Attachment to item number 5.1 -

Bushfire hazard report

Site and soil evaluation and wastewater design report

Site & soil evaluation and design report.

Proposed on-site wastewater management system at 5 Spotswood Road, Dunalley TAS 7177

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 an on-site wastewater management system to service a proposed new residence.

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: 5 Spotswood Road, Dunalley TAS 7177

PID: 3486149

Title Ref: 171987/1

Developer: Darren Carter

Project: New aerated wastewater treatment system and subsurface irrigation area to service a new residence.

Site area: approximately 795m^2

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.

1. A Horizon: 0 - 150mm: sandy loam, grey 7.5YR 5/1; damp, moderate structure; Category 2.

2. B Horizon: 150 – 1000mm; light clay, greyish brown 10YR 5/2, damp, massive structure; Category 5.

3. CR Horizon: 1000-1400mm+, sandy clay gravel, yellow 10YR 7/6, damp, moderate structure Category 2.

The soil profile is classified as a Category 5 soil for the purposes of AS/NZS1547.2012 On-site domestic wastewater management for subsurface irrigation DIR selection; an additional 200mm+ minimum depth of sandy loam topsoil will be imported to provide an improved A-horizon for effluent absorption and vegetation growth, ensuring improved separation to bedrock limiting layer.

This area will be exploited for effluent application by subsurface irrigation.

Soil dispersion
Soil was not comprehensively 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.

A Horizon 0.12-0.5m/day

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 2º treated effluent – 3mm/day

Absorption trench/bed - not suitable

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

Topography

The house site is located at approximately 8-9m ASL overlooking Dunalley Beach, approximately 1000m SE of Dunalley.

The surface within and downslope of the proposed land application area slopes at 2-3°, towards the SE.

Drainage lines / water courses: Nearest downslope water (shown on LISTmap) is the shoreline of Dunalley Beach which lies 33m downslope to the SE from the proposed land application area. Separation to the watercourse meets Performance Criteria as per the Director's Guidelines for on-site wastewater management systems.

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

Site History (land use)

Area cleared possibly for grazing, minor farming etc at time of settlement, more recently developed, probably in 1970s-80s for suburban-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.

The site was previously occupied by a small house which was destroyed by the January 2013 Forcett-Dunalley Bushfire

Site Exposure and Climate.

Aspect: Southerly aspect but largely exposed to day round sun.

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

Climate: Annual rainfall averages 500mm/year (Hobart Airport), with maximum daily average temperature of 22.6ºC and minimum of 12.5ºC, resulting in an annual evapotranspiration of 600-800mm, giving a ET- Annual rainfall deficit of 100mm+, (ie ET exceeds rainfall).

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

The vegetation on this site has been mainly cleared comprising mainly grasses and some shrubs etc.

Environmental Issues

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

The vegetation on this site has been highly altered by the previous residential use, with all original native vegetation having been removed from the site; the operation of an on-site wastewater management system on this site would likely not result in harm to natural flora values.

There are no active water bores depicted on the MRT Groundwater Information Portal within 200m this site.

The site is in a waterfront coastal location, with HWM approximately 33m downslope from the edge of the land application area with average slope angle of 13º to water's edge.

The marine environment at Dunalley Beach is not considered to be an important recreational waterbody, it is not a recreational water quality monitoring site and is not a shellfish aquaculture area; as such, it is not considered to be an unduly sensitive receiving water for on-site wastewater risk management purposes.

Risk of contamination of marine waters is mitigated by treatment to secondary standard, with disinfection and application by subsurface irrigation.

Drainage/Groundwater
Site is potentially affected by run-off from upslope; efficient upslope drainage will be required to be installed around the land application area.

Depth to seasonal groundwater (m)
Shallow groundwater or evidence thereof, was not detected in test borings to refusal at 1000mm depth; presence of shallow groundwater is not anticipated at this site.

Site Stability
Given the slope of 2-3º, landslip/instability is not considered to be an issue for this site; the site is not affected by any Landslide Code overlay under the Planning Scheme.

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, continued secondary treatment of wastewater is required prior to land disposal/absorption, by subsurface irrigation; the existing accredited aerated wastewater treatment system, producing disinfected, secondary treated effluent meets this requirement.

Aerated wastewater treatment system unit:
Developer proposes to install an Ubi Aqua 6000 MKII aerated wastewater management system unit – Accreditation Certificate No: DOC/22/103618

Land Application Area
A subsurface irrigation area (200m^2) will be established in on three sides of the new house, between the western, southern and eastern boundaries.

Water Supply
Rain water supply.

Loadings.
Accommodation comprises 2 bedrooms, with option for a future third bedroom; design occupancy of 5 persons; adopted per capita wastewater loading of 120 litres per day, giving a total loading of 600 litres per day. This assumes rainwater water supply loadings as per AS/NZS1547.2012, Table H1.

Design Irrigation Rate
A DIR of 3.0mm/day appropriate for the predominant Category 5 B-horizon soil profile is applicable.

Wastewater Land Application Area.
Surface irrigation area required: where DIR = 3mm/day

= daily wastewater loading / Design irrigation rate for Cat 5 soil.

= 600 litres per day / 3mm day

= **200m^2**

Irrigation dripper line will be installed into an improved (imported) sandy loam A horizon approximately 200mm deep.

The land application area location will provide horizontal separation from boundaries and surface water, which are respectively consistent with Acceptable Solutions and Performance Criteria under the Director's Guidelines for on-site wastewater management systems 2017 ("the Guidelines".)

Irrigation area hydraulic design summary

Design occupancy	Per capita loading (L/day)	Total daily loading	DIR (mm/day)	Required land application area	Required length dripper line at 1m spacings	Required length dripper line at 0.5m spacings)
5	120	600	3	200	200	400
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)	
200	0.3	2.3	667	1533	**25.5**	
Daily pump time (mins)	Annual pump time (hours)					
23.47826087	142.826087					
Length supply pipe	Material supply pipe	ID pipe	Friction loss (m) at flow rate L/min	https://www.tuhorse.com.au/total-dynamic-head-tdh-calculator/		Head loss (m)
43	LDPE	32	0.49			0.49
Friction loss from other pipe fittings						Head loss (m)
25%			0.12			0.12

Type of filter	Make	Model	Friction loss (m) at flow rate L/min			Head loss (m)
disc	Netafim	1" (25mm)	0.422			0.422
Type of indexing valve	Model		Friction loss (m) at flow rate L/min			Head loss (m)
n/a						0
					Friction head (m)	**1.03**
Differential elevation in (m)	(pump to irrigation area)					
3.5					**Elevation head (m)**	**3.5**
Operating head of dripperline (m)					**Operating head (m)**	
10					10	**10**
Total	**Dynamic**	**Head**	**(TDH)**	**in m**		**14.53**
Required	**pump**	**capacity**	**(minimum)**		**@ 25.5 L/min**	**14.5m TDH**

Pump selection
Irrigation pump fitted in the aerated wastewater treatment system unit must be capable of supplying at least 25.5L/min at a minimum head of 14.5m.

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 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.	P1(a) Land application area sized to AS/NZS1547.2012 Appendix M. P1(b) Risk assessment demonstrates that risk is acceptable.
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 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:	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 meets all of the following: a) The land application area is of sufficient size to comply with the either Appendix L, M or N and setback	n/a

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 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.	distances are consistent with Appendix R 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.	
7. Standards for Wastewater Land Application Areas		
A1 Horizontal separation distance from a building to a land application area must comply with one of the following: a) be no less than 6m; b) be no less than: (i) 3m from an upslope boundary or level building; (ii) If primary treated effluent to be no less than 4m plus 1m for every degree of average gradient from a downslope building; (iii) If secondary treated effluent and subsurface application, no less than 2m plus 0.25m for every degree of average gradient from a downslope building.	P1 The land application area is located so that the risk of wastewater reducing the bearing capacity of a building's foundations is acceptably low.	A1(b)(iii) Secondary treatment; LAA is 2m cross-slope/downslope of building.
A2 Horizontal separation distance from downslope surface water to a land application area must comply with (a) or (b) (a) be no less than 100m; or (b) be no less than the following: (i) if primary treated effluent 15m plus 7m for every degree of average gradient to downslope surface water; or (ii) if secondary treated effluent and subsurface application, 15m plus 2m for every degree of average gradient to down slope surface water.	P2 Horizontal separation distance from downslope surface water to a land application area must comply with all of the following: a) Setbacks must be consistent with AS/NZS 1547 Appendix R; b) A risk assessment in accordance with Appendix A of AS/NZS 1547 has been completed that demonstrates that the risk is acceptable.	P2(a) Separation is consistent with AS/NZS1547.2012 Appendix R P2(b) Risk assessment demonstrates that risk is acceptable.
A3 Horizontal separation distance from a property boundary to a land application area must comply with either of the following: (a) be no less than 40m from a property boundary; or (b) be no less than: (i) 1.5m from an upslope or level property boundary; and (ii) If primary treated effluent 2m for every degree of average gradient	P3 Horizontal separation distance from a property boundary to a land application area must comply with all of the following: (a) Setback must be consistent with AS/NZS 1547 Appendix R; and (b) A risk assessment in accordance with Appendix A of AS/NZS 1547 has been completed that demonstrates that the risk is acceptable.	A3(b)(i) LAA 1.5m from cross-slope boundary. A3(b)(iii) 2º slope to downslope boundary, secondary treatment, 3.5m separation.

from a downslope property boundary; or (iii) If secondary treated effluent and subsurface application, 1.5m plus 1m for every degree of average gradient from a downslope property boundary.		
A4 Horizontal separation distance from a downslope bore, well or similar water supply to a land application area must be no less than 50m and not be within the zone of influence of the bore whether up or down gradient.	P4 Horizontal separation distance from downslope bore, well or similar water supply to a land application area must comply with all of the following: (a) Setback must be consistent with AS/NZS 1547 Appendix R; and (b) A risk assessment completed in accordance with Appendix A of AS/NZS 1547 demonstrates that the risk is acceptable.	A4 No known borehole within 200m
A5 Vertical separation distance between groundwater and a land application area must be no less than: (a) 1.5m if primary treated effluent; or (b) 0.6m if secondary treated effluent	P5 Vertical separation distance between groundwater and a land application area must comply with the following: (a) Setback must be consistent with AS/NZS 1547 Appendix R; and (b) A risk assessment completed in accordance with Appendix A of AS/NZS 1547 that demonstrates that the risk is acceptable	A5(b) Groundwater not encountered to refusal at 1000mm and is considered unlikely to be present. Land application area design, secondary treatment provides minimum of 1000+mm separation to this depth.
A6 Vertical separation distance between a limiting layer and a land application area must be no less than: (a) 1.5m if primary treated effluent; or (b) 0.5m if secondary treated effluent.	P6 Vertical setback must be consistent with AS/NZS1547 Appendix R.	A6(b) Refusal struck at 1000mm. Subsurface irrigation system provides minimum vertical separation of 1000mm to this depth.
A7 Nil	P7 A wastewater treatment unit must be located a sufficient distance from buildings or neighbouring properties so that emissions (odour, noise or aerosols) from the unit do not create an environmental nuisance to the residents of those properties	Aerated wastewater treatment system unit will not normally cause odour or noise or nuisance.

