DOYLE SOIL CONSULTING

SITE AND SOIL EVALUATION REPORT

ONSITE WASTEWATER ASSESSMENT

59 Bruny Island Main Road

Dennes Point

August 2024

Site Plan amended January 2025

Doyle Soil Consulting: 6/76 Auburn Rd Kingston Beach 7050 – 0488 080 455 – robyn@doylesoilconsulting.com.au

SITE INFORMATION

Client: David Bowman

Address: 59 Bruny Island Main Road, Dennes Point (CT 28434/1)

Site Area: Approximately 570 m^2

Date of inspection: 21/08/2024

Building type: Existing shed

Services: Tank water and onsite wastewater

Relevant Planning Overlays: Landslide hazard – low (not in the LAA)

Mapped Geology - Mineral Resources Tasmania 1:25 000 Blackmans Bay sheet: **Qhw** = Windblown and locally derived sand

Soil Depth: >2.0 m

Subsoil Drainage: well drained

Rainfall in previous 7 days: Approximately 17 mm

Average Slope: Approximately 10° to the Northwest

SITE ASSESSMENT AND SAMPLE TESTING

Site and soil assessment in accordance with AS1547-2012 *Onsite domestic wastewater assessment and design*.

Emerson Dispersion test on subsoils.

Test holes were dug using a Christie Post Driver Soil Sampling Kit, comprising CHPD78 Christie Post Driver with Soil Sampling Tube (50 mm OD x 1600/2100 mm).

SITE AND SOIL COMMENTS

The natural soil profiles are formed from deep windblown sand with alluvial clay loam subsoils, overlying probable dolerite bedrock at greater depth. The profiles are deep with no refusal occurring at approximately 2.0 m.

For effluent land application, the soils are limited by the sandy clay loam subsoils. These are moderately structured with mild dispersion characteristics.

Absorption trenches should be constructed within the moderately deep (0.7 m deep) sand topsoil, with total LAA sized on the underlying category 4 – mildly dispersive sandy clay loam.

The maximum estimated Linear loading rate of the sand layers below the absorption trenches is approximately 49 L/m/day. The site is limited by the area available for land application, however a suitably sized area can be contained while allowing room for vehicle parking/turning. The base of absorption areas are to be treated with gypsum (at 0.5 kg/m2) to address dispersive characteristics.

SOIL PROFILES – Test Hole 1

Depth (m)	Horizon	Description and field texture grade	Soil Cat.
0 – 0.1	A1	Very dark grey (10YR 3/1), **Sand,** single grain, few roots, slightly moist loose consistency.	**1**
0.1 – 0.6	A2	Bands of grey (5YR 5/1) and grey (7.5YR 5/1), **Sand,** slightly moist loose consistency.	**1**
0.6 – 0.75	A3	Light yellowish brown (10YR 6/1), **Sand,** single grain, slightly moist medium dense consistency.	**1**
0.75 – 1.4	$B2_1$	Yellowish brown (10YR 6/8), **Sandy Clay Loam,** strong coarse platy structure, slightly moist stiff consistency.	**4**
1.4 -1.8	BC	Yellowish brown (10YR 6/8), **Sandy Loam,** weak medium angular blocky structure.	**3**
1.8 – 2.0+	C	Yellowish brown (10YR 6/8), **Sand,** single grain, slightly moist dense consistency. <u>No refusal.</u>	**1**

EMERSON AGGREGATE DISPERSION TEST

Soils with an excess of exchangeable sodium ions on the cation exchange complex (clays), can cause clay dispersion. Under some circumstances the presence of dispersive soils can also lead to significant erosion, and in particular tunnels leading to eventual gully erosion. Dispersive clay subsoil materials can also cause sealing of the soil surface – if left out in wet weather, they then dry and set very hard in dry weather. Based upon field survey of the property and the surrounding area, no erosion was identified at the site.

The subsoil was tested for dispersion using the Emerson Aggregate Test (EAT). Photos of test results are available on request. Testing resulted in Emerson class 2(2), indicating clays with mild dispersion characteristics. Exposure to rainfall/low-electrolyte water may therefore, lead to spontaneous clay dispersion.

To minimise the likelihood of this, we recommend treating the base of the land application area with gypsum at 1.0 - 0.5 Kg/m^2. During and after construction, cover any exposed subsoil with topsoil and grass seed (or regular treatment gypsum at 1.0 - 0.5 Kg/m^2). Minimise subsoil disturbance where possible.

TH #	Depth (m)	Visual sign	Class
1	0.75 - 1.4	Some dispersion (obvious milkiness < 50% of aggregate affected)	2(2)

WASTEWATER LAND APPLICATION AREA SETBACKS

Required setback from foundations: 3m

Required setback from downslope surface water: 100 m

Required setback from downslope boundary: 6 m

Required setback from upslope and side boundaries: 1.5 m

Required vertical setback to bedrock: 1.5 m below the LAA

WASTEWATER CLASSIFICATION AND DESIGN

Per AS1547-2012, the soil is **category 4** (Clay Loam).

