ON-SITE WASTEWATER ASSESSMENT

Lot 10, 3027 Channel Highway

Kettering

October 2024

GES

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SOLUTIONS

Investigation Details

Client:	Bayden Reardon
Site Address:	Lot 10, 3027 Channel Highway, Kettering
Date of Inspection:	16/01/2024
Proposed Works:	Proposed new dwelling
Investigation Method:	Geoprobe 540UD - Direct Push
Inspected by:	M. Campbell

Site Details

Certificate of Title (CT):	60358/10
Title Area:	Approx. 1462 m²
Applicable Planning Overlays:	None identified
Slope & Aspect:	Approx. 12% N facing slope
Vegetation:	Grass & Weeds

Background Information

Geology Map:	MRT
Geological Unit:	Jurassic dolerite
Climate:	Annual rainfall approx. 900mm
Water Connection:	Tank
Sewer Connection:	Unserviced-On-site required
Testing and Classification:	AS1547:2012

Investigation

A representative of bore hole was completed to identify the distribution and variation of the soil materials at the site, the bore hole location is indicated on the site plan. See soil profile conditions presented below. Tests were conducted to assess the capacity of the materials for onsite wastewater disposal according to AS1547:2012.

Soil Profile Summary

BH 3 Depth (m)	USCS	Description
0.00-0.20	SM	**Silty SAND**: trace of gravel, grey, brown, slightly moist, loose,
0.20-0.30	Cl	**Silty CLAY**: trace of gravel, medium plasticity, grey, brown, slightly moist, stiff,
0.30-0.40	GW	**Sandy GRAVEL**: yellow, brown, slightly moist, dense, refusal.

Site Notes

Soils on the site are developing from Jurassic dolerite. These soils have moderate capacity to accept onsite wastewater, with limited permeability and good nutrient retention capacity.

Wastewater Classification & Recommendations

According to AS1547-2012 for on-site wastewater management the soil on the property is classified as **Light CLAY (Category 5)**. Due to the shallow soils on site, a secondary treatment system (e.g., AWTS) with subsurface irrigation is required. A Design Irrigation Rate (DIR) of 3mm/day has been assigned for secondary treated effluent.

The proposed dwelling has a calculated maximum wastewater output of 720L/day. This is based on a tank water supply and a maximum occupancy of 6 people (120L/day/person). Using the DIR of 3mm/day, an irrigation area of at least 240m^2 will be required to accommodate the expected flows. A cut-off diversion drain will be required upslope of the absorption area and the area excluded from traffic or any future building works. An additional 200mm of loam is required to supplement the shallow soils.

Due to insufficient area on site, no reserve area has been assigned. In the event that system failure occurs, old lines and topsoil are to be removed and replaced with new topsoil and irrigation lines within a 48-hour period of an issue being identified.

The following setback distances are required to comply with E23.10 of the Kingborough Council Interim Planning Scheme 2015 and Building Act 2016:

Upslope or level buildings:	3m
Downslope buildings:	3.25m
Upslope or level boundaries:	1.5m
Downslope boundaries:	8.5m
Downslope surface water:	100m

Compliance with Building Act 2016 Guidelines for On-site Wastewater Management Systems is outlined in the attached table. Compliance with E23.10 of the Kingborough Interim Planning Scheme 2015 is demonstrated below.

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) 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.	Complies Complies 3.75m required

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;	Complies
(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;	N/A

(ii) if secondary treated effluent and subsurface application, 15m plus 2m for every degree of average gradient from down slope 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;	
(b) be no less than: (i) 1.5m from an upslope or level property boundary; and if primary treated effluent 2m for every degree of average gradient from a downslope property boundary; or if secondary treated effluent and subsurface application, 1.5m plus 1m for every degree of average gradient from a downslope property boundary.	Complies Complies 8.5m 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.	No bore or well within 50m

A5

Vertical separation distance between groundwater and a land application area must be no less than 1.5m.	No groundwater encountered

A6

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

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

During construction GES will need to be notified of any 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 Pty Ltd

Land suitability and system sizing for on-site wastewater management

Trench 3.0 (Australian Institute of Environmental Health)

