GEO-ENVIRONMENTAL ASSESSMENT

75 Blyth Parade

Great Bay

January 2022

Revised September 2024

GES

GEO-ENVIRONMENTAL

SOLUTIONS

Investigation Details

Client:	Judy & Mathew Bailey-Lawrence
Site Address:	75 Blyth Parade, Great Bay
Date of Inspection:	11/11/2021
Proposed Works:	Proposed dwelling
Investigation Method:	Geoprobe 540UD - Direct Push
Inspected by:	M. Campbell

Site Details

Certificate of Title (CT):	15511/20
Title Area:	Approx. 7821 m²
Applicable Planning Overlays:	Bushfire-prone Areas Biodiversity Protection Area
Slope & Aspect:	Approx. 15-20% fall to the southwest
Vegetation:	Native bush

Background Information

Geology Map:	MRT SE Sheet 1:25 000
Geological Unit:	Jurassic dolerite
Climate:	Annual rainfall approx. 650mm
Water Connection:	Tank
Sewer Connection:	Unserviced-On-site required
Testing and Classification:	*AS2870:2011, AS1726:2017, AS4055:2021 & AS1547:2012*

Investigation

A number of auger holes were completed to identify the distribution of, and variation in soil materials on the site. Representative auger holes drilled at the approximate location indicated on the site plan were chosen for testing and classification according to AS2870-2011 & AS1547-2012 (see profile summary).

Engineering Profile Summary

Hole 1 Depth (m)	Hole 2 Depth (m)	Horizon	Description
0.00 – 0.20	0.00 – 0.20	A1	Dark Grey **SAND (SP)**, single grain structure, slightly moist loose consistency, few roots, clear boundary to
0.20 – 0.50	0.20 – 0.70	A2	Light Grey **SAND (SP)**, single grain structure, slightly moist medium dense consistency, clear boundary to
0.50 – 0.70	0.70 – 1.00	BC	Greyish Brown **Clayey SAND (SC)**, weak polyhedral structure, slightly moist dense consistency, trace of gravels, auger refusal on dolerite

Wastewater Profile Summary

Hole 3 Depth (m)	Horizon	Description
0.00 – 0.10	A1	Dark Grey **SAND (SP)**, single grain structure, slightly moist loose consistency, few roots, clear boundary to
0.10 – 0.20	A2	Light Grey **SAND (SP)**, single grain structure, slightly moist medium dense consistency, clear boundary to
0.20 – 0.40	BC	Greyish Brown **Clayey SAND (SC)**, weak polyhedral structure, slightly moist dense consistency, trace of gravels, auger refusal on dolerite

Site Notes

The soils found on the site are developing from Jurassic dolerite deposits. Some variation of subsoil depth and weathering of underlying rock is likely. These soils are expected to exhibit some ground surface movement with moisture fluctuations and will have high permeability for onsite wastewater disposal.

Site Classification

The site has been assessed and classified in accordance with AS2870:2011 *"Residential Slabs and Footings".*

The site has been classified as:

Class S

Y_s range: **0-20mm**

Notes: that is a slightly reactive site. Design and construction should be made in accordance with this classification.

Wind Loading Classification

According to *"AS4055:2021 - Wind Loads for Housing"* the house site is classified below:

Wind Classification:	**N3**
Region:	A
Terrain Category:	1.0
Shielding Classification:	PS
Topographic Classification:	T2
Wind Classification:	N3
Design Wind Gust Speed – m/s ($V_{h,u}$):	50

Wastewater Classification & Recommendations

According to AS1547-2012 for on-site wastewater management the soil on the property is classified as **Sandy Loam (Category 2)**. Due to the shallow soils on site, a package treatment system is required (e.g., AWTS such as Envirocycle, Econocycle, Ozzikleen). The typical Design Irrigation Rate (DIR) of 5mm/day for secondary treated effluent in **Category 2** soils has been reduced by 20% to account for the slope on site, resulting in an applicable DIR of 4mm/day.

The proposed two-bedroom dwelling has a maximum wastewater output of 480L/day. This is based on a tank water supply and a maximum occupancy of 4 people respectively (120L/day/person). Using the DIR of 4mm/day, an irrigation area of 120m^2 is required. Given the slope, limited soil depth and vegetation on site, it is recommended that surface sprinklers are installed in order to minimise the impact of installation and operation.

A 100% reserve area will need to be set aside and kept free from development for any future wastewater requirement. There is sufficient space available onsite to accommodate the required reserve due to the large property size (>5000m^2). Therefore, a formal reserve area has not been assigned.