Primary treatment recommended.

Wastewater loading: 2 persons @ 120 L/day (tank) - 240 L/day.

Design Loading Rate (DLR): 15 mm/day for LAA.

Total minimum Land Application Area required: 16 m^2 raised absorption area.

The existing shed has a maximum calculated hydraulic load of 240 L/day. The existing dual-purpose septic tank may be retained but an outlet filter should be installed.

Using a DLR of 15 mm/day, a total minimum absorption area of 16 m^2 is required. This may be installed as two absorption trenches, **10.0 m long x 0.8 m wide x 0.3 m deep,** installed a max depth of approximately 0.5 m. A minimum separation of 1.5 m between the terraced trenches is recommended.

Use a 2-way distribution box with **Tuf-Tite® Speed Levellers™** on each outlet (product info attached) to ensure even distribution between the trenches. Trench bases are to be **level, scarified and treated with gypsum at 0.5 kg/m^2** before backfilling with aggregate and the distribution pipes.

For distribution use 100 mm PVC pipe installed **level** within the upper 150 mm of the aggregate. Pre-drill pipes with 10 mm holes at 4 and 8 o'clock at approximate 300 mm spacing. Local sandy loam topsoil should be mounded over the trenches to min. 200 mm depth. Deep-rooted grass species planted to aid in evapotranspiration.

Individual trenches are to be installed in line with the contour. This design layout results in an estimated LLR of 24 L/m/day, which is far less than the maximum calculated LLR (49 L/m/day) discussed in Site and Soil Comments (and per Table 2.2 of *Designing and Installing, Sydney Catchment Authority Current Recommended Practice*). Therefore (at and below the design hydraulic load of 240 L/day), seepage from upslope trenches should not the affect the downslope trenches, and all effluent applied to the soil should remain subsurface at and below the specified design loading rate

The finished LAA shall not be subjected to vehicular traffic. This may compromise the absorptive capacity of the system. Install adequate fencing/landscaping/protection if necessary.

A 100% reserve area is set aside for future wastewater requirements and should not be built on with any permanent structures (see Site Plan).

Compliance with *the Directors Guidelines 2016* is shown in the attached table for acceptable criteria. It is recommended that during construction Doyle Soil Consulting be notified of any major variation to the soil conditions or loading rate as predicted in this report.

Robyn Doyle
B.Agr.Sc. CPSS
Soil Scientist and Wastewater Designer
Licence no. CC7149

Rowan Mason
B.Agr.Sc.(hons)
Soil Scientist

APPENDIX 1 – TRENCH™

Doyle Soil Consulting

Land suitability and system sizing for on-site wastewater management

Trench 3.0 (Australian Institute of Environmental Health)

Assessment Report

Assessment for	David Bowman	Assess. Date	5-Sep-24
	4 Butterworth St, West Hoart	Ref. No.	
Assessed site(s)	59 Bruny Island Main Rd, Dennes Point	Site(s) inspected	21-Aug-24
Local authority	Kingborough Council	Assessed by	R Doyle

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

Wastewater Characteristics

Wastewater volume (L/day) used for this assessment = 240 (using the 'No. of bedrooms in a dwelling' method)
Septic tank wastewater volume (L/day) = 80
Sullage volume (L/day) = 160
Total nitrogen (kg/year) generated by wastewater = 1.8
Total phosphorus (kg/year) generated by wastewater = 0.4

Climatic assumptions for site (Evapotranspiration calculated using the crop factor method)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean rainfall (mm)	39	35	41	42	44	42	43	46	40	49	48	55
Adopted rainfall (R, mm)	39	35	41	42	44	42	43	46	40	49	48	55
Retained rain (Rr, mm)	33	30	34	35	37	36	37	39	34	42	40	47
Max. daily temp. (deg. C)	24	24	22	18	14	11	11	13	16	18	20	22
Evapotrans (ET, mm)	137	120	91	61	41	27	30	43	63	91	103	130
Evapotr. less rain (mm)	**103**	**90**	**57**	**26**	**4**	**-9**	**-6**	**4**	**29**	**49**	**62**	**84**

Annual evapotranspiration less retained rain (mm) = 493

Soil characterisitics

Texture = Sandy clay loam Category = 4 Thick. (m) = 3
Adopted permeability (m/day) = 0.5 Adopted LTAR (L/sq m/day) = 15 Min depth (m) to water = 5

Proposed disposal and treatment methods

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

Suggested dimensions for on-site secondary treatment system

Total length (m) =	12
Width (m) =	0.8
Depth (m) =	0.5
Total disposal area (sq m) required =	58
comprising a Primary Area (sq m) of:	42
and a Secondary (backup) Area (sq m) of:	16

Sufficient area is available on site

To enter comments, click on the line below 'Comments'. (This yellow-shaded box and the buttons on this page will not be printed.)

Comments

The calculated DLR for the category 4 soil is 15 mm/day and a land application area of 16 sq m is required. Therefore the system should have the capacity to cope with predicted climatic and loading events.