Assessment of setback distance against Appendix R

- **Surface water -** Table R1 setback range from surface water is 15-100m with site constraint factors A, B, D, E, F, G & J identified.
    - **A – microbial effluent quality**; range (low to high constraint) 10cfu - 10^6 cfu/100mL.

Secondary treatment with disinfection, effluent quality predicted to meet 10cfu/100mL or better.

Microbiological effluent quality is therefore considered to be a low constraint.

- B – Surface water

  Category 4 – 6 soils – high constraint

  Permanent surface water <50m down gradient – high constraint

  Low rainfall area – low constraint

  Low resource/env value – low constraint

- **C – Groundwater**

  Category 5 & 6 soils – low constraint

  Low resource/env value – low constraint

- **D – Slope:**

  0-6% surface application ----> >10% surface application

  Slope to surface water averages 24% - high constraint.

- **E – Position of land application area in landscape**

  Up gradient of surface water – high constraint

- **F – Drainage**

  Category 5 soils – no groundwater moderate constraint

- **G – Flood potential**

  Above 1 in 20-year flood contour – low constraint

- **J – Application method**

  Drip or subsurface ---> surface application

  Effluent to be applied subsurface – low constraint.

Low constraint and moderate constraint issues substantially exceed high constraints issues for proximity of land application area to surface water at this site; it is therefore concluded that the proposal is substantially in accordance with Appendix R of AS/NZS1547.2012.

Risk assessment

This proposal meets all Acceptable Solutions under the Guidelines, with the exceptions of 5.1P1 and 5.2P2; the risk assessment process below as per Clause 5.5.3.2 of AS/NZS1547.2012 is therefore limited to consideration of these issues.

Risk assessment – 5Spotswood Rd, Dunalley

Each identified environmental aspect is subject to a qualitative risk analysis based on likelihood and consequences of environmental impact. The risk analysis matrix is as follows:

LIKELIHOOD	***CONSEQUENCES***				
	Catastrophic 1	Major 2	Moderate 3	Minor 4	Insignificant 5
A (almost certain)	Extreme	Extreme	High	High	Medium
B (likely)	Extreme	Extreme	High	High	Medium
C (possible)	Extreme	Extreme	High	Medium	Low
D (unlikely)	Extreme	High	Medium	Low	Low
E (rare)	High	Medium	Low	Low	Low

Criteria for the five categories of likelihood:

Almost certain: An environmental health impact is expected to occur in most circumstances.

Likely: An environmental health impact will probably occur in most circumstances

Possible: An environmental health impact could occur.

Unlikely: An environmental health impact could occur but is not expected.

Rare: An environmental health impact would occur only in exceptional circumstances.

Criteria for determining consequence to environmental health from an on-site wastewater management issue:

Catastrophic: Widespread, irreparable environmental damage; loss of human life or long term human health effects; serious litigation; over $1 million to manage consequences.

Major: Widespread, medium to long term impact; moderate human health impacts requiring medical treatment; major breach of legal requirements (prosecution); $50,000 to $1 million to manage consequences.

Moderate: Localised medium to long term impact; minor and reversible human health impacts treatable with first aid; moderate breach of legal requirements with fine (EIN/prosecution); $5,000 to $50,000 to manage consequences.

Minor: Localised short to medium term impact; no injury to people; minor breach of legal requirements (eg legal notice, EIN); $1000 to $5,000 to manage consequences.

Insignificant: Limited impact to a local area but no long-term effects; concern or complaints from neighbours; no injury to people; minor technical nonconformity but no legal nonconformity; less than $1000 cost to manage consequences.

Conducting a risk analysis results in the allocating of a risk level of *extreme*, *high*, *moderate* or *low* for each environmental aspect. Environmental health aspects with an *extreme* or *high* risk are considered to be *significant*, that is, they have or can have a significant environmental impact.

Issue	Potential impacts	Likelihood	Consequence	Risk rating	Risk reduction measure (RRM) / factors	Rating after adoption of RRM
OSWMS component						
Size of land application area.	Insufficient reserve area – failure of irrigation system	C	3	M	Conservative application rate (irrigation) Imported providing additional absorption capacity sandy loam for irrigation system. Dripper line may be replaced in situ in event of dripper blockage or localised soil clogging	Low
Land application area proximity to surface water	Pollution of surface waters	D	4	L	Conservative application rate (irrigation) Subsurface application Secondary treatment Disinfection	(Very) low.

Date of Site Visit: **27/11/2024**

Weather Conditions:
Overcast, cool and dry; 31mm of rainfall at Hobart Airport since 01/10/2024.

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 5 Spotswood Road, Dunalley 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 Darren Carter, Sorell 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 Darren Carter 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

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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.

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.