There is insufficient suitable area within the designated Bushfire Hazard Management Area to accommodate the required irrigation area. Potential impact on natural vales has been considered in the development of this design report. The following measures have been taken to ensure that the proposed wastewater system will have the lowest reasonable impact on these values:

- Use of secondary treatment and dispersal via surface sprinklers will minimise potential impact on biodiversity values, and it is considered that this disposal method will pose minimal environmental risk to the site overall.
- No significant clearing or removal of mature trees is required to accommodate onsite wastewater.
- Investigations completed by Mulcahy Planning and Property Services (letter dated 17 September 2024) have addressed the potential impacts of the proposed development on native vegetation and high conservation value trees. A Tree Plan is included within the letter and illustrates the approximate proposed location of the wastewater irrigation area – please refer to that document for further details.

Where possible, the land application area should remain outside of any Tree Protection Zone and the area must not exceed the minimum setback distances outlined below.

To comply with E23.10.1 of the Kingborough Interim Planning Scheme 2015;

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;	Complies
(b) be no less than; (i) 2m from an upslope or level building; (ii) if primary treated effluent 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 down slope building.	

A2 Horizontal separation distance from downslope surface water to a land application area must comply with any of the following:

(a) be no less than 100m;	Non-compliance
(b) if the site is within a high rainfall area or the site soil category is 4, 5 or 6, be no less than the following; (i) if primary treated effluent standard or surface application, 50m plus 7m for every degree of average gradient from downslope surface water; (ii) if secondary treated effluent standard and subsurface application, 50m plus 2m for every degree of average gradient from down slope surface water.	N/A
(c) if the site is not within a high rainfall area or the site soil category is not 4, 5 or 6, be no less than the following; (i) if primary treated effluent 15m plus 7m for every degree of average gradient from downslope surface water; (ii) if secondary treated effluent and subsurface application, 15m plus 2m for every degree of average gradient from down slope surface water.	Complies 37m required

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;	Non-compliance
(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.	N/A Complies 12.5m 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.	N/A

A5

Vertical separation distance between groundwater and a land application area must be no less than 1.5m.	N/A

A6

Vertical separation distance between a limiting layer and a land application area must be no less than 1.5m.	Non-compliance See P6

P6 Vertical separation distance between a limiting layer and a land application area must satisfy all of the following:

(a) effluent must be no less than secondary treated effluent standard and applied through a subsurface land application system;	Complies
(b) vertical separation distance must be no less than 0.5m, (whether 'in ground' or by use of a raised bed).	Complies

A7 The arrangement of a land application area must comply with both of the following:

(a) not include areas beneath buildings, driveways or other hard stand areas;	Complies
(b) have a minimum horizontal dimension of 3m.	Complies

The following setback distances are required to comply with Building Act 2016:

Buildings:	6m
Upslope or level boundaries:	1.5m
Downslope boundaries:	12.5m
Downslope surface water:	37m

Compliance with Building Act 2016 is outlined in the attached table.

Construction Notes & Recommendations

The site has been classified as **Class S** - see 'Site Classification' above.

Excavation and placement of the footings into underlying gravels/bedrock is recommended to minimise the potential for foundation movement. There was variation in depth to refusal across the site, patches of deeper soils may exist where weathering or fractures of the parent material are present.

All earthworks on site must comply with AS3798:2012, and I further recommend that consideration be given to drainage and sediment control on site during and after construction. Care should also be taken to ensure there is adequate drainage in the construction area to avoid the potential for weak bearing and foundation settlement associated with excessive soil moisture.

During installation GES will need to be notified of any major variation to the soil conditions or wastewater loading as outlined in this report.

Dr John Paul Cumming B.Agr.Sc (hons) PhD CPSS GAICD

Director

Disclaimer

This Report has been prepared in accordance with the scope of services between Geo-Environmental Solutions Pty. Ltd. (GES) and the Client. To the best of GES's knowledge, the information presented herein represents the client's requirements at the time of printing of the Report. However, the passage of time, manifestation of latent conditions or impacts of future events may result in findings differing from that discussed in this Report. In preparing this Report, GES has relied upon data, surveys, analyses, designs, plans and other information provided by the Client and other individuals and organisations referenced herein. Except as otherwise stated in this Report, GES has not verified the accuracy or completeness of such data, surveys, analyses, designs, plans and other information.

The scope of this study does not allow for the review of every possible geotechnical parameter or the soil conditions over the whole area of the site. Soil and rock samples collected from the investigation area are assumed to be representative of the areas from where they were collected and not indicative of the entire site. The conclusions discussed within this report are based on observations and/or testing at these investigation points.

This report does not purport to provide legal advice. Readers of the report should engage professional legal practitioners for this purpose as required.

No responsibility is accepted for use of any part of this report in any other context or for any other purpose by third a party.