Doyle Soil Consulting

Land suitability and system sizing for on-site wastewater management

Trench 3.0 (Australian Institute of Environmental Health)

Site Capability Report

Assessment for	David Bowman	Assess. Date	5-Sep-24
	4 Butterworth St, West Hoart	Ref. No.	
Assessed site(s)	59 Bruny Island Main Rd, Dennes Point	Site(s) inspected	21-Aug-24
Local authority	Kingborough Council	Assessed by	R Doyle

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

Alert	Factor	Units	Value	Confid level	Limitation Trench	Limitation Amended	Remarks
AA	Expected design area	sq m	132		Very high		
AA	Density of disposal systems	/sq km	50		Very high		
	Slope angle	degrees	6		Low		
	Slope form		Straight simple		Low		
	Surface drainage		Good		Very low		
	Flood potential		Site floods <1:100 yrs		Very low		
	Heavy rain events		Very rare		Very low		
	Aspect (Southern hemi.)		Faces N		Very low		
	Frequency of strong winds		Common		Low		
	Wastewater volume	L/day	240		Very low		
	SAR of septic tank effluent		1.0		Low		
	SAR of sullage		2.5		Moderate		
	Soil thickness	m	3.0		Very low		
	Depth to bedrock	m	4.0		Very low		
	Surface rock outcrop	%	0		Very low		
	Cobbles in soil	%	0		Very low		
	Soil pH		6.0		Low		
	Soil bulk density	gm/cub. cm	1.4		Very low		
AA	Soil dispersion	Emerson No.	2		Very high		
	Adopted permeability	m/day	0.5		Moderate		
	Long Term Accept. Rate	L/day/sq m	15		Very low		

To enter comments, click on the line below 'Comments'. (This yellow-shaded box and the buttons on this page will not be printed.)

Comments

The site is suitable for onsite wastewater disposal with sufficient area available and sandy topsoils to approx 0.7 m over sandy clay loam subsoil. The LAA is sized for the Cat 4 subsoil.

Doyle Soil Consulting

Land suitability and system sizing for on-site wastewater management

Trench 3.0 (Australian Institute of Environmental Health)

Environmental Sensitivity Report

Assessment for	David Bowman	Assess. Date	5-Sep-24
	4 Butterworth St, West Hoart	Ref. No.	
Assessed site(s)	59 Bruny Island Main Rd, Dennes Point	Site(s) inspected	21-Aug-24
Local authority	Kingborough Council	Assessed by	R Doyle

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

Alert	Factor	Units	Value	Confid level	Limitation Trench	Limitation Amended	Remarks
A	Cation exchange capacity	mmol/100g	35		High		
A	Phos. adsorp. capacity	kg/cub m	0.3		High		
	Annual rainfall excess	mm	-493		Very low		
	Min. depth to water table	m	5		Very low		
	Annual nutrient load	kg	2.2		Very low		
	G'water environ. value	Agric non-sensit			Low		
	Min. separation dist. required	m	6		Very low		
	Risk to adjacent bores						Factor not assessed
	Surf. water env. value	Agric non-sensit			Low		
	Dist. to nearest surface water	m	280		Low		
AA	Dist. to nearest other feature	m	6		Very high		
	Risk of slope instability		Low		Low		
	Distance to landslip	m	210		Very low		

To enter comments, click on the line below 'Comments'. (This yellow-shaded box and the buttons on this page will not be printed.)

Comments

There will be a low environmental risk due to the deep sandy topsoil with a mximum LLR of approx 70 L/m/day. Total LAA is sized on the undelying Cat 4 subsoil and the applied effluent will remain subsurface due to the adopted LLR of 24 L/m/day.

Demonstration of wastewater system compliance to *2016 Directors Guidelines for On-site Wastewater Disposal*

Acceptable Solutions	**Performance Criteria**	**Compliance**
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; or b) be no less than: i) 3m from an upslope building or level building; ii) If primary treated effluent to be no less than 4m plus 1m for every degree of average gradient from a downslope building; iii) If secondary treated effluent and subsurface application, no less than 2m plus 0.25m for every degree of average gradient from a downslope building	P1 The land application area is located so that a) the risk of wastewater reducing the bearing capacity of a building's foundations is acceptably low.; and b) is setback a sufficient distance from a downslope excavation around or under a building to prevent inadequately treated wastewater seeping out of that excavation	Complies with A1 (b) (i) Land application area will be located with a minimum separation distance of 3m from an upslope or level 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) Setback 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.	Complies with A2 (a) Land application area located > 100m from downslope surface water