Assessment Report

Site assessment for on-site waste water disposal

Assessment for	Bayden Reardon	Assess. Date	29-Oct-24
		Ref. No.	
Assessed site(s)	Lot 10, 3027 Channel Highway	Site(s) inspected	16-Jan-24
Local authority	Kingborough	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 = 720 (using the 'No. of bedrooms in a dwelling' method)
Septic tank wastewater volume (L/day) = 240
Sullage volume (L/day) = 480
Total nitrogen (kg/year) generated by wastewater = 2.6
Total phosphorus (kg/year) generated by wastewater = 1.3

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)	54	56	63	76	72	81	82	95	87	85	75	73
Adopted rainfall (R, mm)	54	56	63	76	72	81	82	95	87	85	75	73
Retained rain (Rr, mm)	46	47	53	64	61	69	70	81	74	73	64	62
Max. daily temp. (deg. C)												
Evapotrans (ET, mm)	130	110	91	63	42	29	32	42	63	84	105	126
Evapotr. less rain (mm)	**84**	**63**	**38**	**-1**	**-19**	**-39**	**-38**	**-39**	**-11**	**11**	**41**	**64**

Annual evapotranspiration less retained rain (mm) = 154

Soil characterisitics

Texture = Light CLAY Category = 5 Thick. (m) = 0.7
Adopted permeability (m/day) = 0.12 Adopted LTAR (L/sq m/day) = 3 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:	In-ground
The preferred type of in-ground secondary treatment:	None
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) =	24
Width (m) =	10
Depth (m) =	0.6
Total disposal area (sq m) required =	240
comprising a Primary Area (sq m) of:	240
and a Secondary (backup) Area (sq m) of:	

Sufficient area is available on site

Comments

The assigned DIR for the Category 5 soil present on site for wastewater is 3L/m^2/day. With a daily wastewater loading of 720L/day, a minimum irrigation area of 240m^2 is required. Therefore the system should have the capacity to cope with extreme climatic and loading events.

GES Pty Ltd

Land suitability and system sizing for on-site wastewater management

Trench 3.0 (Australian Institute of Environmental Health)

Site Capability Report

Site assessment for on-site waste water disposal

Assessment for	Bayden Reardon	Assess. Date	29-Oct-24
		Ref. No.	
Assessed site(s)	Lot 10, 3027 Channel Highway	Site(s) inspected	16-Jan-24
Local authority	Kingborough	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	1,000	V. high	Moderate		
	Density of disposal systems	/sq km	20	Mod.	Moderate		
	Slope angle	degrees	7	High	Low		
	Slope form	Convex spreading		High	Very low		
	Surface drainage	Imperfect		High	Moderate		
	Flood potential	Site floods <1:100 yrs		High	Very low		
	Heavy rain events	Infrequent		High	Moderate		
	Aspect (Southern hemi.)	Faces NE or NW		V. high	Low		
	Frequency of strong winds	Common		High	Low		
	Wastewater volume	L/day	720	High	Moderate		
	SAR of septic tank effluent		1.0	High	Low		
	SAR of sullage		1.6	High	Low		
	Soil thickness	m	0.7	V. high	Low		
AA	Depth to bedrock	m	0.7	V. high	Very high		
	Surface rock outcrop	%	0	V. high	Very low		
	Cobbles in soil	%	0	V. high	Very low		
	Soil pH		5.5	High	Low		
	Soil bulk density	gm/cub. cm	1.4	High	Very low		
	Soil dispersion	Emerson No.	8	V. high	Very low		
	Adopted permeability	m/day	0.12	Mod.	Very low		
	Long Term Accept. Rate	L/day/sq m	3	High	High	Moderate	Other factors lessen impact

Comments

Secondary treatment of wasterwater is required.