GES P/L

Land suitability and system sizing for on-site wastewater management

Trench 3.0 (Australian Institute of Environmental Health)

Assessment Report

Site assessment for wastewater system

Assessment for	Judy & Matthew Bailey-Lawrence	Assess. Date	30-Sep-24
		Ref. No.	
Assessed site(s)	75 Blyth Parade, Great Bay	Site(s) inspected	11-Nov-21
Local authority	Kingborough Council	Assessed by	John Paul Cumming

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 = 480 (using the 'No. of bedrooms in a dwelling' method)

Septic tank wastewater volume (L/day) = 160

Sullage volume (L/day) = 320

Total nitrogen (kg/year) generated by wastewater = 2.6

Total phosphorus (kg/year) generated by wastewater = 1.2

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)	38	37	49	41	61	63	60	62	48	67	54	54
Adopted rainfall (R, mm)	38	37	49	41	61	63	60	62	48	67	54	54
Retained rain (Rr, mm)	30	30	39	33	49	51	48	50	39	53	43	43
Max. daily temp. (deg. C)												
Evapotrans (ET, mm)	130	110	91	63	42	29	32	42	63	84	105	126
Evapotr. less rain (mm)	**100**	**80**	**52**	**30**	**-7**	**-21**	**-17**	**-8**	**24**	**31**	**62**	**83**

Annual evapotranspiration less retained rain (mm) = 410

Soil characterisitics

Texture = Sandy LOAM Category = 2 Thick. (m) = 0.4

Adopted permeability (m/day) = 3 Adopted LTAR (L/sq m/day) = 4 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 a package treatment plant
The preferred method of on-site secondary treatment:	Above-ground
The preferred type of in-ground secondary treatment:	None
The preferred type of above-ground secondary treatment:	Surface irrigation
Site modifications or specific designs:	Not needed

Suggested dimensions for on-site secondary treatment system

Total length (m) =	24
Width (m) =	5
Depth (m) =	0.2
Total disposal area (sq m) required =	120
comprising a Primary Area (sq m) of:	120
and a Secondary (backup) Area (sq m) of:	

Sufficient area is available on site

Comments

A reduced Design Irrigation Rate (DIR) of 4mm/day has been assigned to account for the steep relief of the site. Given a wastewater loading of 480L/day for a two-bedroom house on tank water, an irrigation area of at least 120m^2 is required. Therefore the system should have the capacity to cope with predicted climatic and loading events.

GES P/L

Land suitability and system sizing for on-site wastewater management

Trench 3.0 (Australian Institute of Environmental Health)

Site Capability Report

Site assessment for wastewater system

Assessment for	Judy & Matthew Bailey-Lawrence	Assess. Date	30-Sep-24
		Ref. No.	
Assessed site(s)	75 Blyth Parade, Great Bay	Site(s) inspected	11-Nov-21
Local authority	Kingborough Council	Assessed by	John Paul Cumming

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		Remarks
					Trench	Amended	
	Expected design area	sq m	800	V. high	Moderate		
	Density of disposal systems	/sq km	10	High	Very low		
	Slope angle	degrees	11	V. high	Moderate		
	Slope form	Straight simple		V. high	Low		
	Surface drainage	Mod. good		High	Low		
	Flood potential	Site floods 1 in 75-100 yrs		High	Low		
	Heavy rain events	Infrequent		High	Moderate		
A	Aspect (Southern hemi.)	Faces SE or SW		V. high	High		
	Frequency of strong winds	Infrequent		High	Moderate		
	Wastewater volume	L/day	480	High	Low		
	SAR of septic tank effluent		1.7	Mod.	Low		
	SAR of sullage		2.1	Mod.	Moderate		
A	Soil thickness	m	0.4	V. high	High		
AA	Depth to bedrock	m	0.4	High	Very high		
	Surface rock outcrop	%	0	High	Very low		
	Cobbles in soil	%	0	High	Very low		
	Soil pH		5.5	High	Low		
	Soil bulk density	gm/cub. cm	1.4	High	Very low		
	Soil dispersion	Emerson No.	7	V. high	Very low		
AA	Adopted permeability	m/day	3	High	Very high		
A	Long Term Accept. Rate	L/day/sq m	4	High	High		

Comments

The site has moderate capacity to accept onsite wastewater. Secondary treatment is required and surface irrigation will account for the limited soil depth and relief of the site.

GES P/L

Land suitability and system sizing for on-site wastewater management

Trench 3.0 (Australian Institute of Environmental Health)

Environmental Sensitivity Report

Site assessment for wastewater system

Assessment for	Judy & Matthew Bailey-Lawrence	Assess. Date	30-Sep-24
		Ref. No.	
Assessed site(s)	75 Blyth Parade, Great Bay	Site(s) inspected	11-Nov-21
Local authority	Kingborough Council	Assessed by	John Paul Cumming

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		Remarks
					Trench	Amended	
A	Cation exchange capacity	mmol/100g	30	High	High		
A	Phos. adsorp. capacity	kg/cub m	0.3	Mod.	High		
	Annual rainfall excess	mm	-410	High	Very low		
	Min. depth to water table	m	5	High	Very low		
	Annual nutrient load	kg	3.7	High	Very low		
	G'water environ. value	Agric sensit/dom irrig		High	Moderate		
	Min. separation dist. required	m	2	High	Very low		
	Risk to adjacent bores	Very low		High	Very low		
A	Surf. water env. value	Recreational		High	High		
	Dist. to nearest surface water	m	80	High	High	Moderate	Other factors lessen impact
	Dist. to nearest other feature	m	13	V. high	High	Moderate	Other factors lessen impact
	Risk of slope instability	Low		High	Low		
	Distance to landslip	m	0	Mod.	Very high	Moderate	Other factors lessen impact