A3 Horizontal separation distance from a property boundary to a land application area must comply with either of the following: a) be no less than 40m from a property boundary; or b) be no less than: i) 1.5m from an upslope or level property boundary; and ii) If primary treated effluent 2m for every degree of average gradient from a downslope property boundary; or iii) If secondary treated effluent and subsurface application, 1.5m plus 1m for every degree of average gradient from a downslope property boundary.	P3 Horizontal separation distance from a property boundary to a land application area must comply with all of the following: a) Setback must be consistent with AS/NZS 1547 Appendix R; and b) A risk assessment in accordance with Appendix A of AS/NZS 1547 has been completed that demonstrates that the risk is acceptable.	Complies with A3 (b) (i) Land application area will be located with a minimum separation distance of 1.5m from an upslope or level property boundary Complies with A3 (b) (ii) Land application area will be located with a minimum separation distance of 6 m of downslope property boundary (6 m required)
A4 Horizontal separation distance from a downslope bore, well or similar water supply to a land application area must be no less than 50m and not be within the zone of influence of the bore whether up or down gradient.	P4 Horizontal separation distance from a downslope bore, well or similar water supply to a land application area must comply with all of the following: a) Setback must be consistent with AS/NZS 1547 Appendix R; and b) A risk assessment completed in accordance with Appendix A of AS/NZS 1547 demonstrates that the risk is acceptable	Complies with A4 No bore or well identified within 50m

A5 Vertical separation distance between groundwater and a land application area must be no less than: a) 1.5m if primary treated effluent; or b) 0.6m if secondary treated effluent	P5 Vertical separation distance between groundwater and a land application area must comply with the following: a) Setback must be consistent with AS/NZS 1547 Appendix R; and b) A risk assessment completed in accordance with appendix A of AS/NZS 1547 that demonstrates that the risk is acceptable	Complies with A5 (a) No groundwater encountered.
A6 Vertical separation distance between a limiting layer and a land application area must be no less than: a) 1.5m if primary treated effluent; or b) 0.5m if secondary treated effluent	P6 Vertical setback must be consistent with AS/NZS1547 Appendix R.	Complies with A6 (a) No limiting layer identified.
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	Complies

CERTIFICATE OF THE RESPONSIBLE DESIGNER

Section 94
Section 106
Section 129
Section 155

Form **35**

To: David Bowman *Owner name*
4 Butterworth Street *Address*
West Hobart 7000 *Suburb/postcode*

Designer details:

Name: Robyn Doyle
Category: Bldg srvcs dsgnr-hydraulic domestic
Business name: Doyle Soil Consulting
Phone No: 0488080455
Business address: 6/76 Auburn Rd
Kingston Beach 7050
Fax No:
Licence No: CC7418
Email address: robyn@doylesoilconsulting.com.au

Details of the proposed work:

Owner/Applicant David Bowman
Designer's project reference No. 2024-08
Address: 59 Bruny Island Main Road
Lot No: 1
Dennes Point 7150

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

Description of work:
Wastewater Design

(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 Services Designer
	☐ Structural design	Structural Engineer
	☐ Fire Safety design	Fire Engineer
	☐ Civil design	Civil Engineer
	☒ Hydraulic design	Building Services Designer
	☐ Fire service design	Building Services Designer
	☐ Electrical design	Building Services Designer
	☐ Mechanical design	Building Service Designer
	☐ Plumbing design	Plumber
	☐ Other (specify)	

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

Other details:

Design documents provided:

The following documents are provided with this Certificate –

Document description:

Drawing numbers:	Prepared by: Doyle Soil Consulting	Date: August 2024
Schedules:	Prepared by:	Date:
Specifications:	Prepared by: Doyle Soil Consulting	Date: August 2024
Computations:	Prepared by:	Date:
Performance solution proposals:	Prepared by:	Date:
Test reports:	Prepared by: Doyle Soil Consulting	Date: August 2024

Standards, codes or guidelines relied on in design process:

AS1547-2012 On site domestic wastewater management.

AS3500 (Parts 0-5)-2013 Plumbing and drainage set.

Any other relevant documentation:

Site and Soil Evaluation Report

Attribution as designer:

I, Robyn Doyle, 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:	R Doyle		27/08/2024
Licence No:	CC7418		

Assessment of Certifiable Works: (TasWater)

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

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

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

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

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

Certification:

I, ……Robyn Doyle……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:	Robyn Doyle		27/08/2024

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AS1547:2012 – Loading Certificate – Septic System Design

This loading certificate is provided in accordance with Clause 7.4.2(d) of AS/NZS 1547:2012 and sets out the design criteria and the limitations associated with the use of the system.

Site Address: 59 Bruny Island Main Road, Dennes Point

System Capacity: 2 people @ 120 L/person/day

Summary of Design Criteria

DLR: 15 L/m^2/day.

Absorption area: 16 m^2

Reserve area location /use: area assigned

Water-saving features fitted: Standard fixtures

Allowable variation from design flows: 1 event @ 200 % daily loading per quarter

Typical loading change consequences: Expected to be minimal due to capacity of system and site area (provided loading changes within 25 % of design)

Overloading consequences: Continued overloading may cause hydraulic failure of the absorption area and require upgrading/extension of the area. Risk considered acceptable due to intended use being for holiday home/shack.

Underloading consequences: Lower than expected flows will have minimal consequences on system operation unless the house has long periods of non-occupation. Under such circumstances additional maintenance of the system may be required. Risk considered acceptable.