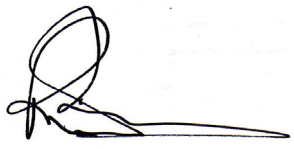
SITE ASSESSOR AND SYSTEM DESIGNER

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: 16/07/2025

APPENDICES

Appendix 1. Site Location

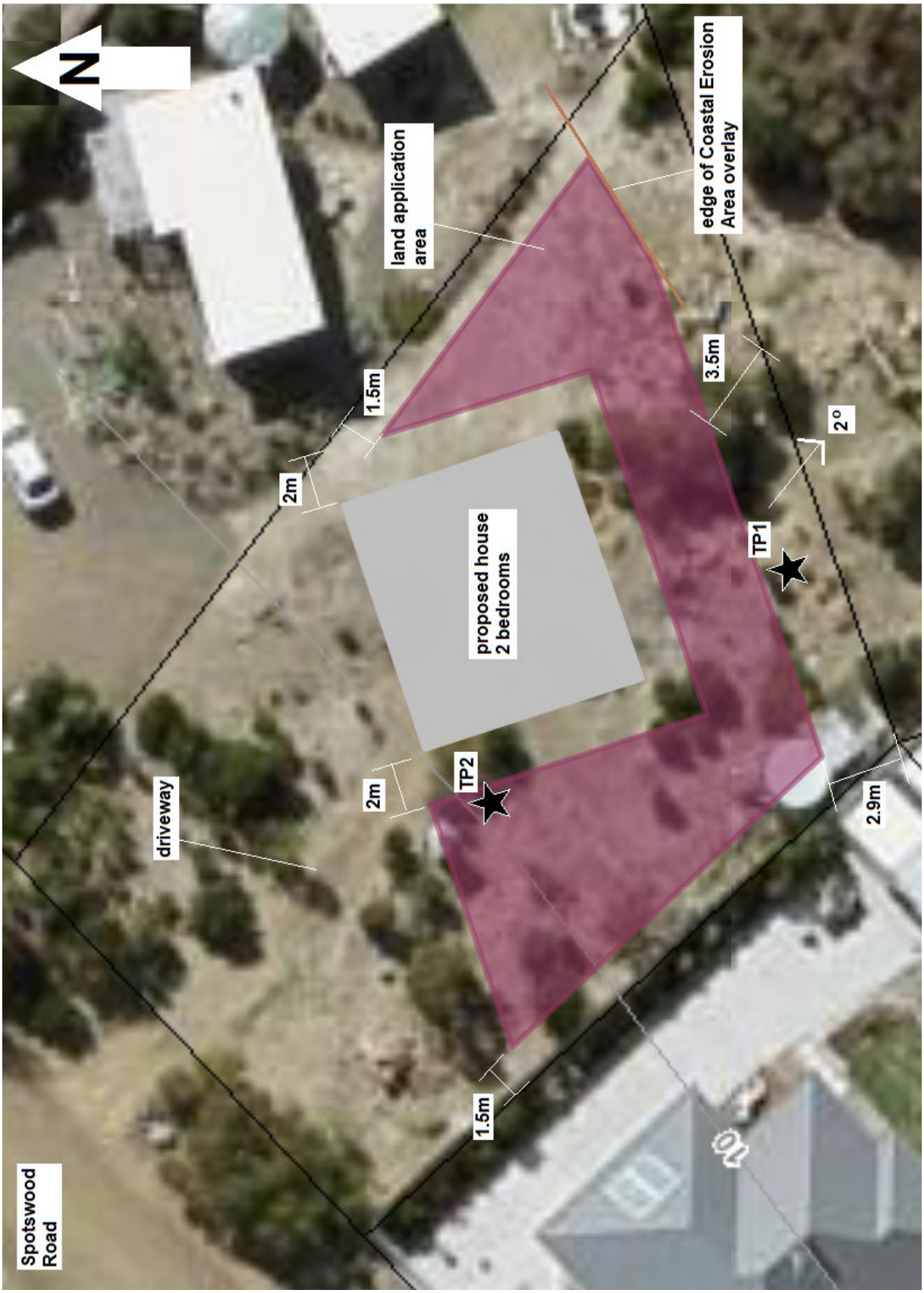
Appendix 2 - Site photos

(above) Views of proposed land application area

Appendix 3 – Soil testing

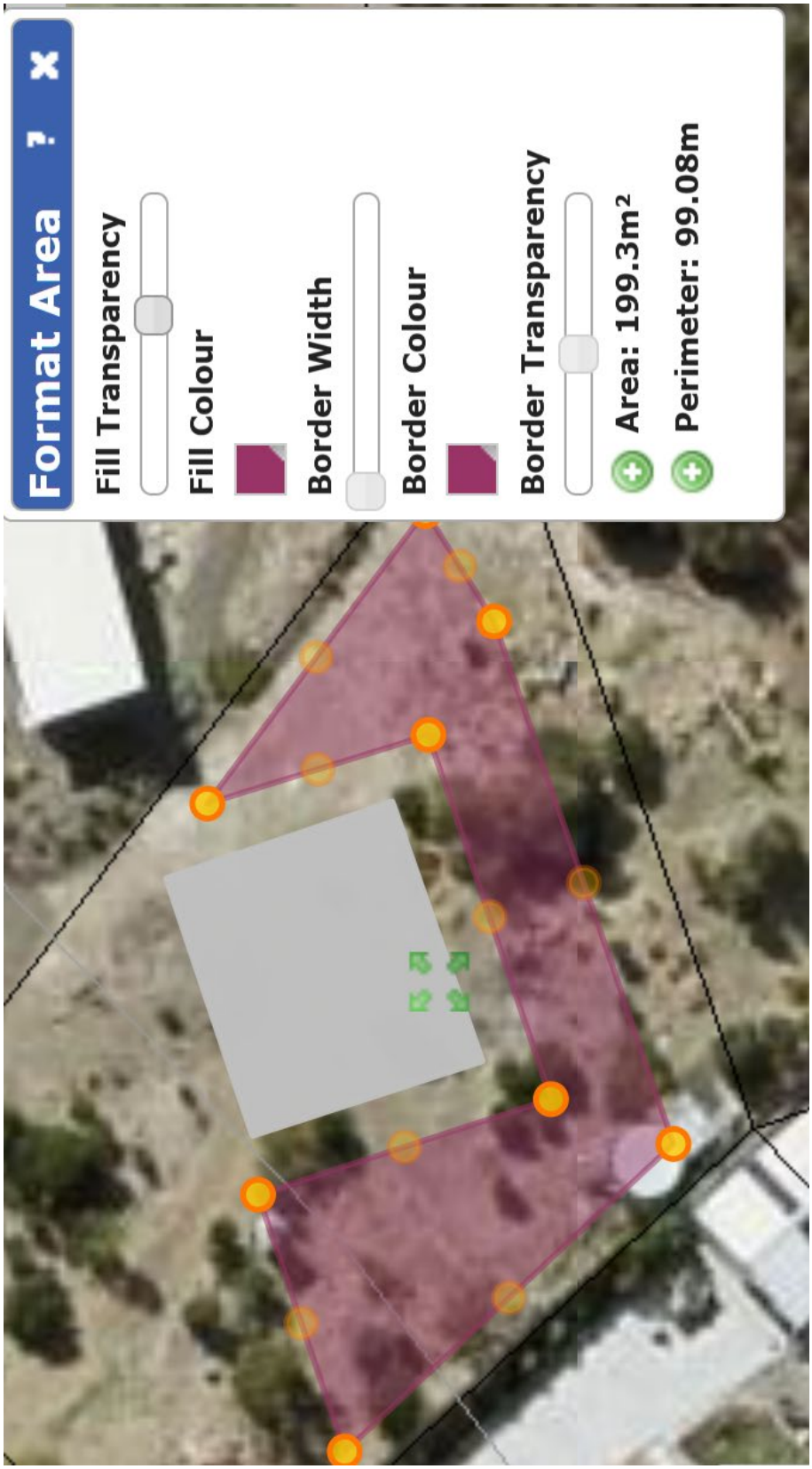
(above) – test cores from proposed land application area.

Appendix 4 - Design plans.