Comments

The soil on site has a sandy texture and a low CEC, therefore the soil system has a low capacity to cope with the applied nutrient load from the system. The use of secondary treatment will improve effluent quality, coupled with nutrient uptake from existing native vegetation on site, will assist in managing the nutrient load. There is a low environmental risk associated with wastewater disposal on this site.

Demonstration of wastewater system compliance to *Building Act 2016 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 a) The land application area is located so that (i) the risk of wastewater reducing the bearing capacity of a building's foundations is acceptably low.; and (ii) 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 (a) Land application area will be located with a minimum separation distance of 6m from a 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.	Complies with A2 (b) (ii) Land application area will be located with a minimum separation distance of 37m of 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) (iii) Land application area will be located with a minimum separation distance of 12.5m of 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 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	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	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 (b)
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

AS1547:2012 – Loading Certificate – AWTS Design

This loading certificate sets out the design criteria and the limitations associated with use of the system.

Site Address: 75 Blyth Parade, Great Bay

System Capacity: 4 persons @ 120L/person/day

Summary of Design Criteria

DIR: 4mm/day.

Irrigation area: 120m^2

Reserve area location /use: Not assigned – more than 100% available

Water saving features fitted: Standard fixtures

Signage: Suitable warning signs to be displayed around the disposal area indicating that reclaimed water is being used i.e. “Recycled Water, Avoid Contact, Do Not Drink”

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

Typical loading change consequences: Expected to be minimal due to use of AWTS and large land area

Overloading consequences: Continued overloading may cause hydraulic failure of the irrigation area and require upgrading/extension of the area. Risk considered acceptable due to monitoring through quarterly maintenance reports.

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. Long term under loading of the system may also result in vegetation die off in the irrigation areas and additional watering may be required. Risk considered acceptable due to monitoring through quarterly maintenance reports.

Lack of maintenance / monitoring consequences: Issues of underloading/overloading and condition of the irrigation area require monitoring and maintenance, if not completed system failure may result in unacceptable health and environmental risks. Monitoring and regulation by the permit authority required to ensure compliance.

Other considerations: Owners/occupiers must be made aware of the operational requirements and limitations of the system by the installer/maintenance contractor.

CERTIFICATE OF THE RESPONSIBLE DESIGNER

Section 94
Section 106
Section 129
Section 155

Form **35**

To: Judy & Matthew Bailey-Lawrence *Owner name*
75 Blyth Parade *Address*
Great Bay 7150 *Suburb/postcode*

Designer details:

Name: John-Paul Cumming
Category: Bld. Srvcs. Dsgnr. - Hydraulic
Business name: Geo-Environmental Solutions
Phone No: 03 6223 1839
Business address: 29 Kirksway Place
Battery Point 7004
Fax No: N/A
Licence No: CC774A
Email address: office@geosolutions.net.au

Details of the proposed work:

Owner/Applicant Judy & Matthew Bailey-Lawrence
Designer's project reference No. J5584
Address: 75 Blyth Parade
Lot No: 15511/20
Great Bay 7150

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

Description of work:
On-site wastewater management system - 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 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 to surface irrigation.

Design documents provided:

The following documents are provided with this Certificate –

Document description:

Drawing numbers:	Prepared by: Geo-Environmental Solutions	Date: Sep-24
Schedules:	Prepared by:	Date:
Specifications:	Prepared by: Geo-Environmental Solutions	Date: Sep-24
Computations:	Prepared by:	Date:
Performance solution proposals:	Prepared by:	Date:
Test reports:	Prepared by: Geo-Environmental Solutions	Date: Sep-24

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:

Geo-Environmental Assessment - 75 Blyth Parade, Great Bay - Sep-24

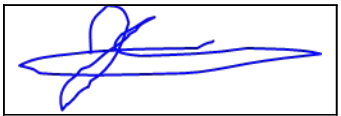
Geo-Environmental Assessment - 75 Blyth Parade, Great Bay - Sep-24

Attribution as designer:

I John-Paul Cumming, 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:	John-Paul Cumming		30/09/2024
Licence No:	CC774A		

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.