Lack of maintenance / monitoring consequences: Issues of underloading/overloading and condition of the absorption area require monitoring and maintenance, if not completed system failure may result in unacceptable health and environmental risks. Septic tank de-sludging must also be monitored to prevent excessive sludge and scum accumulation. Monitoring and servicing by the property owner required to ensure compliance.

Other operational considerations: Owners/occupiers must be aware of the operational requirements and limitations of the system: the absorption area must not be subject to traffic by vehicles or heavy stock and should be fenced-off if deemed necessary to avoid this; The absorption area must be maintained with adequate grass cover to assist in evapotranspiration of treated effluent. The septic tank must be de-sludged at least every 3 years, and any other infrastructure such as septic tank outlet filters must also be cleaned regularly (approx. every 6 months depending upon usage). Foreign materials such as rubbish and solid waste must be kept out of the system.

Trench Detail
59 Bruny Island Main Rd, Dennes POint

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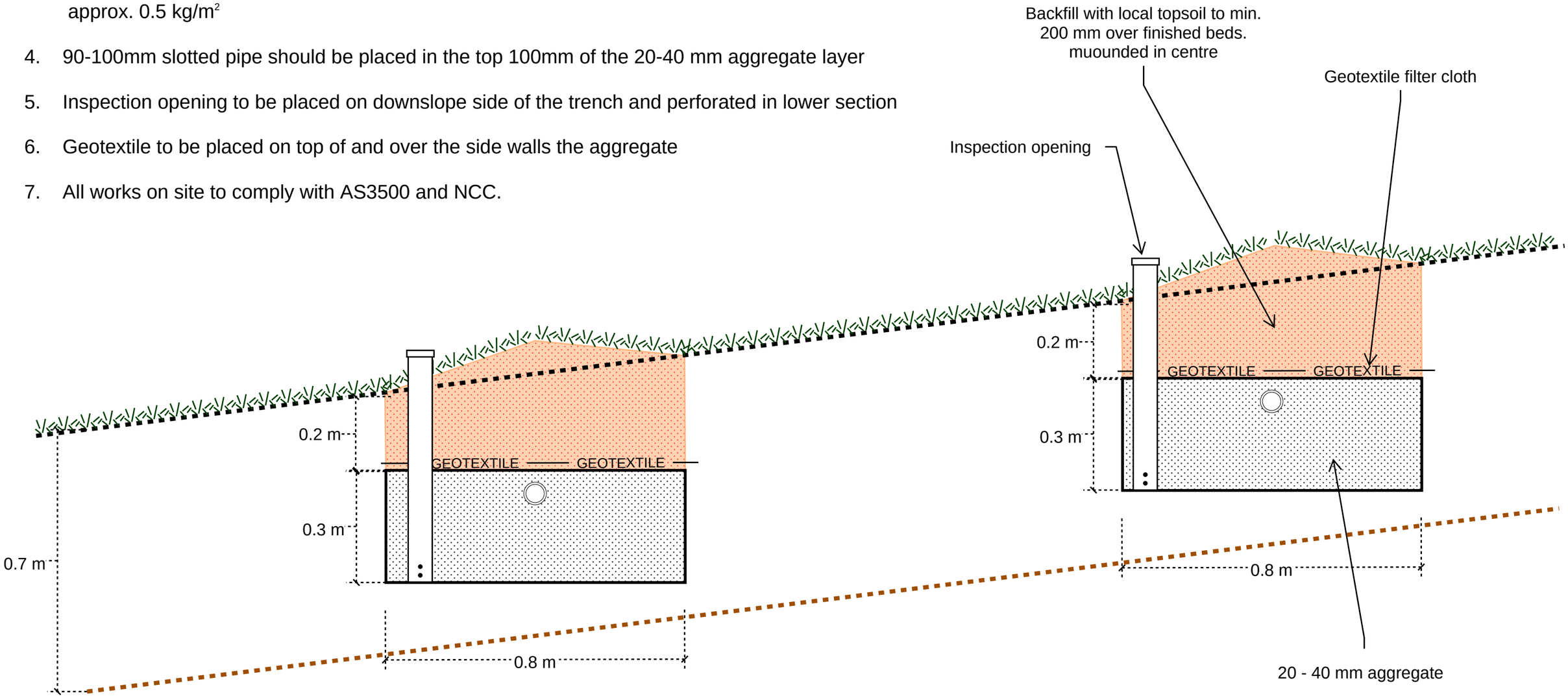
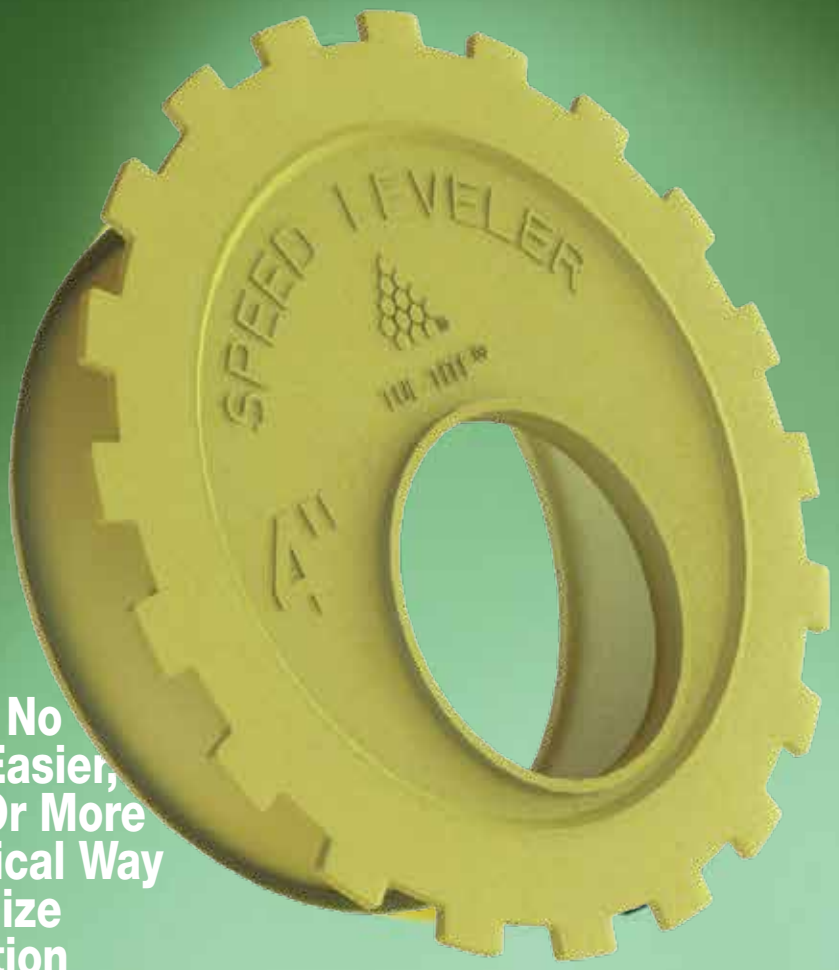
Design notes:

1. Two gravity-fed absorption trenches
2. Trench dimensions of 10 000 mm long by 800 mm wide by 300 mm deep
3. Base of the trench to be excavated level approx 0.5 m below surface and treated with gypsum at approx. 0.5 kg/m^2
4. 90-100mm slotted pipe should be placed in the top 100mm of the 20-40 mm aggregate layer
5. Inspection opening to be placed on downslope side of the trench and perforated in lower section
6. Geotextile to be placed on top of and over the side walls the aggregate
7. All works on site to comply with AS3500 and NCC.



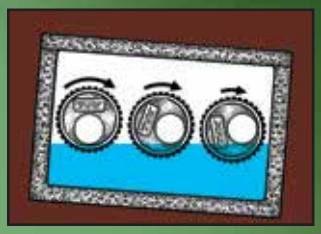
TUF-TITE®

Speed Levelers™



Tough Problem

The distribution box is out of alignment. Effluent does not flow equally into the outlet pipes.



TUF-TITE Solution

Insert Tuf-Tite Speed Levelers into the outlet pipes. Simply adjust each Leveler so the flow is equally distributed.

There Is No Faster, Easier, Better, Or More Economical Way To Equalize Distribution Box Flow

There's no need to dig up and re-level tilted distributions boxes. Or to struggle with makeshift pipe dams. Now, with Tuf-Tite Speed Levelers, you can do the job in a fraction of the time, for a fraction of the cost.

For all size and shape concrete distributions boxes, as well as polyethylene boxes from Tuf-Tite.

For 3" or 4" PVC pipes

Speed Levelers are precision engineered to fit commonly used Schedule 40 Thick-Wall, SDR 35 (3034), and 2729 Thin-Wall PVC pipes. Simply press the Levelers into the pipe ends. They fit water-tight. No tools are necessary.

Non-corrosive Polyethylene

Tuf-Tite Speed Levelers are molded of specially formulated polyethylene that is highly chemical resistant. They are actually more corrosion resistant than the PVC pipe in which they're used.

They're hand-adjustable

Easily rotate Speed Levelers by hand. The Flo-Hole can be positioned to admit effluent at the precise level you desire. The range of settings is infinitely variable. And Levelers can be reset easily, anytime.