GES Pty Ltd

Land suitability and system sizing for on-site wastewater management

Trench 3.0 (Australian Institute of Environmental Health)

Environmental Sensitivity Report

Site assessment for on-site waste water disposal

Assessment for	Bayden Reardon	Assess. Date	29-Oct-24
		Ref. No.	
Assessed site(s)	Lot 10, 3027 Channel Highway	Site(s) inspected	16-Jan-24
Local authority	Kingborough	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 Trench	Limitation Amended	Remarks
	Cation exchange capacity	mmol/100g	90	High	Low		
	Phos. adsorp. capacity	kg/cub m	0.6	High	Moderate		
	Annual rainfall excess	mm	-154	High	Very low		
	Min. depth to water table	m	5	High	Very low		
	Annual nutrient load	kg	3.9	High	Very low		
	G'water environ. value	Agric non-sensit		V. high	Low		
	Min. separation dist. required	m	2	High	Very low		
	Risk to adjacent bores	Very low		V. high	Very low		
A	Surf. water env. value	Recreational		V. high	High		
	Dist. to nearest surface water	m	170	V. high	Moderate		
	Dist. to nearest other feature	m	50	V. high	Moderate		
	Risk of slope instability	Very low		V. high	Very low		
	Distance to landslip	m	140	V. high	Low		

Comments

There is low risk of environmental degredation associated with the proposed wastewater system.

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 (b) (i) Land application area will be located with a minimum separation distance of 3m from an upslope or level building. Complies with A1 (b) (iii) Land application area will be located with a minimum separation distance of 4m from a downslope 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 (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) (iii) Land application area will be located with a minimum separation distance of 9.5m 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: Lot 10, 3027 Channel Highway, Kettering (CT 60358/10)

System Capacity: 6 persons @ 120L/person/day

Summary of Design Criteria

DIR: 3mm/day.

Irrigation area: 240m^2

Reserve area location /use: Not available – irrigation lines and topsoil to be replaced within a 48-hour period.

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 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: Bayden Reardon *Owner name*
PO Box 16 *Address*
Cygnet 7112 *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 Bayden Reardon
Designer's project reference No. J9911
Address: Lot 10, 3027 Channel Highway
Lot No: 60358/10
Kettering 7155

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 with irrigation

Design documents provided:

The following documents are provided with this Certificate –

Document description:

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

Onsite Wastewater Assessment - Lot 10, 3027 Channel Highway Kettering - Oct-24

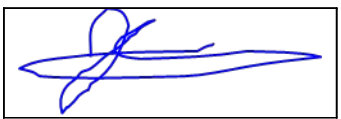
Onsite Wastewater Assessment - Lot 10, 3027 Channel Highway Kettering - Oct-24

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		29/10/2024
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

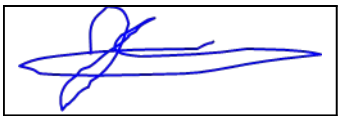
	Name: (print)	*Signed*	*Date*
Designer:	John-Paul Cumming		29/10/2024