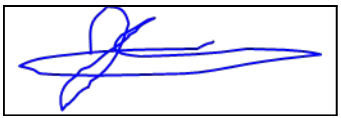
I confirm that the proposed works are not Certifiable Works, in accordance with the Guidelines for TasWater CCW Assessments, by virtue that all of the following are satisfied:

- [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 ..... John-Paul Cumming..... 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:	John-Paul Cumming		30/09/2024

CERTIFICATE OF QUALIFIED PERSON – ASSESSABLE ITEM

Section 321

Form **55**

To: Judy & Matthew Bailey-Lawrence *Owner /Agent*

75 Blyth Parade *Address*

Great Bay 7150 *Suburb/postcode*

Qualified person details:

Qualified person: John-Paul Cumming

Address: 29 Kirksway Place

Battery Point 7004

Phone No: 03 6223 1839

Fax No:

Licence No: AO999

Email address: jcumming@geosolutions.net.au

Qualifications and Insurance details: Certified Professional Soil Scientist (CPSS stage 2)

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

Speciality area of expertise: AS2870-2011 Foundation Classification

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

Details of work:

Address: 75 Blyth Parade

Great Bay 7150

Lot No:

Certificate of title No: 15511/20

The assessable item related to this certificate: Classification of foundation Conditions according to AS2870-2011

(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: Foundation Classification

(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 item, at any stage, as part of - *(tick one)*

building work, plumbing work or plumbing installation or demolition work ☒

or

a building, temporary structure or plumbing installation: ☐

In issuing this certificate the following matters are relevant –

Documents:	The attached soil report for the address detailed above in 'details of Work'
Relevant calculations:	Reference the above report.
References:	AS2870:2011 residential slabs and footings AS1726:2017 Geotechnical site investigations CSIRO Building technology file – 18.

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

Site Classification consistent with AS2870-2011.

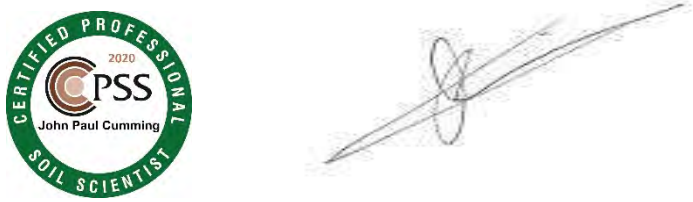
Scope and/or Limitations

The classification applies to the site as inspected and does not account for future alteration to foundation conditions as a result of earth works, drainage condition changes or variations in site maintenance.

I, John-Paul Cumming certify the matters described in this certificate.

Qualified person:

Signed:



Certificate No: J5584

Date: 28/01/2022

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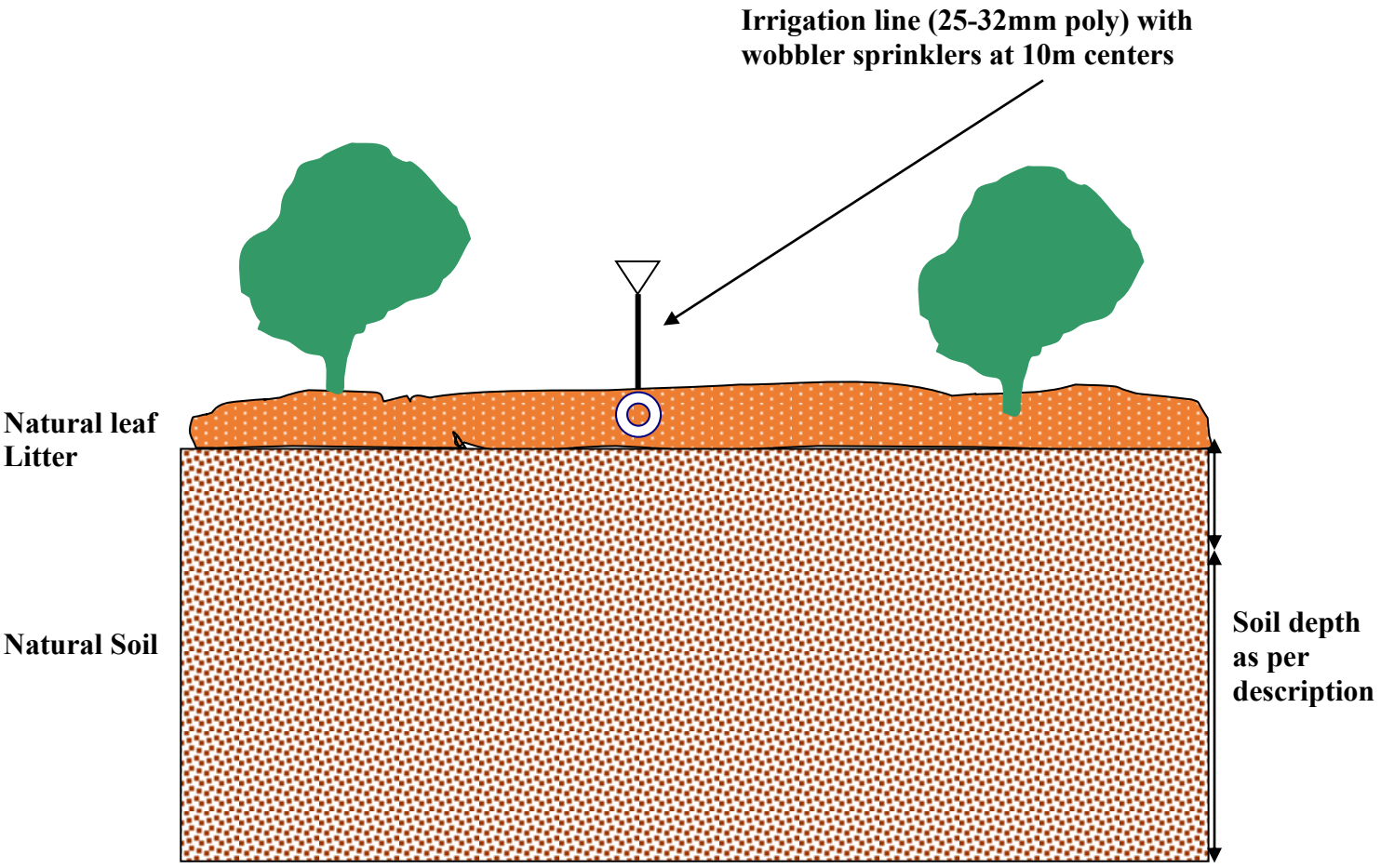
Figure 1 - AWTS