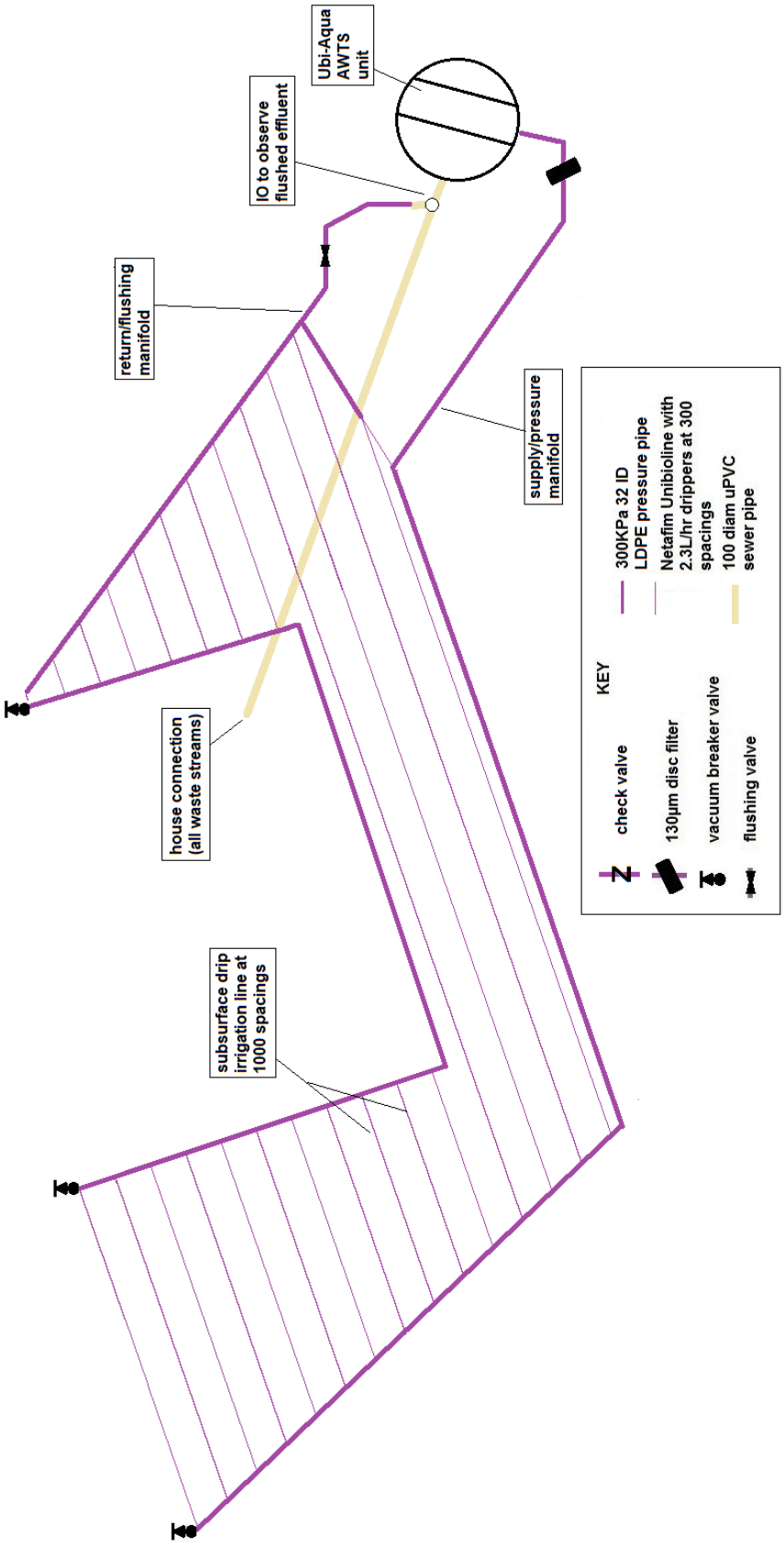


Site plan

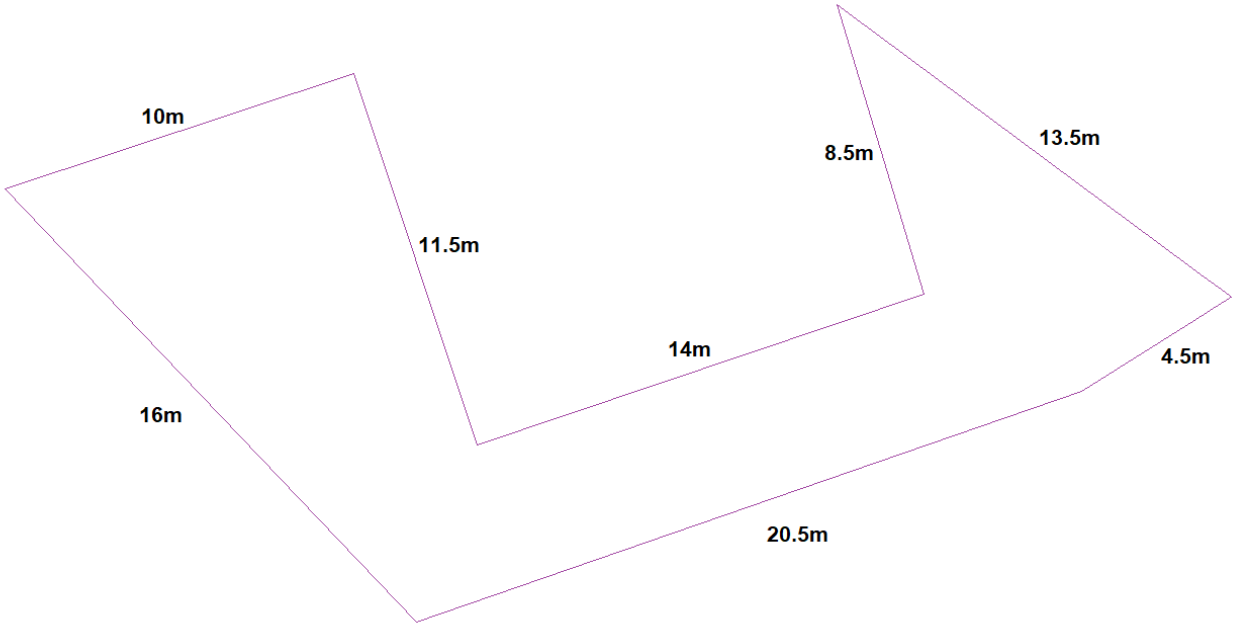
Drainage plan



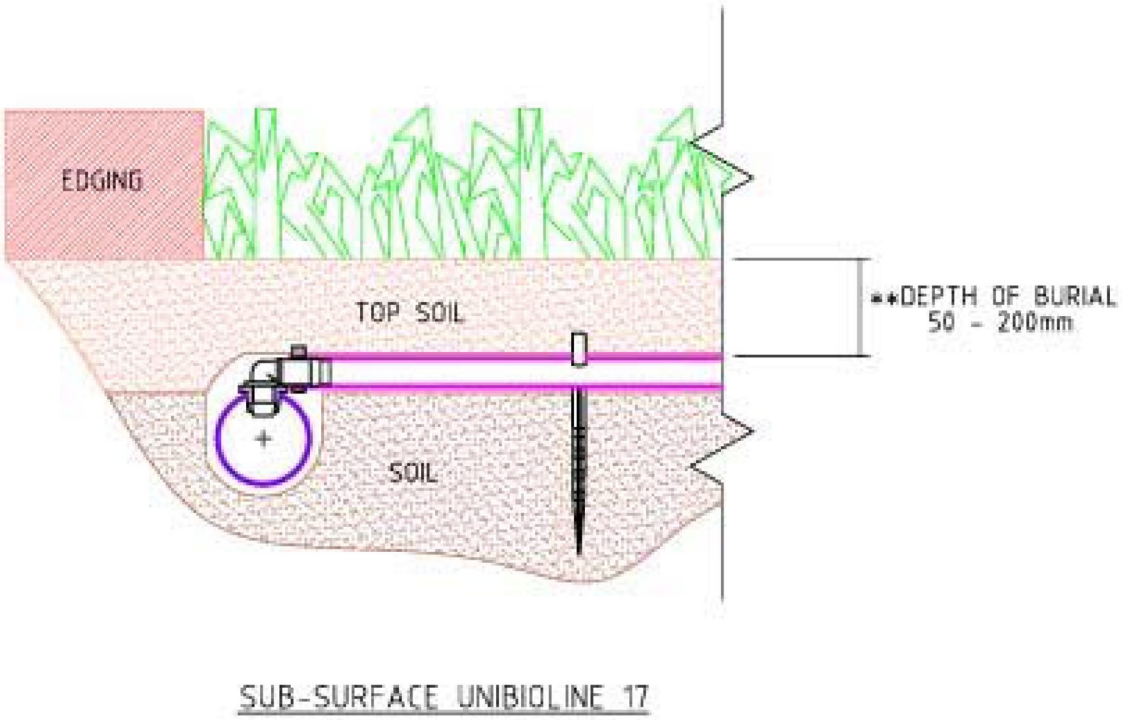
(above) Extract from LISTmap with area drawing tool showing proposed land application area sizing.



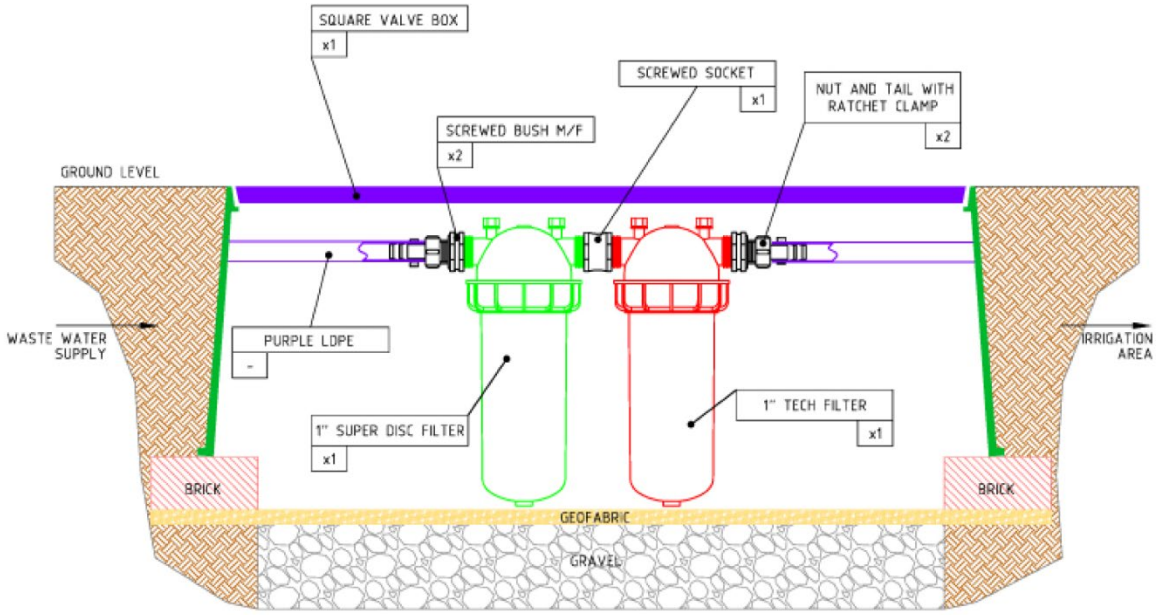
(above) On-site wastewater management system schematic – see below for dimensions



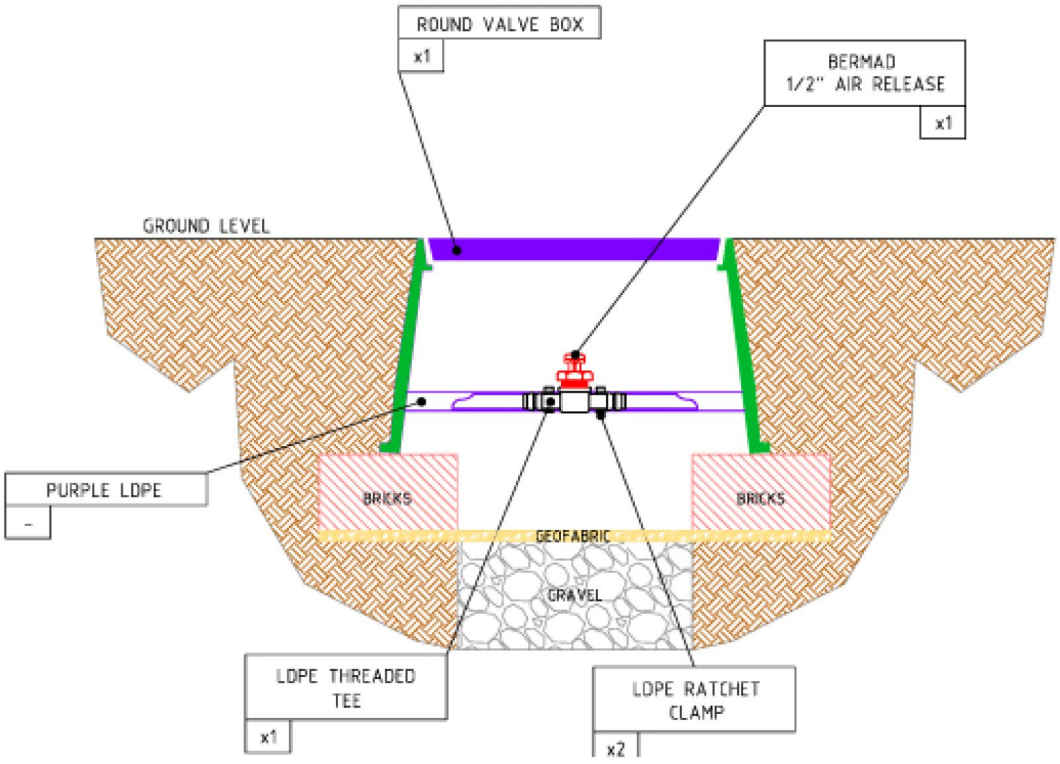
(above) Subsurface irrigation area dimensions