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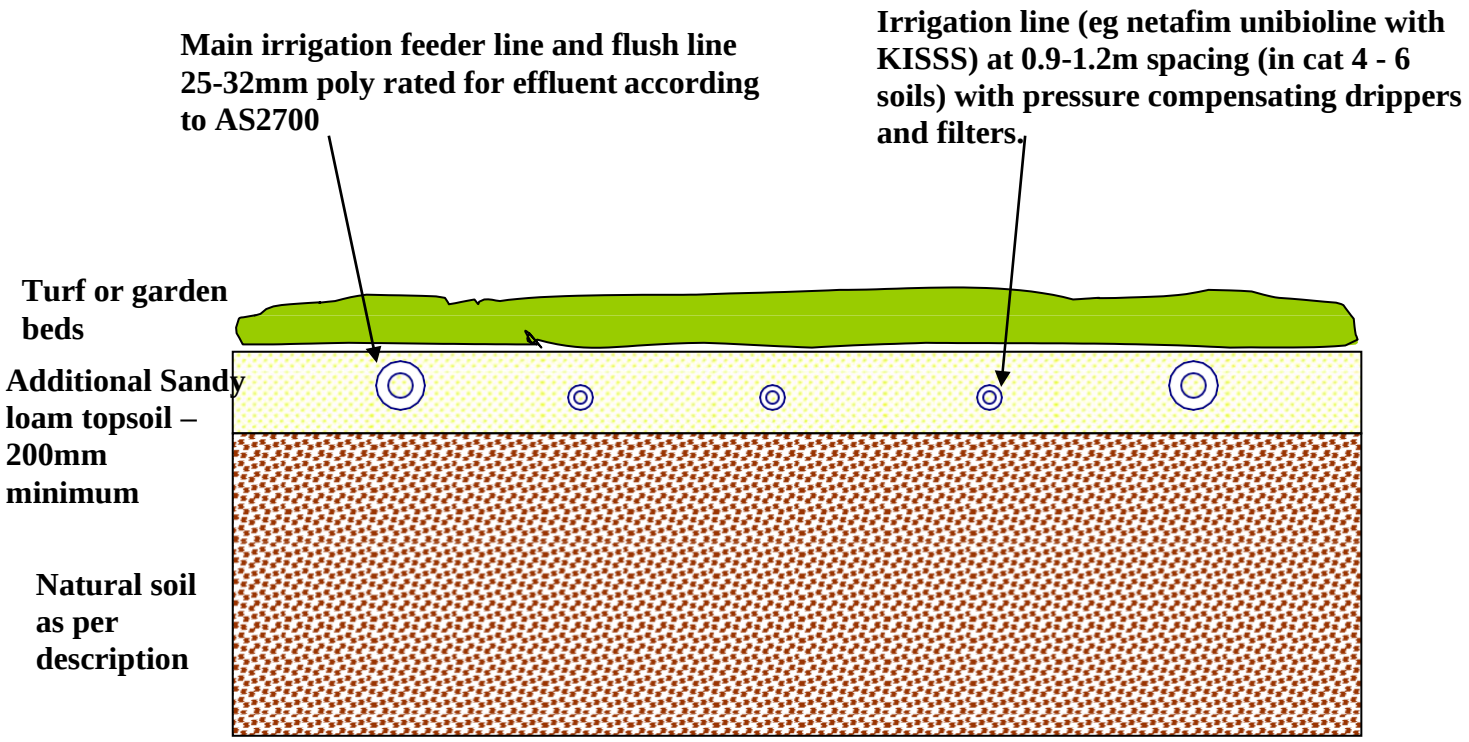
Figure 1

Subsurface irrigation design

To be used in conjunction with site evaluation report for construction of subsurface irrigation areas for use with aerated wastewater treatment systems (AWTS). On dispersive soils gypsum should be added to tilled natural soil at 1Kg/5m^2. The irrigation outlet line from the system or holding tank should utilize a 25-32mm main line out stepped down to a 11-16mm lateral drip irrigation lines in each irrigation row. If the final design is for shrubs/trees then a mounded row design is best employed with a nominal mound height of approximately 200mm.

