brand of aerated waste water treatment system they wish to have. →
- Design completed and submitted to council for approval. →
- If system design is approved a plumbing permit will be issued to the owner by council. →
- A licensed plumbing contractor is engaged by the owner to install the system. →
- System is installed as per the approved plumbing permit or design. →
- Installation is inspected by the designer upon completion and a completion certificate is sent to council to confirm the installation meets with the design requirements. →
- Owner must enter into a maintenance contract with a service contractor and notify the council of such. The owner must also provide council with a copy of the maintenance contract. →
- Quarterly servicing begins.

Department of Justice
Consumer, Building and Occupational Services
PO Box 56, Rosny TAS 7018
P: 1300 65 44 99
E: cbosinfo@justice.tas.gov.au
W: www.justice.tas.gov.au

This guide is a resource and reference document and is for general information only. Published April 2016

Are you purchasing a new aerated waste water treatment system?

This guide will help you to choose the best system and contractor to suit your needs. Read on for handy tips and information designed to help you make an informed investment choice.

OWNERSHIP

- Purchasing, installing and maintaining a waste water treatment system can be a significant up-front investment, and will have ongoing maintenance costs. We recommend that you choose a system and maintenance contractor which best suits your needs.
- An aerated waste water treatment system accepts normal domestic household waste from toilets, basins, showers, baths and kitchen sinks. It is designed to treat the waste and then distribute treated waste water on site to the garden area.
- It is important to understand that this treated water is not suitable for vegetable gardens or fruit trees or any other produce producing plants
- Even after treatment of the waste water, bare skin contact and contact by pets and livestock should be avoided.

WARNINGS

- Waste water treatment systems that are not working or are working incorrectly can be a serious health hazard.
- Ponding of water and leaking waste water distribution systems should be rectified immediately.
- Keep pets and children clear of waste water distribution areas.

RESPONSIBILITIES

- You, as the owner, will be responsible for the overall operation and monitoring of your system and for making sure the scheduled maintenance is carried out at regular intervals, such as quarterly.
- Your local council will issue a plumbing permit – with permit conditions attached – for your new installation. As long as you own the property you will be responsible for making sure these conditions are met.
- We recommend that you choose a suitable maintenance contractor to work with you to ensure you meet the permit conditions. Perhaps ask other owners who services their system.

INSTALLATION

- Before your system can be installed, an accredited designer will need to complete a design for the waste water system including the irrigation area. The design will require approval from your local authority (council).
- A licensed plumber must be used to install your waste water management system.

CHOOSING YOUR SYSTEM

- There are various waste water systems on the market for you to choose from. Ask your local council, accredited designer or plumbing contractor for some advice on a suitable system.

MAINTENANCE

- Aerated waste water treatment systems require regular maintenance, usually 4 services per year.
- Servicing needs to be carried out by a qualified person (ask your local council for a list of suitable maintenance contractors).
- You will need to enter into a formal maintenance contract with the maintenance contractor.
- You will need to agree on the service costs with the maintenance contractor. This amount should be contained within a Maintenance Service Contract.
- The local council will require a copy of the formal contract once it's been agreed to and signed by both parties.
- The local council will require a 'receipt of servicing' from your contractor after every service.
- You, as the owner, will also receive a copy of this service receipt.
- Generally a service of a typical aerated waste water treatment system takes between 0.5-1.0 hour to complete correctly.

MAINTENANCE CONTRACTORS AND CONTRACTS

- Seek good advice and be prepared to speak with more than one maintenance contractor.
- Maintenance contractors differ when it comes to terms and conditions within a contract, and these terms and conditions are often negotiable.
- You may wish to change contractors or your circumstances may change, which could require you to terminate the contract. Be aware that contractors offer varying exit options from the contract, and make sure you compare the contract exit options when deciding on a contractor.
- Contractors offer varying lengths of time for which the contract is active. You should compare contract lengths to ensure you are entering a contract with a timeframe appropriate for you.
- Make sure you understand all of the terms and conditions prior to signing the contract.
- Ensure that your contract contains all the basic terms including price, services to be provided and service intervals.