Cross section through subsurface irrigation area



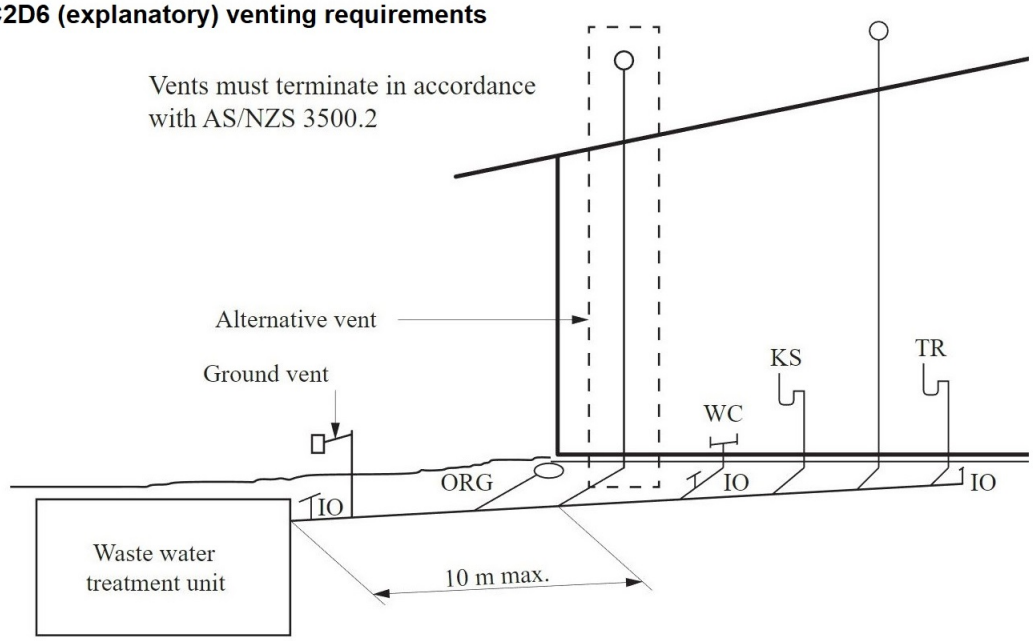
(above) Filter details

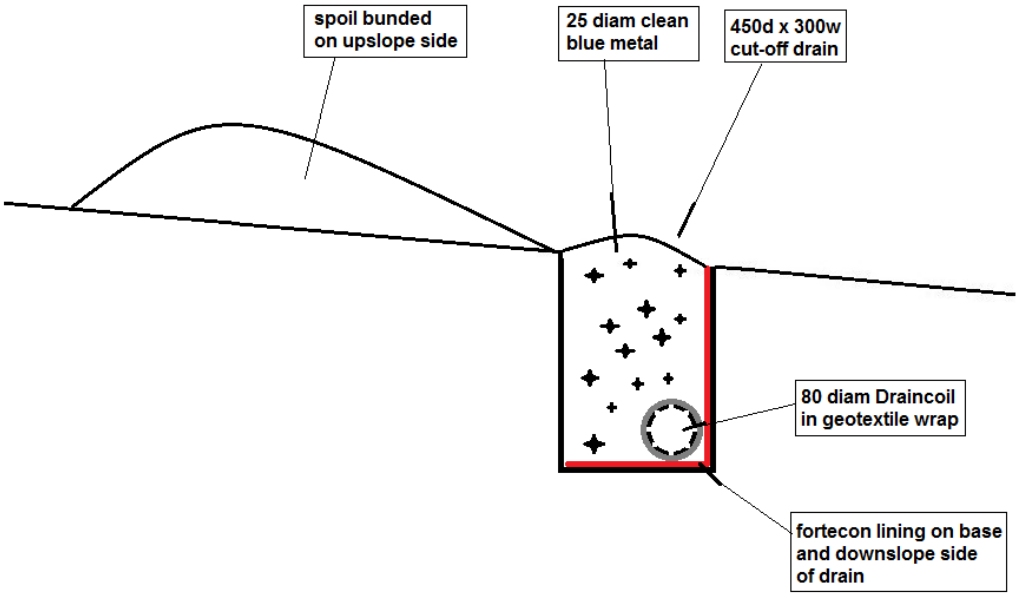


(above) Vacuum breaker valve details

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

Tas Figure C2D6 (explanatory) venting requirements





(above) Cut-off drain detail

Appendix 5 – Onsite wastewater management system design specifications.

1. Ubi Aqua 6000 MKII aerated wastewater management system unit to be installed.

2. Land application area will comprise approximately 200m^2 subsurface irrigation system, 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 500mm spacings.

6. Install irrigation dripper line laid on ripped natural soil surface.

7. Imported sandy loam topsoil to be laid level to depth of 200mm over new irrigation system.

8. Dripper line to be laid between Supply and Return manifolds, each comprising 32mm diameter lilac LD polyethylene pipe, as per irrigation area details in Appendix 4.

9. Vacuum breakers connected to highest points on each irrigation area as per attached plan in Appendix 4.

10. All valves and breakers to be placed in valve boxes with lilac screw-down covers flush to finished ground surface.

11. Supply manifolds connected to lowest point on irrigation area, return manifold runs from highest point on irrigation area zones.

12. Manual or automatic flushing valve to be provided in return line, discharging back to secondary settlement chamber of Aerated Wastewater Treatment unit.

13. Spread lawn grass seed over finished soil surface.

14. Condition and performance of wastewater land application area to be monitored and reported during routine quarterly maintenance inspections.

Exclusion of surface/stormwater

15. 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 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 residence at 5 Spotswood Road, Dunalley .

i. **System capacity** (medium-long term) – 5 persons / 600 litres/day.

ii. **Design criteria summary**:
- Effluent quality – secondary with disinfection
- Soil category - Category 5 (3mm/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; no additional land is available.

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; 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. <u>Consequences of overloading the system.</u>

Long term use by more than 5 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. <u>Consequences of underloading the system.</u>

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. **<u>Consequences of lack of operation, maintenance and monitoring attention.</u>**

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.
- 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.

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.

PROCESS IN BRIEF

Property requires an aerated waste water treatment system solution.

↓

Property owner engages an accredited designer to design a system to suit the owners 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

CBOS
Consumer Building and Occupational Services

A GUIDE TO PURCHASING, INSTALLING & MAINTAINING

AERATED WASTE WATER TREATMENT SYSTEMS

Department of Justice
Consumer, Building and Occupational Services

Tasmanian Government

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

Form **55**

To: Darren Carter *Owner /Agent*
PO Box 377 *Address*
Sorell 7172 *Suburb/postcode*

Qualified person details:

Qualified person: Richard Mason
Address: 20 Adelong Drive
Kingston
Phone No: 0418 589309
Fax No:
Licence No: CC6157T
Email address: richardmason@iprimus.com.au

Qualifications and Insurance details: BSc Environmental Sciences (Salford).

Arch Insurance Policy No. P0021114PI2022AU0

(description from Column 3 of the Director of Building Control's Determination)

Speciality area of expertise: Site and soil evaluation and land application system design.

(description from Column 4 of the Director of Building Control's Determination)

Details of work:

Address: 5 Spotswood Road
Dunalley 7177
Certificate of title No: 171987/1

The assessable item related to this certificate: Onsite wastewater management – Site and soil evaluation for onsite wastewater management capability;

(description of the assessable item being certified)
-

Certificate details:

Certificate type: On-site wastewater management - Site and soil evaluation

(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: x

In issuing this certificate the following matters are relevant –

Documents: AS/NZS 1547. 2012: On-site domestic-wastewater management.

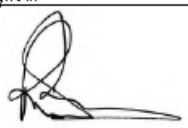
Relevant calculations:	
References:	AS/NZS 1547.2012: Onsite Domestic Wastewater Management. Directors Guidelines for on-site wastewater management systems

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

Site & soil evaluation and design report - Proposed on-site wastewater management system at 5 Spotswood Road, Dunalley TAS 7177, by Richard Mason, Onsite Assessments Tas, dated 16/07/2025.

Scope and/or Limitations

I certify the matters described in this certificate.

	Signed:	*Certificate No:*	*Date:*
Qualified person:		n/a	16/07/2025

Appendix 9 – Form 35

CERTIFICATE OF THE RESPONSIBLE DESIGNER

Section 94
Section 106
Section 129
Section 155

To: Darren Carter *Owner name*
PO Box 377 *Address*
Sorell 7172 *Suburb/postcode*

Form **35**

Designer details:

Name: Richard Mason
Category: Hydraulic Restricted
Business name: Onsite Assessments Tas
Phone No: 0418 589 309
Business address: 20 Adelong Drive
Kingston 7050
Fax No:
Licence No: CC6057T
Email address:

Details of the proposed work:

Owner/Applicant Darren Carter
Designer's project reference No. n/a
Address: 5 Spotswood Road
C/T No: 171987/1
Dunalley 7177

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

Description of work:

On site wastewater management system

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

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

Certificate Type:	Certificate	Responsible Practitioner
	☐ Building design	Architect or Building Designer
	☐ Structural design	Engineer or Civil Designer
	☐ Fire Safety design	Fire Engineer
	☐ Civil design	Civil Engineer or Civil Designer
	✓ Hydraulic design	Building Services Designer
	☐ Fire service design	Building Services Designer
	☐ Electrical design	Building Services Designer
	☐ Mechanical design	Building Service Designer
	☐ Plumbing design	Plumber-Certifier; Architect, Building Designer or Engineer
	☐ Other (specify)	

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

Other details:
AWTS with subsurface irrigation.

Director of Building Control - date approved: 2 August 2017 *Building Act 2016* - Approved Form No 35

Design documents provided:

The following documents are provided with this Certificate –

Document description:

Drawing numbers: Appendix 4	Prepared by: Richard Mason	Date: 16/07/2025
Schedules:	Prepared by: Richard Mason	Date:
Specifications: Appendix 5	Prepared by: Richard Mason	Date: 16/07/2025
Computations: Pages 6-7	Prepared by: Richard Mason	Date: 16/07/2025

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 Certificate of accreditation:

Ubi Aqua 6000 MKII – DOC/22/103618

Site & soil evaluation and design report - Proposed on-site wastewater management system at 5 Spotswood Road, Dunalley TAS 7177, by Richard Mason, Onsite Assessments Tas, dated 16/07/2025.

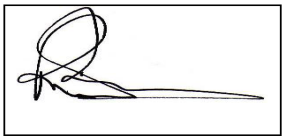
Form 55, dated 16/07/2025, certifying Site & Soil Evaluation etc Report.

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.

	Name: (print)	*Signed*	*Date*
Designer:	Richard Mason		16/07/2025
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:

- [x] The works will not increase the demand for water supplied by TasWater
- [x] The works will not increase or decrease the amount of sewage or toxins that is to be removed by, or discharged into, TasWater's sewerage infrastructure
- [x] The works will not require a new connection, or a modification to an existing connection, to be made to TasWater's infrastructure
- [x] The works will not damage or interfere with TasWater's works
- [x] The works will not adversely affect TasWater's operations
- [x] The work is not within 2m of TasWater's infrastructure and are outside any TasWater easement
- [x] I have checked the LISTMap to confirm the location of TasWater infrastructure
- [x] If the property is connected to TasWater's water system, a water meter is in place, or has been applied for to TasWater.

Certification:

I .....Richard 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

	Name: (print)	*Signed*	*Date*
Designer:	Richard Mason		16/07/2025

BUSHFIRE HAZARD REPORT

Proposed residential dwelling
5 Spotswood Drive
Dunalley, 7172

Dated 15th September 2025
Report by David Lyne BFP-144

11 Granville Avenue
Geilston Bay, 7015
M: 0421 852 987
dave_lyne@hotmail.com

Contents

Appendix A – Site analysis with Cadastral & Contour Overlay - indicates subject site
Appendix B – Designers site plan and site photos
Appendix C – Bushfire Hazard Management Plan, by David Lyne – certified date 15.09.2025; Certificate of Others (Form 55) 1714/25

1. Introduction

I have been engaged by Prime Design to prepare a bushfire report and plan for a new residential dwelling in the suburb of Dunalley. The intent of this report is to confirm the suitability of the bushfire prone parcel of land to be successfully developed for a new residential dwelling in accordance with the Directors Determination – Bushfire hazard areas v1.2.

The assessment describes the site and surrounding area, classifying the vegetation, assessing the slope and environmental features. This report should be included with approval documentation forming part of the certified documentation intended to satisfy the Directors Determination. The body of the report describes the site and assesses the requirements to be implemented to satisfy the requirements of the Directors Determination.