AWTS – surface bush irrigation

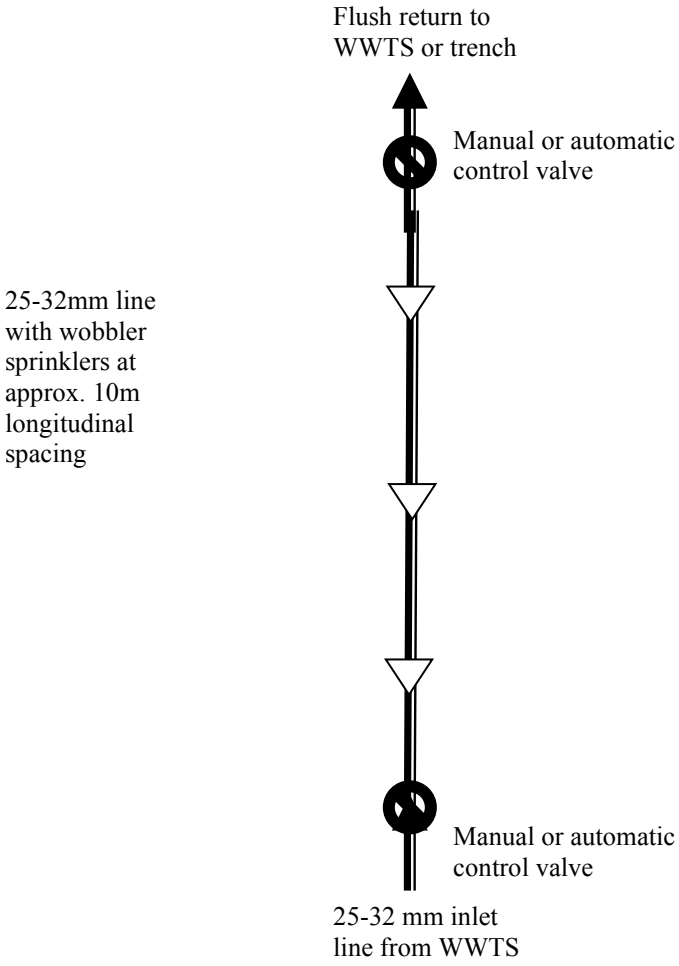
To be used in conjunction with site evaluation report for construction of irrigation areas for use with aerated wastewater treatment systems (AWTS) on in areas of native bush**.** On dispersive soils gypsum should be added to tilled natural soil at 1Kg/5m^2. For irrigation areas larger than 500m^2 the irrigation area should be split into multiples of at least 100m^2 with flow automatically switched between each area by an automatic sequencing value (e.g., K-Rain). On steep sites pressure check valves should be utilized on each sprinkler row to ensure even distribution.