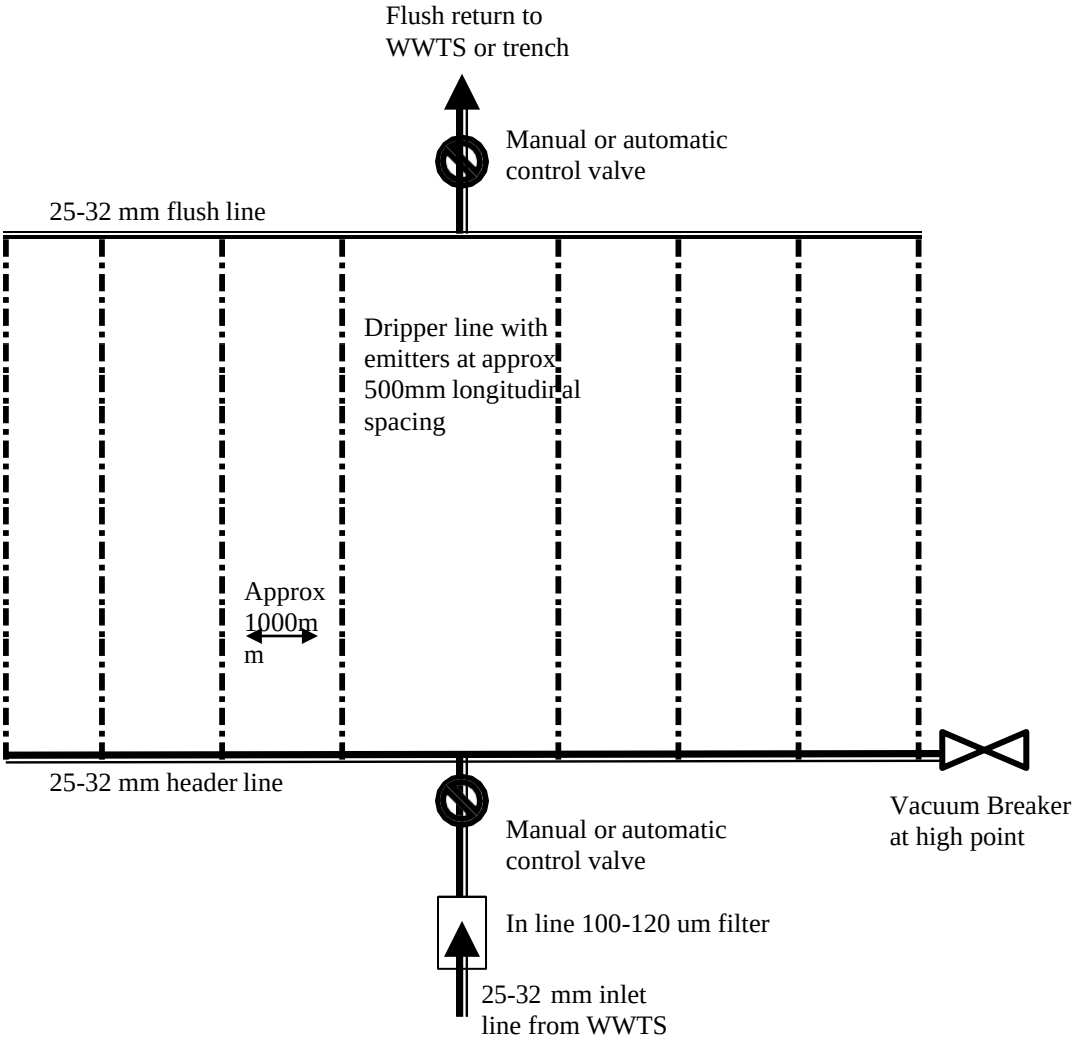
Irrigation Area Cross Section



Note – the bedding sandy loam & topsoil/turf depths are minimum, with a maximum depth below surface of 100mm recommended (range 100-200mm).

- The existing surface of the site should be tilled to a depth of 100mm with a conventional plough, discs or spring tines to break down the turf matt and any large soil clods – all stones must be removed
- A minimum of 200mm of sandy loam should be added to the site to aid installation of the drip line into a suitable medium – the loam should be mixed into the exiting subsoil with another pass of the cultivating tines or similar
- Turf, seed or plants should be applied to the are as soon as practical after the laying of dripper line and commissioning of the system

Irrigation Area Plan View



Design specifications:

1. Manufacturer's recommendations for spacing of lateral irrigation lines should be followed (eg netafim unibioline with/without KISSS) with commonly used with spacing of 0.3m (0.6m KISSS) in highly permeable soils and 0.6m (1.0-1.2m KISSS) in less permeably loams and clays.
2. Dependant upon treatment system a 200µm filter may be installed at the pumping chamber outlet, but a 100-120 µm inline disc filter should be installed prior to discharge into the irrigation area.
3. A vacuum breaker valve must be installed at the highest point of each irrigation zone in a marked and protected valve control box.
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 equivalent to 120kpa (i.e. 12m of head) at the furthest point of the irrigation area (a gauge should be placed at the vacuum breaker) – therefore pump size can be matched on site to the irrigation pipe size and design.

CHANNEL HIGHWAY

Edge of sealed road

Ex. grated drain

CT60358/10
+/-1424m

450 x 450 grated PVC pit (trafficable) connected to stormwater absorption trench.

ORG @ 35.86 with tap over

100 UPVC pipe connected to sewer absorption system (to be designed by engineer)

450 x 450 grated PVC pit connected to stormwater absorption trench.

AWTS

100mm ag drain to rear of wall.

EX. FENCE

Proposed asphalt driveway.

Proposed Conc. parking

150 Grated drain (trafficable)

Fall

EX. GRAVEL

Tr

WC

d.p.

i.o.