2. Limitation of Report

This report has been prepared for the above mentioned clients for their use and distribution only. The intent of the report is to provide supporting documentation for the Development Application (specifically vegetation clearance/maintenance distances) and the Building Application. Should submitted Application Plans differ from the Certified Plans in this report then an amended design review should be conducted to determine the suitability of any amendments in relation to the Bushfire Prone Area Requirements of AS3959-2018.

It is also to be noted that the assessment has been conducted according to the site inspection being conducted in September 2025 and does not take into account the possibility of altered site conditions either naturally occurring or where currently maintained or excluded vegetation conditions change due to a lack of ongoing maintenance.

It should be noted that compliance with the recommendations contained in this assessment does not mean that there is no residual risk to life safety or property as a result of bushfire. A residual level of risk remains which recognizes that removing the risk to life and property in absolute terms is not achievable while people continue to build in bushfire prone areas. This limitation is expressed in the following extract from AS 3959 (2018) which states (in the forward), *It should be borne in mind that the measures contained in this Standard cannot guarantee that a building will survive a bushfire event on every occasion. This is substantially due to the degree of vegetation management, the unpredictable nature and behaviour of fire, and extreme weather conditions.*

This level of residual risk is inherent in all bushfire standards and also applies to this assessment.

3. Site Description and Background

5 Spotswood Drive Dunalley is an existing land parcel located in the municipality of the Sorell Council. The property is currently predominately managed or low threat vegetation, with neighbouring properties to the north, east and west containing low threat vegetation surrounding established residential dwellings. To the north and east beyond the residential allotments are large areas of grassland, with scrub present to the south of the south between Dunalley beach and the property.

The site has access to an unsealed public road – Spotswood Drive, which links to Arthur Highway. This allotment is not provided with a reticulated hydrant water supply for firefighting.

3.1 Property Details

Address: 5 Spotswood Drive, Dunalley

Municipality: Sorell Council

Zoned: Rural Living

Lot Number: 171987/1

Type of Development: New residential dwelling

Classified BAL: **BAL-19**

Appendix A: Photo 1 – Site analysis with cadastral overlay – Subject site highlighted blue.

3.2 Classification of Vegetation

The vegetation affecting the site has been classified in accordance with Clause 2.2.3 of AS 3959-2018. The Bushfire-Prone vegetation affecting the site is predominantly ***Scrub – Group D*** and ***Grassland – Group G*** in accordance with AS3959-2018.

In this case, in accordance with Clause 2.2.2 of AS 3959-2018, the relevant Fire Danger Index for Tasmania of 50 (FDI 50).

When considering the definition of Bushfire Prone Area under the Directors Determination it is evident the proposed dwelling location is within 100 metres of greater than 1 hectare of vegetation classified in accordance with AS 3959-2018 and is therefore considered *'Bushfire Prone'*. It should be also noted that Clauses C2.2.3.1 and C2.2.5 of AS3959-2018 state that a sufficient level of distance must be used to determine the vegetation classification and the effective slope which may necessitate the consideration of vegetation out to distances in excess of 100m from the site. As such the classified vegetation and effective slope under the vegetation has been assessed over a distance of 140m of the site.

From the proposed dwelling site a 360° survey has been conducted to determine the vegetation type, proximity and slope under the vegetation which is of the highest hazard rating. In this case the ***Scrub*** and ***Grassland*** is the highest hazard vegetation surrounding the proposed dwelling.

Note: in a bushfire there is a possibility of fire attack from any direction, not just the direction of the highest hazard. Photo 1, above indicates the Bushfire Prone Vegetation described.

3.3 Slope

The Effective slope of the land under the classified vegetation is determined in accordance with Clause 2.2.5 of AS 3959- 2018.

The *effective* slope under the bushfire prone vegetation is generally Upslope/Flatland to north and east; and downslope 0-5° to the south and west of the site.

Refer to Appendix A Image for topographic contour information.

4. Bushfire Assessment

In accordance with Clause 2.2 of AS 3959-2018, the Simplified Procedure has been applied to determine the Bushfire Attack Level (BAL) for the proposed dwelling site. In accordance with the Directors Determination, fire-fighting water supply and vehicle access are also considered and discussed in relation to the proposed dwelling.

It should be noted that AS3959 Table 2.6 only provides BAL ratings for separation distance up to and including 50m from grassland. Therefore, grassland less than 100m but greater than 50m separation from the site has been excluded from assessment.

4.1 Bushfire Attack Level

Considering the current conditions, in accordance with AS3959-2018 the dwelling site is capable of achieving **BAL-12.5** (the minimum required standard being BAL-29 required by the Directors Determination).

The desired BAL rating to be applied in this instance will be **BAL-12.5**. The vegetation within the Hazard Management Area (HMA) is to be continually managed to a low threat level - as per Clause 2.2.3.2 of AS3959-2018.

Table 1 – Bushfire Attack Level Assessment Summary and Notes

Property Details

Applicants Name	Prime Design			**Phone**	03 6228 4575
Municipality	Sorell Council			**Zoning**	Rural Living
Certificate of Title/Lot No.	171987/1		**Lot Size**		794m²
Address	5 Spotswood Drive, Dunalley 7172				

Type of Building Work

New Class 1a Buildings	x
New Class 10a Building	
New Class 2 Building	
New Class 3 Building	
Alteration/Additions to an existing building	

Description of building work: e.g. *single dwelling with attached garage*
New residential dwelling

Bush Fire Attack Level (BAL)

Relevant fire danger index: (see clause 2.2.2) **FDI 50**

Assess the vegetation within 100m in all directions (tick relevant group)
Note 1: Refer to table 2.3 and figures 2.3 & 2.4 for description and classification of vegetation.
Note 2: If there is no classified vegetation within 100m of the site then the BAL is LOW for that part of the site.

Vegetation Classification (See Table 2.3	North X	South X	East X	West X
	North East	South-West	South-East	North-West
Group -	Grassland	Scrub	Grassland	Scrub

Exclusions (where applicable)	Circle relevant paragraph descriptor from clause 2.2.3.2			
	(a) (b) (c) (d) (e) (f)	(a) (b) (c) (d) (e) (f)	(a) (b) (c) (d) (e) (f)	(a) (b) (c) (d) (e) (f)

Distance of the site from classified vegetation (see clause 2.2.4)

Distance to classified vegetation	Show distances in meters			
	25m	22m	43m	103m

Effective Slope	Upslope			
Slope under the classified vegetation	Upslope/o° X	Upslope/o°	Upslope/o° X	Upslope/o°
	Downslope			
	>0 to 5° ☐	>0 to 5° X	>0 to 5° ☐	>0 to 5° X
	>5 to 10° ☐	>5 to 10° ☐	>5 to 10° ☐	>5 to 10° ☐
	>10 to 15° ☐	>10 to 15° ☐	>10 to 15° ☐	>10 to 15° ☐
	>15 to 20° ☐	>15 to 20° ☐	>15 to 20° ☐	>15 to 20° ☐

BAL value for each side of the site	BAL-12.5	BAL-19	BAL-12.5	BAL-LOW
Separation to achieve BAL-29	6-<10m	15-<22m	6-<10m	15-<22m
Separation to achieve BAL-19	10-<14m	22-<31m	10-<14m	22-<31m
Separation to achieve BAL-12.5	14-<50m	31-<100m	14-<50m	31-<100m

Construction Requirements
For this particular development a BAL-19 rating would suit all directions of this site, construction will be generally compliant with AS3959 -2018 Sections 3 and 6.

4.2 Road / Vehicle Access

The primary access to the lot is from an unsealed public road – Spotswood Drive, which connects to the Arthur Highway. As the access is required in order for a fire appliance to access the onsite water supply in the case of a bushfire, it is subject to meeting the requirements of Table 2 of the Directors Determination.

Table 2: Requirements for Property Access		
A.	Property access length is less than 30m; or access is not required for a fire appliance to access a firefighting water point.	There are no specified design and construction requirements.
B.	Property access length is 30m or greater; or access is required for a fire appliance to a firefighting water point.	The following design and construction requirements apply to property access: (a) all-weather construction; (b) load capacity of at least 20t, including for bridges and culverts; (c) minimum carriageway width of 4m; (d) minimum vertical clearance of 4m; (e) minimum horizontal clearance of 0.5m from the edge of the carriageway; (f) cross falls of less than 3 degrees (1:20 or 5%); (g) dips less than 7 degrees (1:8 or 12.5%) entry and exit angle; (h) curves with a minimum inner radius of 10m; (i) maximum gradient of 15 degrees (1:3.5 or 28%) for sealed roads, and 10 degrees (1:5.5 or 18%) fo (j) terminate with a turning area for fire appliances provided by one of the following: (i) a turning circle with a minimum outer radius of 10m; or (ii) a property access encircling the building; or (ii) a hammerhead "T" or "Y" turning head 4m wide and 8m long.
C.	Property access length is 200m or greater.	**Not applicable to this development.**
D.	Property access length is greater than 30m, and access is provided to 3 or more properties.	**Not applicable to this development.**
E.	Additional requirements for certain Class 9 Buildings	**Not applicable to this development.**

4.3 Water supply for firefighting

As the proposed development does not have access to a reticulated water supply suitable for firefighting, a static water supply of minimum 10,000 litres must be provided solely for firefighting for this particular site. The water supply must include a water connection point within 3.0 m of a vehicle hardstand that is at least 6.0 m from the building. The hardstand must be connected to the property access. The water supply must comply with Table 3B of the Director's Determination:

Table 3B Static Water Supply for Fire fighting

A. Distance between building area to be protected and water supply

The following requirements apply:

1. The building area to be protected must be located within 90 metres of the water connection point of a static water supply; and
2. The distance must be measured as a hose lay, between the water connection point and the furthest part of the building area.

B. Static Water Supplies

A static water supply:

1. May have a remotely located offtake connected to the static water supply;
2. May be a supply for combined use (firefighting and other uses) but the specified minimum quantity of firefighting water must be available at all times;
3. Must be a minimum of 10,000 litres per building area to be protected. This volume of water must not be used for any other purpose including firefighting sprinkler or spray systems;
4. Must be metal, concrete or lagged by non-combustible materials if above ground; and
5. If a tank can be located so it is shielded in all directions in compliance with Section 3.5 of AS 3959, the tank may be constructed of any material provided that the lowest 400 mm of the tank exterior is protected by:

   (a) metal;

   (b) non-combustible material; or

   (c) fibre-cement a minimum of 6 mm thickness.