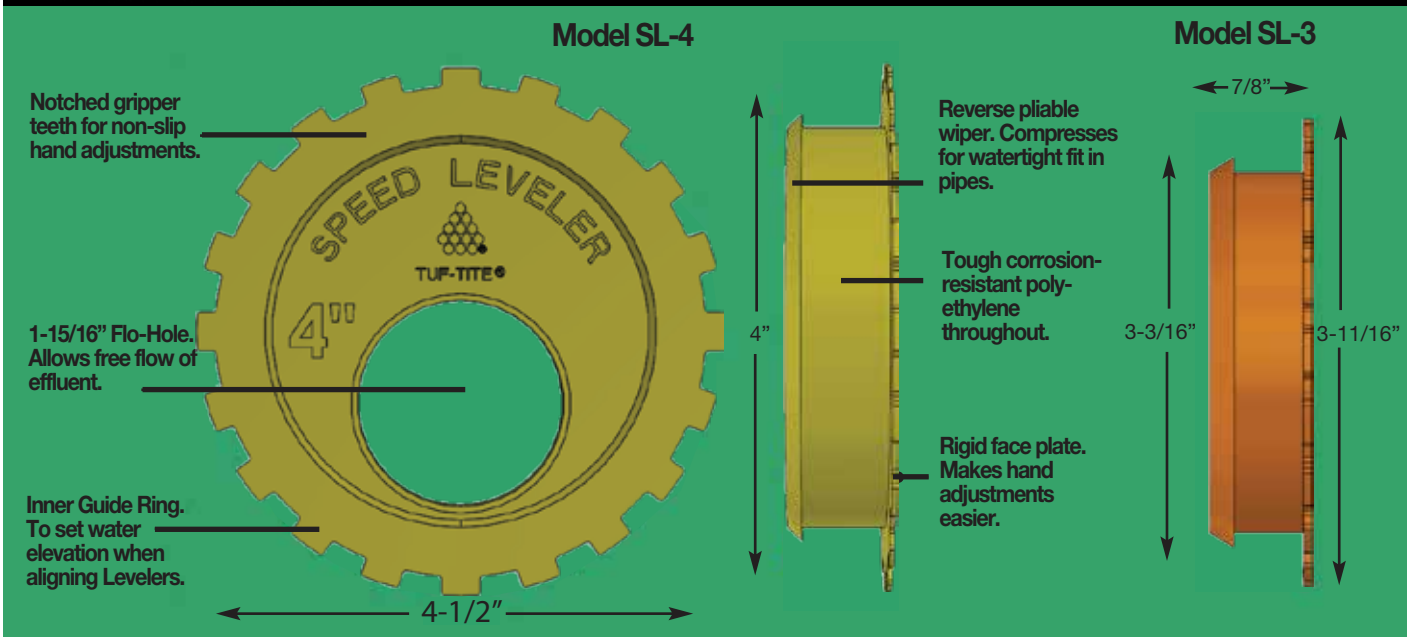
Tested. Proved. Preferred

Test after test show that Tuf-Tite Speed Levelers significantly improve distribution in gravity-flow septic systems. There simply is no other way this can be accomplished as effectively, quickly, easily, or economically.

TUF-TITE

Speed Levelers™ SL-4

One size fits all 4" PVC pipe. Model SL-3, for 3" PVC pipe, also available.



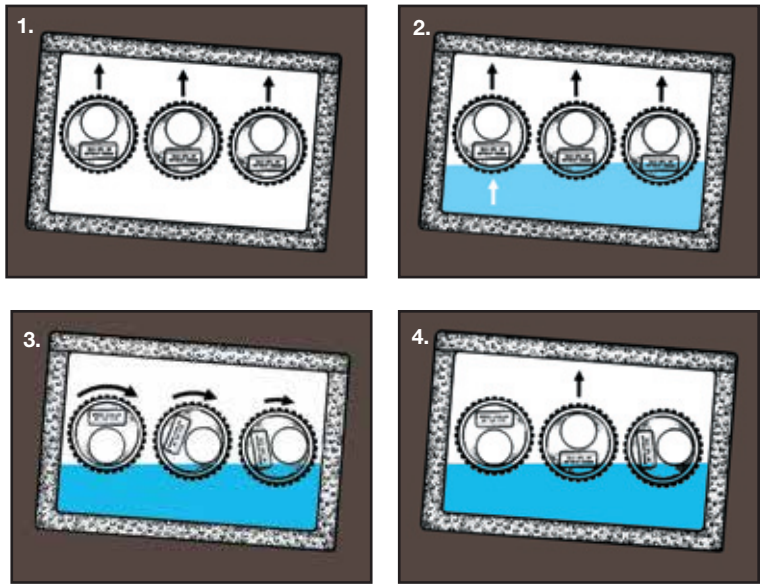
HOW TO SET SPEED LEVELERS

1. Insert a Speed Leveler into each outlet pipe inside the Distribution Box. Rotate each Leveler until the Flo-Hole is at the 12 o'clock position.

2. Start filling the Distribution Box with water. Stop when the water level touches the "Inner Guide Ring" of the highest Speed Leveler.

3. Rotate all the Speed Levelers until each of the Flo-Holes is aligned just above the water level. Slowly add more water to see if it enters all the Flo-Holes simultaneously. Make fine-tune adjustments if necessary.

4. You can alternate fields, or rest failed lines anytime. Simply rotate the Leveler on the appropriate pipe until the Flo-Hole is at the 12 o'clock position to stop the flow.