Stair void

Heat pump indoor unit

50mm UPVC vent to outside through roof

d.p. hang under house floor

Hot water overflow connected to stormwater absorption trench.

WC

B

Shr

Bth

S

NOTE:
All d.p. conn. to water tanks.

100mm ag drain to base of cut. Fall to one end.

3700

Cut-off drain

Proposed irrigation area (to be designed by engineer)

Stormwater absorption trench (to be designed by engineer)

8500

1500

FENCE

11.77

EX. CONC.

EX. SHED

TREE

79.92

100 UPVC pipe connected to stormwater absorption trench (to be designed by engineer)

Heat pump outdoor unit drain connected to stormwater

450 x 450 grated PVC pit connected to stormwater absorption trench.

Proposed water tanks. 3x 10,000ltr. Overflow connect to stormwater trench.

33.53

40.71

40.37

40.17

40.19

WAYLEAVE EASEMENT 'A' 12.00 WIDE

WAYLEAVE EASEMENT 'B' 6.00 WIDE

POWER POLE

1. THIS PLAN HAS BEEN PREPARED BY ANOTHER PERSPECTIVE PTY LTD FROM A COMBINATION OF EXISTING SURVEY PLANSGPS DETAIL SURVEY CARRIED OUT BY ANOTHER PERSPECTIVE PTY LTD.
2. TITLE BOUNDARIES SHOWN WERE NOT VERIFIED OR MARKED AT THE TIME OF THIS SURVEY.
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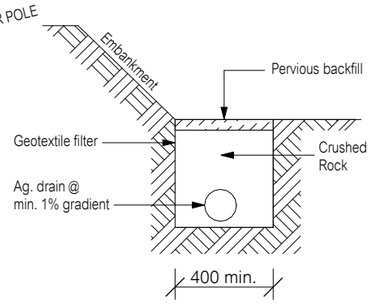
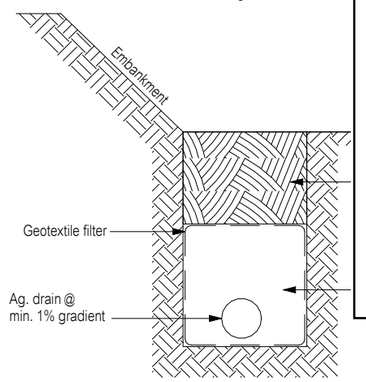
4. THIS NOTE IS AN INTEGRAL PART OF THIS PLAN/DATA. REPRODUCTION OF THIS PLAN OR ANY PART OF IT WITHOUT THIS NOTE BEING INCLUDED IN FULL WILL RENDER THE INFORMATION SHOWN ON SUCH A REPRODUCTION INVALID AND NOT SUITABLE FOR USE WITHOUT PRIOR AUTHORITY OF ANOTHER PERSPECTIVE PTY LTD.
5. HORIZONTAL DATUM IS BASED ON P164701 (MGA94) - SHIFTED TO GDA2020 DISTANCES ARE SCALED TO PLANE (CSF 0.999600 ABOUT SPM9631)
6. VERTICAL DATUM IS AHD (RTK GPS).
7. CONTOUR INTERVAL IS 0.2 METRE, INDEX IS 1.0 METRE.
NOTE: BOUNDARIES AND EASEMENTS (IF INCLUDED) ARE COMPILED FROM SURVEY PLAN P164701 & P60368)
ANOTHER PERSPECTIVE ARE NOT REGISTERED LAND SURVEYORS AND IF REQUIRED A REGISTERED LAND SURVEYOR SHOULD BE ENGAGED TO IDENTIFY AND MARK TITLE BOUNDARIES & EASEMENTS.



TYPICAL AG. DRAIN DETAIL
(≥1800 FROM HOUSE)
Not to scale



TYPICAL AG. DRAIN DETAIL
(<1800 FROM HOUSE)
Not to scale

Where ag drain is < 1.5m from footing, the follow
are required:

1. Ag drain to be capped with 300mm of clay to
run-off unless it is under a paving slab etc (ag d
removal of ground water, surface water should b

2. Ag drain to have a minimum 1% fall to a grate
stormwater system.

3. Install a geotextile filter sock to the slotted dra
drain in geofabric (to the underside of clay capp

4. Provide additional grated pits / or inspection
of the ag drain and at the high point to make the
visible and enable a blockage to be cleared.