C. Fittings, pipework and accessories (including stands and tank supports)

Fittings and pipework associated with a water connection point for a static water supply must:

1. Have a minimum nominal internal diameter of 50mm;
2. Be fitted with a valve with a minimum nominal internal diameter of 50mm;
3. Be metal or lagged by non-combustible materials if above ground;
4. Where buried, have a minimum depth of 300mm;
5. Provide a DIN or NEN standard forged Storz 65 mm coupling fitted with a suction washer for connection to firefighting equipment;
6. Ensure the coupling is accessible and available for connection at all times;
7. Ensure the coupling is fitted with a blank cap and securing chain (minimum 220 mm length);
8. Ensure underground tanks have either an opening at the top of not less than 250 mm diameter or a coupling compliant with this Table; and
9. Where a remote offtake is installed, ensure the offtake is in a position that is:

   (a) Visible;

   (b) Accessible to allow connection by firefighting equipment;

   (c) At a working height of 450 – 600mm above ground level; and

   (d) Protected from possible damage, including damage by vehicles.

D. Signage for static water connections

1. The water connection point for a static water supply must be identified by a sign permanently fixed to the exterior of the assembly in a visible location. The sign must comply with: Water tank signage requirements within AS 2304 *Water storage tanks for fire protection systems; or*
2. The following requirements:

   (a) Be marked with the letter "W" contained within a circle with the letter in upper case of not less than 100 mm in height;

(b) Be in fade-resistant material with white reflective lettering and circle on a red background; (c) Be located within one metre of the water connection point in a situation which will not impede access or operation; and (d) Be no less than 400 mm above the ground.
E. Hardstand
A hardstand area for fire appliances must be provided: 1. No more than three metres from the water connection point, measured as a hose lay (including the minimum water level in dams, swimming pools and the like); 2. No closer than six metres from the building area to be protected; 3. With a minimum width of three metres constructed to the same standard as the carriageway; and 4. Connected to the property access by a carriageway equivalent to the standard of the property access.

4.4 Hazard management area

The minimum extents of the Hazard Management Area (HMA) are for the entirety of the residential allotment to be managed and treated as HMA. Management prescriptions for the proposed HMA are provided in Table 2.

Table 2 - Hazard Management Area Prescriptions

Within 10m of habitable buildings	• No storage of flammable materials (e.g. firewood); • Avoid locating flammable garden materials near vulnerable building elements such as glazed windows/doors, decks and eaves (e.g. non-fire-retardant plants and combustible mulches); • Non-flammable features such as paths, driveways and paved areas are encouraged around habitable buildings.
Trees within HMA	• Maintain canopy separation of approximately 2.0m; • Ensure no branches overhang habitable buildings; • Remove tree branches within 2.0m of the ground level below; • Locate any new tree plantings 1.5 x their mature height from buildings; • Avoid planting trees with loose, stringy or ribbon bark.
Understory vegetation within HMA	• Maintain grass cover at <100mm; • Maintain shrubs to <2.0m height; • Shrubs are to be maintained in clumps so as to not form contiguous vegetation (i.e. clumps up to 10sqm in area, separated from each other by at least 10m); • Avoid locating shrubs directly underneath trees; • Periodically remove dead leaves, bark and branches from underneath trees and around habitable buildings.

5. Conclusion

The site has been classified as **BAL-19** as per the assessment processes outlined in AS3959-2018. The separation distances shown above are the areas to be maintained and kept in a way to reduce the fuel loads present in order to achieve lower BAL ratings. For this particular site and for where the proposed building is to be constructed, a **BAL-19** rating is easily achieved and would suit all directions of the site.

6. References

Directors Determination – Bushfire hazard areas v1.2.

LIST map version. Aerial Photograph [online]. Available from: http://www.thelist.tas.gov.au/listmap/listmap

Standards Australia 2018, *Construction of buildings in bushfire prone areas*, AS 3959-2018.

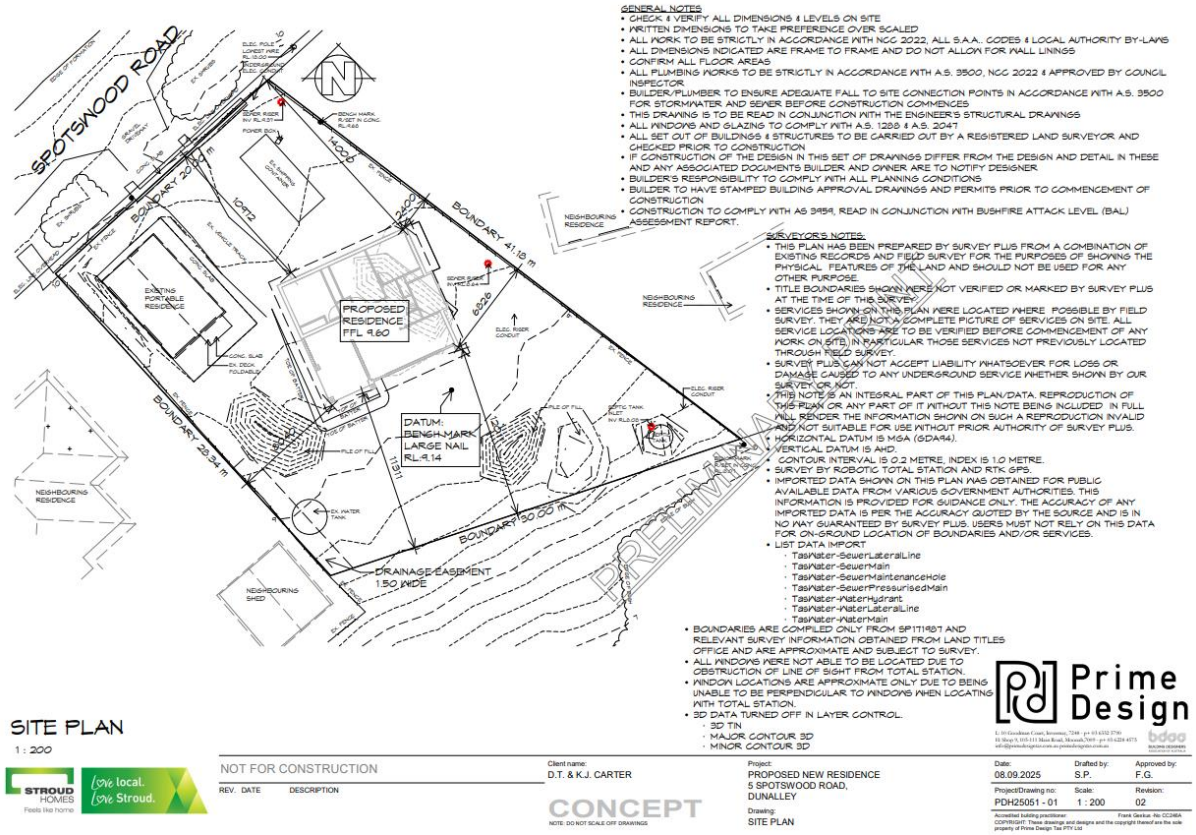
Statement

I have taken all reasonable steps to ensure that the information provided in this assessment is accurate and reflects the conditions on and around the site and allotment on the date of this assessment.
It should be noted that this report does not take into account the possibility of altered site conditions either naturally occurring or where currently maintained or excluded vegetation conditions change due to lack of ongoing maintenance. Compliance with the recommendations contained in this assessment does not mean that there is no residual risk to safety of life or property as a result of bushfire.

Signed: .....

Date: 15/09/2025.....

Appendix B – Designer's site plan and site images



Looking north

Looking south

Looking east

Looking west

HAZARD MANAGEMENT AREAS – HMA

Hazard Management Area includes the area to protect the Building as well as the access and water supplies. Vegetation in the Hazard Management area is to be managed and maintained in a minimum fuel condition.
The HMA is determined from the unmanaged vegetation on this allotment and neighbouring allotments, and should the level of the unmanaged vegetation increase the BHMP and HMA should be reviewed to determine the ongoing suitability of the BHMP and HMA associated with the development.

MAINTENANCE SCHEDULE

- Removal of fallen limbs, leaf and bark litter;
- Cut lawns short (less than 100mm) and maintain;
- Remove pine bark and other garden mulch;
- Complete under–brushing and thin out the under storey;
- Prune low hanging trees to ensure separation from ground litter;
- Prune larger trees to establish and maintain horizontal and vertical canopy separation;
- Maintain storage of petroleum fuels;
- Maintain access to the dwelling and water storage area Remove fallen limbs, leaf and bark litter from roofs, gutters and around the building;
- Ensure that 10,000 litres of dedicated water supply for fire fighting purposes is available at all times.

BUSHFIRE PROTECTION MEASURES

To reduce the risk of bushfire attack, continual maintenance of bushfire protection measures including building maintenance, managed vegetation areas, water supply and road construction are to be undertaken by successive owners for perpetuity.