Irrigation Area Cross Section



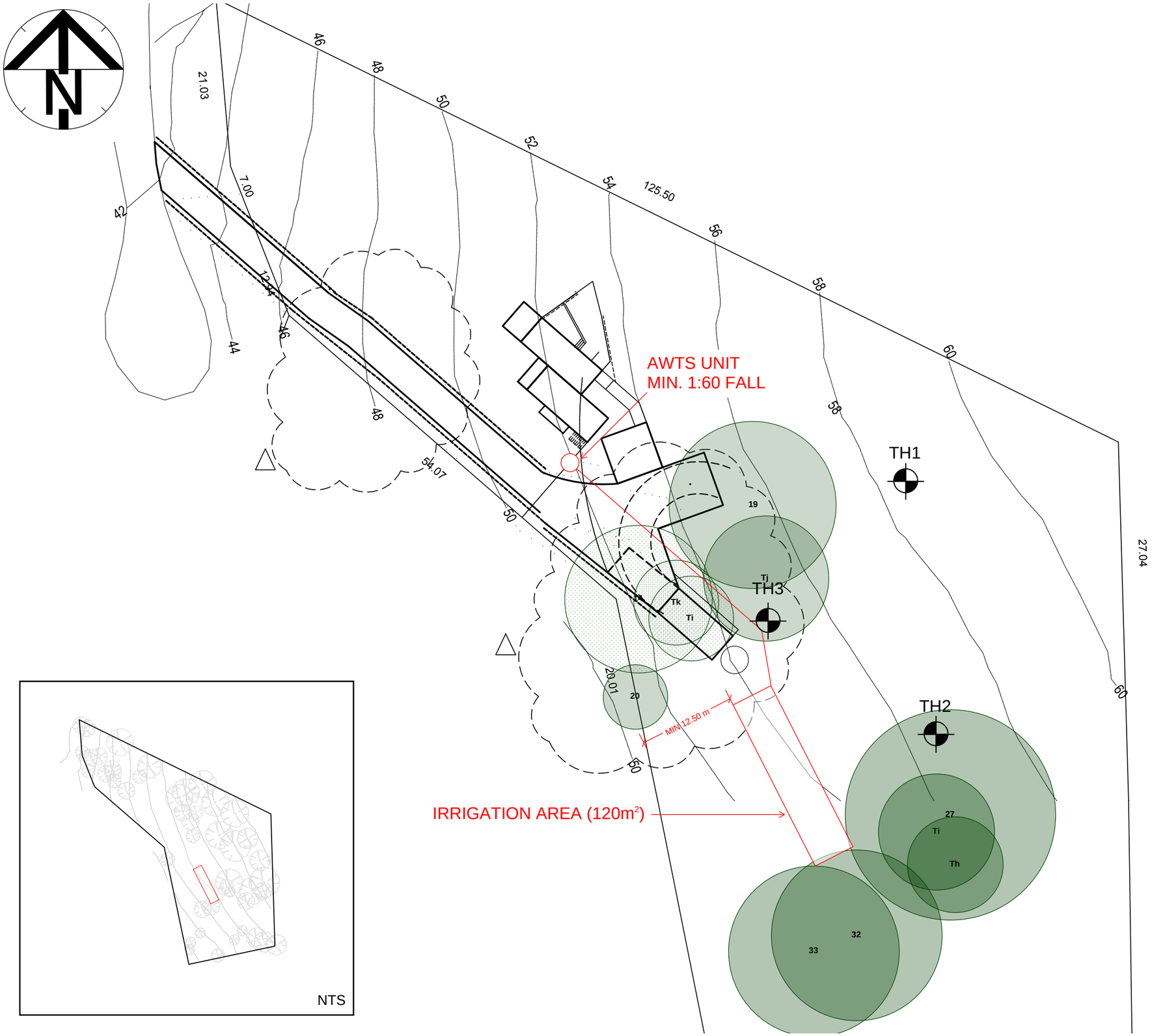
- The irrigation lines should be scratched into the ground surface and/or covered with natural leaf litter. Additional gum mulch to added as required
- The area should have a minimum of 1 native plant per 5m^2, and supplementary planting maybe required

Irrigation Area Plan View



Design specifications:

1. Manufacturer's recommendations for spacing of irrigation lines and sprinklers should be followed (i.e., wobbler® 5.56 mm sprinklers) with a longitudinal spacing of approx. 5-10m centers.
2. Typical sprinkler flow rates are 0.3-0.8L/sec per 5.56 mm emitter dependant pressure.
3. Sprinklers to be placed on secure staked risers with sufficient height to clear undergrowth such as grass and sedges
4. A flush line must be installed at the lowest point/bottom of the irrigation area with a return valve for flushing back into the treatment chamber of the system (not into the primary chamber as it may affect the performance of the microbial community) or to a dedicated absorption trench.
5. The minimum irrigation pumping capacity should be a 12m head or 120 kPa measured at the highest point of the irrigation area.
6. Pressure check valves to be used on steep sites on each sprinkler line to ensure even distribution



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Wastewater system:

AWTS Unit with venting according to NCC Vol 3 Tas C2D6

Irrigation area (120m²)

Min 6m from buildings
Min 1.5m from upslope or level boundaries
Min 12.5m from downslope boundary
Min 37m from downslope surface water

Refer to GES report

Dr. John Paul Cumming
Building Services Designer-Hydraulic
CCC774A

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30/09/2024

Approximate Test Hole Location

TPZ of mature trees within 15m of LAA
Refer to letter by Mulcahy Planning and Property Services