Wastewater system:

AWTS Unit with venting according to NCC Vol 3 Tas C2D6 - min 1:60 fall from fixtures

Cut-off drain drain

Subsurface irrigation area (240m²)

Additional 200mm sandy loam

Min 3m from upslope or level buildings
Min 3.25m from downslope buildings
Min 1.5m from upslope or level boundaries
Min 8.5m from downslope boundary
Min 100m from downslope surface water

Refer to GES report

Dr. John Paul Cumming
Building Services Designer-Hydraulic
CCC774A

05/11/2024

GES
GEO-ENVIRONMENTAL SOLUTIONS
29 Kirksway Place Battery Point
T| 62231839 E| office@geosolutions.net.au

Approximate Test Hole Location

0 2 4 6 8m
1:200

No.	Date	Int.
G	02 Sept. 2024	CK
E	27 June 2024	CK

Amendment changes as per cover sheet

Soil classification: M

Refer to Soil Report for nominated founding depth and description of founding material.

All Materials and construction to comply with AS/NZ3500 Part 2 & Part 3

- Wet areas to comply with NCC 10.2 and AS3740

Notes
- Builder to verify all dimensions and levels on site prior to commencement of work
- All work to be carried out in accordance with the current National Construction Code.
- All materials to be installed according to manufacturers specifications.
- Do not scale from these drawings.
- No changes permitted without consultation with designer.

Designer:

ANOTHER PERSPECTIVE PTY LTD
PO BOX 21
NEW TOWN
LIC. NO. 685230609 (S. Turvey)
Ph: (03) 6231 4122
Fx: (03) 6231 4166
Email:
info@anotherperspective.com.au

Client / Project info

PROPOSED REARDON RESIDENCE

3027 Channel Highway,
KETTERING

another perspective drafting&design

DRAINAGE PLAN

Drawn	CK	AP2023-2319
Date	03 June 2024	Sheet
Scale	1 : 200	01b/03

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SOLUTIONS
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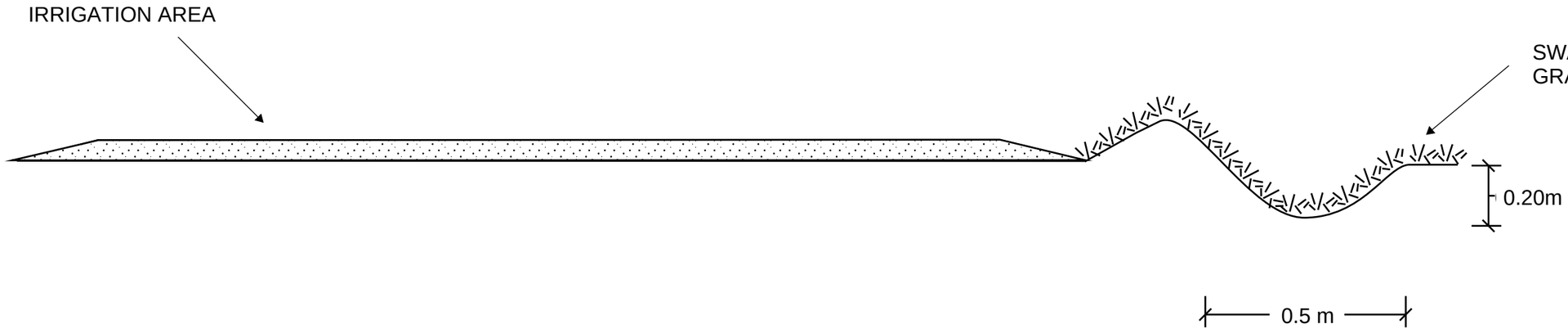
TYPICAL GRASSED SWALE DRAIN CROSS-SECTION

SWALE DRAIN TO BE MIN 0.5M WIDE BY MIN 0.20M DEEP

GRASS COVER TO BE MAINTAINED TO SLOW WATER FLOW AND MINIMSE EROSION



Do not scale from these drawings. Dimensions to take precedence over scale.	Geo-Environmental Solutions		Date: Nov 2021	Grassed swale drain typical cross-section	Sheet 1 of 1 Drawn by SR