WATER SUPPLY

Fittings and pipework associated with a water connection point for a static water supply must: –

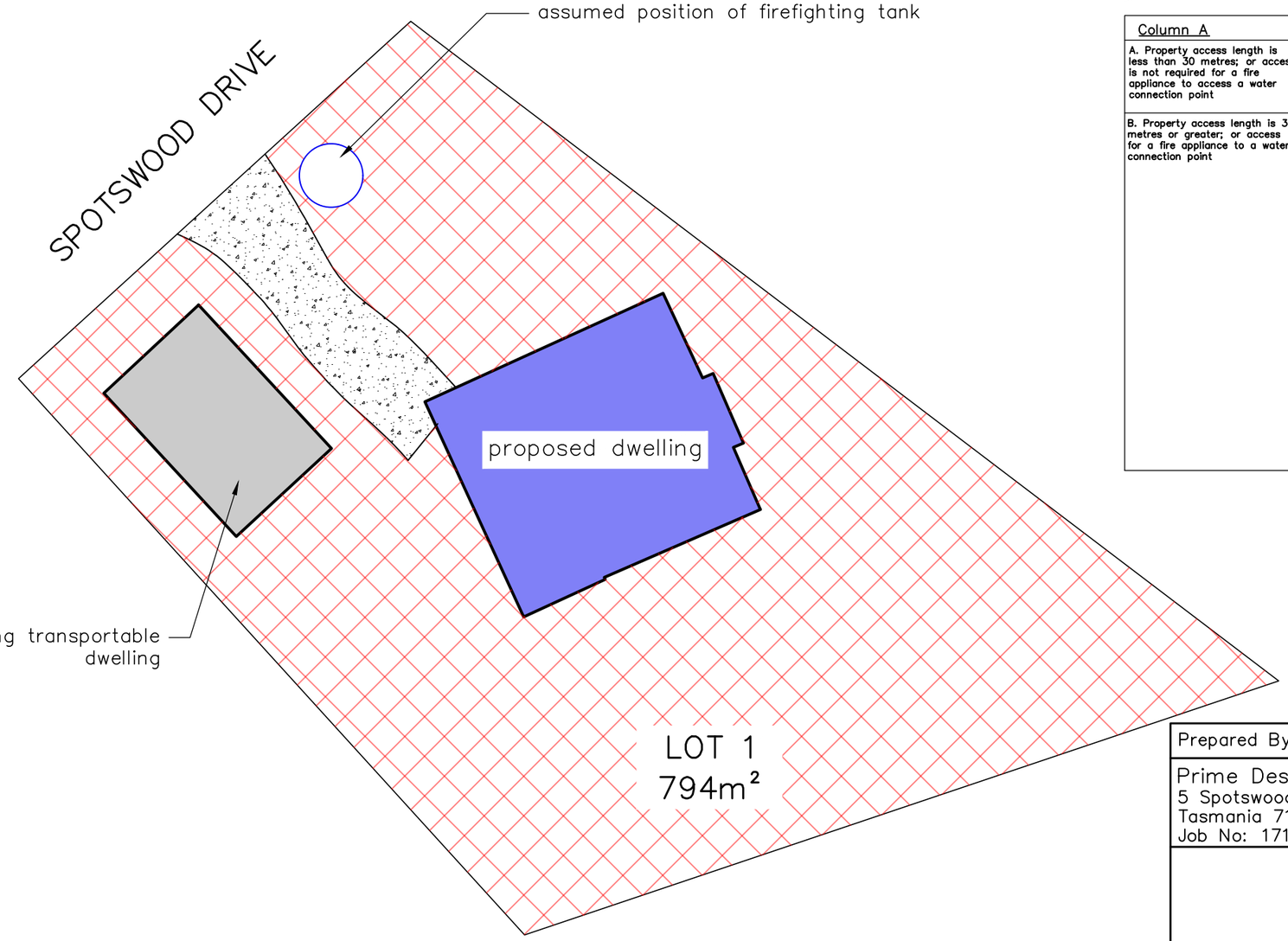
- Have a minimum nominal internal diameter of 50mm
- Be fitted with a valve with a minimum nominal internal diameter of 50mm
- Be metal or lagged by non–combustable materials if above ground
- Where buried, have a minimum depth of 300mm (compliant with AS/NZS 3500.1 Clause 5.23)
- Provide a DIN or NEN standard forged Storz 65mm coupling fitted with a suction washer for connection to fire fighting equipment
- Ensure the coupling is accessible and available for connection at all times
- Ensure the coupling is fitted with a blank cap and securing chain (minimum 220mm length)
- Ensure underground tanks have either an opening at the top of not less than 250mm diameter or a coupling compliant with this table; and
- Where a remote offtake is installed, ensure the offtake is in a position that is:
  a. Visible
  b. Accessible to allow connection to by fire fighting equipment
  c. At a working height of 450–600mm above ground level; and
  d. Protected from possible damage, including damage by vehicles

SIGNAGE FOR STATIC WATER CONNECTIONS

The water connection points for a static water supply must be identified by a sign permanently fixed to the exterior of the assembly in a visible location. The sign must comply with: –

- Water tank signage requirements within AS2304 Water storage tanks for fire protection systems; or
- The following requirements:
  a. Be marked with the letter "W" contained within a circle with the letter in upper case of not less than 100mm in height;
  b. Be in fade–resistant material with white reflective lettering and circle on a red background;
  c. Be located within one metre of the water connection point in a situation which will not impede access or operation; and
  d. Be no less than 400mm above ground.

SITE PLAN NTS



PLAN TO BE READ IN CONJUNCTION WITH BUSHFIRE ATTACK LEVEL (BAL) REPORT

NOTIFY COUNCIL AND CERTIFYING BUSHFIRE PRACTITIONER IF ANY VARIATION IN BUILDING SETOUT OR VEGETATION HAZARDS OCCUR

ENSURE THIS PLAN AND ACCOMPANYING REPORT DO NOT CONFLICT WITH OTHER RELEVANT REPORTS AND ASSESSMENTS

BHMP
SCALE 1:200

HAZARD MANAGMENT AREA
Low threat, maintained vegetation in accordance with AS 3959 – Clause 2.2.3.2 (e) & (f). Building is to be constructed to meet BAL–19 requirements

2 0 2 4 6 8 10 m
SCALE 1:200

Private access roads for vehicles – requirements for design and construction

Vehicle access roads of a length (or part thereof) as specified in Column A is satisfied by the design and construction requirements specified in Column B.

Column A	Column B
A. Property access length is less than 30 metres; or access is not required for a fire appliance to access a water connection point	There is no design and construction requirements if TFS access to the water supply is not required
B. Property access length is 30 metres or greater; or access for a fire appliance to a water connection point	The following design and construction requirements apply: • All–weather construction • a load limit of at least 20 tonnes, including for bridges and culverts • minimum carriageway width of 4 metres • minimum vertical clearance of 4 metres • minimum horizontal clearance of 0.5 metres from the edge of the carriageway • cross falls of less than 3° (1:20 or 5%) • dips less than 7° (1:8 or 12.5%) entry and exit angle • Curves with a minimum inner radius of 10 metres • maximum gradient of 15° (1:3.5 or 28%) for sealed roads, and 10° (1:5.5 or 18%) for unsealed roads • terminate with a turning area for fire applicances provided by one of the following (a) a turning circle with a minimum inner radius of 10m (b) a property access encircling the building (c) a hammerhead "T" or "Y" turning head 4m wide and 8m long

Prepared By David Lyne – BFP 144

Prime Design
5 Spotswood Drive, Dunalley
Tasmania 7177
Job No: 1714

N

11 GRANVILLE AVENUE
GEILSTON BAY, TASMANIA 7015
PH: 0421 852 987 EMAIL: dave_lyne@hotmail.com
Accredited Designer: David Lyne CC7063

PLEASE READ CAREFULLY

THIS PLAN CERTIFIED CORRECT IS THE ONE REFERRED TO IN THE BUILDING CONTRACT AND I UNDERSTAND CHANGES HEREAFTER MAY NOT BE POSSIBLE.

FINAL PLAN: ANY REQUESTED VARIATIONS TO YOUR HOUSE PLAN WILL INCUR AN AMENDMENT / ADMINISTRATION MINIMUM FEE

SIGNATURES

CLIENT:..... DATE:.....

CLIENT:..... DATE:.....

BUILDER:.....DATE:.....

DWG NO: 1714		SHEET: 01
SCALE AT A3: 1:200		DATE:15.09.2025
DRAWN:DL	CHECK:DL	REV 0

CERTIFICATE OF QUALIFIED PERSON – ASSESSABLE ITEM

Section 321

Form **55**

To: Prime Design *Owner /Agent*

Address

Suburb/postcode

Qualified person details:

Qualified person: David Lyne

Address: 11 Granville Avenue

Geilston Bay TAS 7015

Phone No: 0421 852 987

Fax No:

Licence No: BFP-144

Email address: dave_lyne@hotmail.com

Qualifications and Insurance details: Accredited to report on bushfire hazards under Part IVA of the Fire Service Act 1979

(description from Column 3 of the Director's Determination - Certificates by Qualified Persons for Assessable Items

Speciality area of expertise: Analysis of hazards in bushfire-prone areas

(description from Column 4 of the Director's Determination - Certificates by Qualified Persons for Assessable Items)

Details of work:

Address: 5 Spotswood Drive

Dunalley 7177

Lot No: 1

Certificate of title No: 171987

The assessable item related to this certificate: Assessment – BAL Ratings

(description of the assessable item being certified)
Assessable item includes –
- *a material;*
- *a design*
- *a form of construction*
- *a document*
- *testing of a component, building system or plumbing system*
- *an inspection, or assessment, performed*

Certificate details:

Certificate type: Bushfire Hazard
Bushfire Hazard Management Plan

(description from Column 1 of Schedule 1 of the Director's Determination - Certificates by Qualified Persons for Assessable Items n)

This certificate is in relation to the above assessable items, 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:	Bushfire Hazard Report – new residential dwelling Bushfire hazard management plan
Relevant calculations:	• In Accordance with AS3959-2018; and • the Building Regulations (TAS).
References:	• AS3959-2018; • the Building Regulations (TAS); and • Building Code of Australia (BCA).

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

The above mentioned report concludes that a BAL-19 rating is achievable and easily maintained for this site

Scope and/or Limitations

The assessment has been conducted according to information provided by the designer/client and freely available historical data and does not take into account the possibility of altered site conditions from the data relied upon.
It should be noted compliance with the recommendations contained in the certified documents does not mean that there is no residual risk to life safety and property as a result of bushfire. The limitation is expressed in the following extract from AS3959-2018, which states:

It should be borne in mind that the measures contained in this Standard cannot guarantee that a building will survive a bushfire event on every occasion. This is substantially due to the degree of vegetation management, the unpredictable nature and behaviour of fire, and extreme weather conditions.

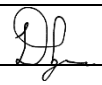
The level of residual risk is inherent in all bushfire standards and also applies to this certification.

The assessment has been undertaken and certification provided on the understanding that; -

1. The certificate only deals with the potential bushfire risk all other statutory assessments are outside the scope of this report.

2. The report only identifies the size, volume and status of vegetation at the time the site inspection was undertaken and cannot be relied upon for any future development.
Impacts of future development and vegetation growth have not been considered.

I certify the matters described in this certificate.

	Signed:	*Certificate No:*	*Date:*
Qualified person:		1714/25	15/09/2025