Do not scale from these drawings. Dimensions to take precedence over scale.	Judy & Mathew Bailey-Lawrence 75 Blyth Parade, GREAT BAY 7150	C.T.: 15511/20 PID: 5055190	Date: 30/09/2024	On-Site Wastewater Management Plan	1:500 @ A3	Sheet 1 of 1 Drawn by: EF

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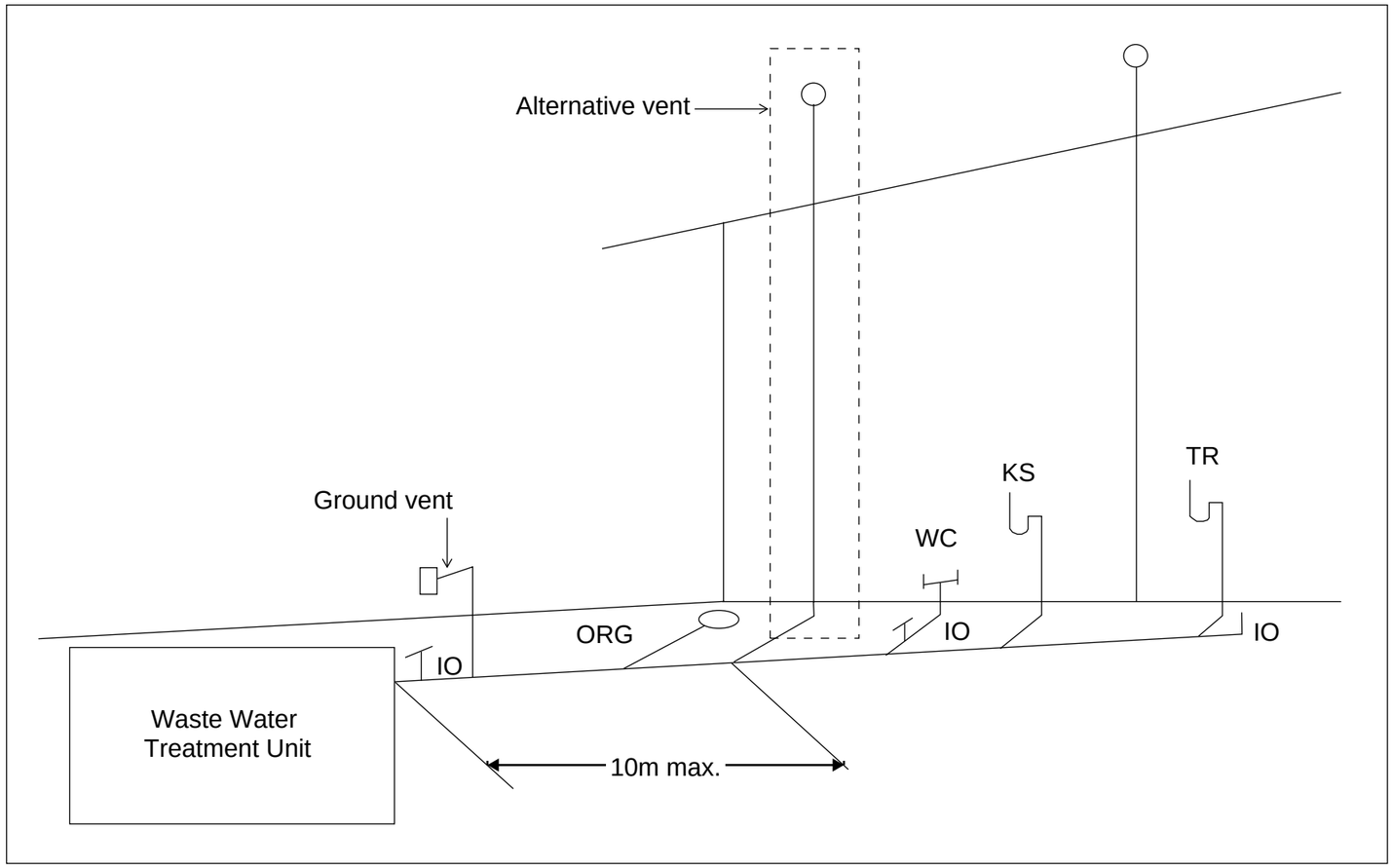

Tas Figure C2D6 Alternative Venting Arrangements

Vents must terminate in accordance with AS/NZS 3500.2

Alternative venting to be used by extending a vent to terminate as if an upstream vent, with the vent connection between the last sanitary fixture or sanitary appliance and the on-site wastewater management system. Use of a ground vent in not recommended

Inspection openings must be located at the inlet to an on-site wastewater management system treatment unit and the point of connection to the land application system and must terminate as close as practicable to the underside of an approved inspection opening cover installed at the finished surface level

Access openings providing access for desludging or maintenance of on-site wastewater management system treatment unites must terminate at or above finished surface level

Do not scale from these drawings. Dimensions to take precedence over scale.				Tas Figure C2D6 Alternative Venting Arrangements		Sheet 1 of 1