Clockwise from above: Example of an aerated waste water system being delivered. Example of a typical installation. Example of regular maintenance.

Appendix 8 – Form 55

CERTIFICATE OF QUALIFIED PERSON – ASSESSABLE ITEM

Section 321

To: Owner /Agent
 Address
 Suburb/postcode

Form 55

Qualified person details:

Qualified person:
 Address: Phone No: 0418 589309
Fax No:
 Licence No: Email address: richardmason@iprimus.com.au

Qualifications and Insurance details: (description from Column 3 of the Director of Building Control's Determination)

Speciality area of expertise: (description from Column 4 of the Director of Building Control's Determination)

Details of work:

Address: Certificate of title No: 209334/1
 The assessable item related to this certificate: (description of the assessable item being certified)

Certificate details:

Certificate type: (description from Column 1 of Schedule 1 of the Director of Building Control's Determination)

This certificate is in relation to the above assessable item, at any stage, as part of - (tick one)

building work, plumbing work or plumbing installation or demolition work:
 or
 a building, temporary structure or plumbing installation:

In issuing this certificate the following matters are relevant –

Documents:

Relevant calculations:

References:

AS/NZS 1547.2012: Onsite Domestic Wastewater Management.
Directors Guidelines for on-site wastewater management systems

Substance of Certificate: (what it is that is being certified)

Site & soil evaluation and design report - Proposed on-site wastewater management system at 3856 Bruny Island Main Road, Alonnah TAS 7150, by Richard Mason, Onsite Assessments Tas, dated 20/06/2024.

Scope and/or Limitations

I certify the matters described in this certificate.

	<i>Signed:</i>	<i>Certificate No.:</i>	<i>Date:</i>
Qualified person:		n/a	20/06/2024

Appendix 9 – Form 35

CERTIFICATE OF THE RESPONSIBLE DESIGNER

**Section 94
Section 106
Section 129
Section 155**

To: Owner name
 Address
 Suburb/postcode

Form **35**

Designer details:

Name: Category:
 Business name: Phone No:
 Business address:
 Fax No:
 Licence No: Email address:

Details of the proposed work:

Owner/Applicant Designer's project reference No.
Address: C/T No:

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

Description of work:

(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"/> <small>(X the appropriate box)</small>
Other details: AWTS with subsurface irrigation.		

Design documents provided:

The following documents are provided with this Certificate –

Document description:

Drawing numbers: Appendix 4	Prepared by: Richard Mason	Date: 20/06/2024
Schedules:	Prepared by: Richard Mason	Date:
Specifications: Appendix 5	Prepared by: Richard Mason	Date: 20/06/2024
Computations: Page 8	Prepared by: Richard Mason	Date: 20/06/2024

Standards, codes or guidelines relied on in design process:

AS/NZS1547.2012 On site domestic waste water management
National Construction Code 2022 Vol 3
Director's Guidelines for On-site Wastewater Management Systems, Director of Building Control (Tasmania), 2017.

Any other relevant documentation:

CBOS Certificates of accreditation:

DOC/20/89089(V2) - Taylex ABS 1500 (10EP)
DOC/20/66067 - Fuji Clean ACE 1200 (8EP)
DOC/22/103618 - UBI Aqua 6000 MKII (8EP)
DOC/19/35195 - EnviroTAS 10ANR

Site & soil evaluation and design report - Proposed on-site wastewater management system at 3856 Bruny Island Main Road, Alonnah TAS 7150, by Richard Mason, Onsite Assessments Tas, dated 20/06/2024.

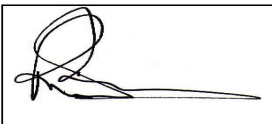
Form 55, dated 20/06/2024, for Site & Soil Evaluation etc Report.

Attribution as designer:

I, **Richard Mason** 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.

	<i>Name: (print)</i>	<i>Signed</i>	<i>Date</i>
Designer:	Richard Mason		20/06/2024
Licence No:	CC6157T		

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:

IRichard Mason..... 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

	<i>Name: (print)</i>	<i>Signed</i>	<i>Date</i>
Designer:	Richard Mason		20/06/2024