TUF-TITE

Drainage and Septic Products

Tuf-Tite® Corporation
1200 Flex Ct.
Lake Zurich, IL 60047

www.tuf-tite.com

Water-tight Lids and Risers by Tuf-Tite®

DOYLE SOIL CONSULTING

59 Bruny Island Main Rd, Dennes Point

Wastewater system:

Existing dual purpose septic tank. Installer to ensure outlet filter fitted.

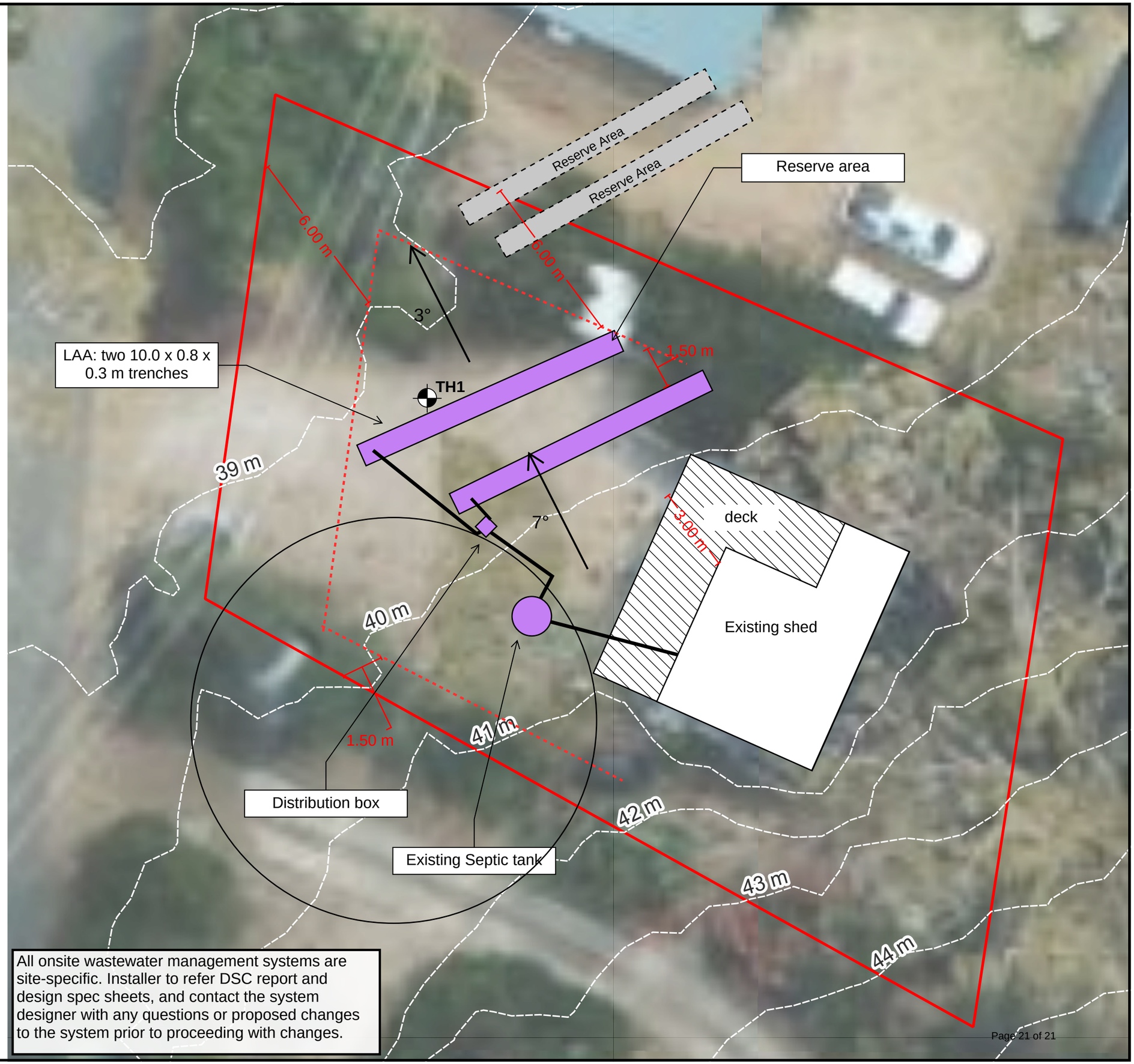
Two-way distribution box with Tuf-Tite ® Speed Levellers on outlets.

Land Application Area: 16 sq m
- two gravity-fed absorption trenches
- dims: 10 m x 0.8 m x 0.3 m

Min 100 m downslope water setback
Min 6 m downslope boundary setback
Min 3 m setback from foundations
Min 1.5 m horizontal boundary setback

Refer to DSC report

Approximate test hole location



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9/9/2024
Amended 6/1/2025

Prepared by
Rowan Mason

07/01/2025
5/9/24

All onsite wastewater management systems are site-specific. Installer to refer DSC report and design spec sheets, and contact the system designer with any questions or proposed changes to the system prior to proceeding with changes.