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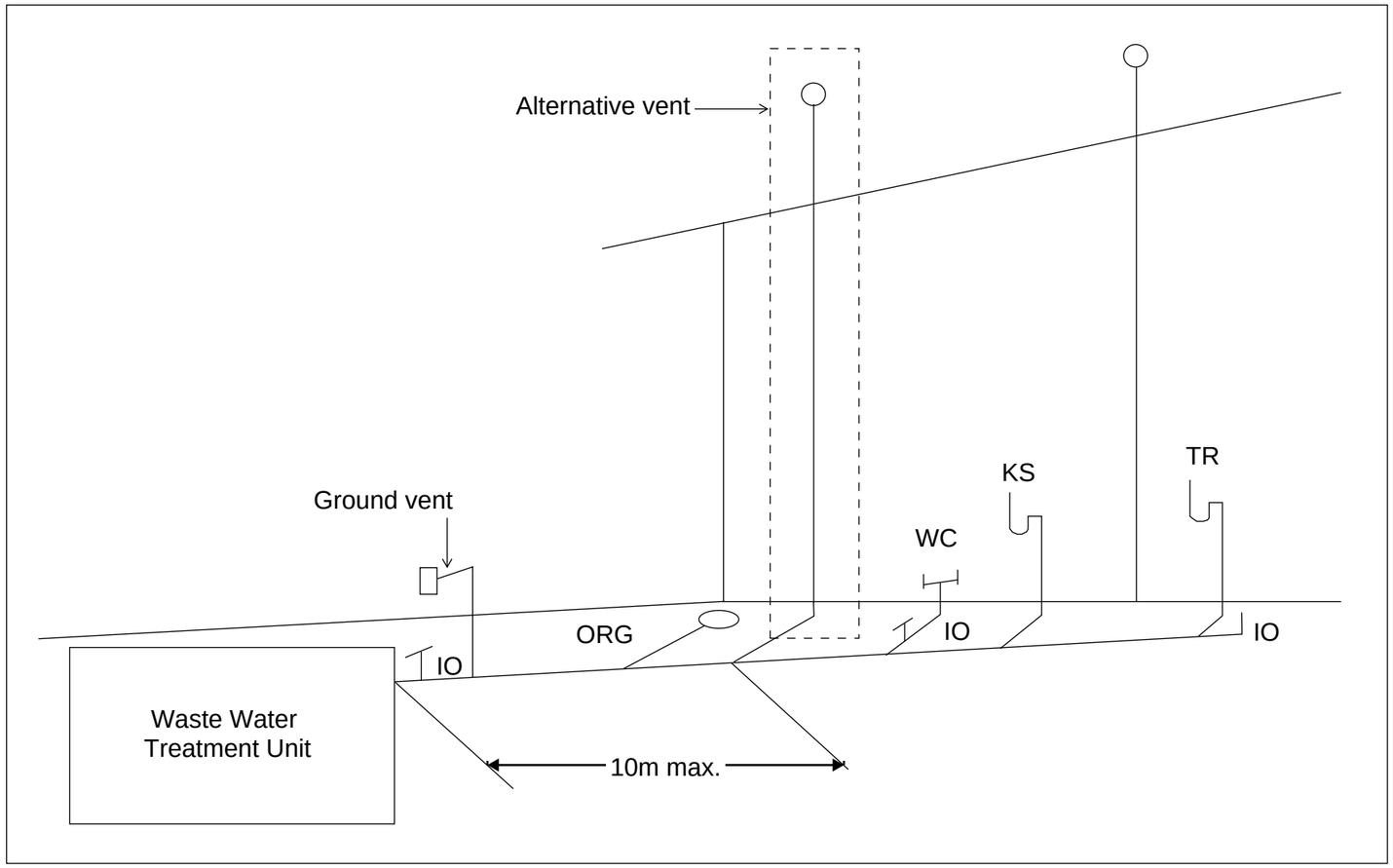

Tas Figure C2D6 Alternative Venting Arrangements

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