Mansfield Land Capability & Soil Assessments

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LAND CAPABILITY ASSESSMENT

Report No. L41123

Client: Tony Roussos
Site Address: 152 Davies Road, Merrijig

Figure 1: Proposed irrigation area viewed from north-north-west to south-south-east as on the 5th June 2023.

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1. INTRODUCTION

Mansfield Land Capability & Soil Assessments has been engaged to undertake a Land Capability Assessment (LCA) by Tony Roussos for a site at 152 Davies Road, Merrijig, 3723.

The field visit and report have been undertaken and entirely carried out by Adam Layfield and Emma Layfield and we have the required professional indemnity insurance. The field testing included soil profile logging and sampling, laboratory testing, water and nutrient balance modelling and risk assessment has revealed that on-site effluent disposal is appropriate and sustainable.

Our submission will provide information about the site and soil conditions. It will also provide a detailed LCA and include a conceptual design for suitable onsite wastewater management, including recommendations for monitoring and management requirements.

The subject allotment is a 6.86ha allotment located approx. 17.7km south-east of the Mansfield township. The property is currently used for farming and lifestyle purposes, there is an existing building on the allotment and the proposed development is to alter and extend the existing building into a three-bedroom dwelling with a carport. The wastewater loading has been calculated based on four persons (three-bedrooms).

2. DESCRIPTION OF DEVELOPMENT

Site address:	152 Davies Road, Merrijig, 3723.
Parcel Details:	Lot 11 LP148582 (Refer to Appendix C.)
Owner:	T. Roussos
Email address:	Tony.roussos72@gmail.com
Phone:	0419 830 804
Vic Roads directory reference:	63 F4
Local Government Authority:	Mansfield
Council property number:	A9425
Allotment area:	6.86 ha
Planning Zone:	Farming Zone (FZ) Schedule to the Farming Zone (FZ)
Planning Overlay:	Environmental Significance Overlay (ESO) Environmental Significance Overlay – Schedule 2 (ESO2) Significant Landscape Overlay (SLO) Significant Landscape Overlay – Schedule 1 (SLO1) **Refer to Appendix F**
Catchment Area:	The site is in a Special Water Supply Catchment area.

3. INVESTIGATION METHOD

The report is in accordance with the current Code of Practice - *Onsite Wastewater Management, E.P.A.* Publication 891.4, *Land Capability Assessment for Onsite Domestic Wastewater Management*, E.P.A. Publication 746.1, *AS/NZS 1547:2012 and the* Mansfield Shire Council On-site Wastewater Management Plan 2022.

Our capability assessment involved investigating and reporting on climate, slope, aspect, vegetation, soil profile characteristics, proximity to surface waters and escarpments, transient soil moisture characteristics and hydraulic conductivity.

Exploratory drilling was undertaken and a bore hole was drilled to a depth of 1m as shown in Appendix E.

Soil permeability tests within the proposed irrigation area (LAA) were conducted using the constant head permeameter testing method in accordance with AS/NZS 1547:2012 as shown in Appendix D.

Water and nutrient balance analyses were based on the mean rainfall (redistribution of rainfall 9th Decile) recorded by the closest accurate weather station, the Mansfield weather station No 83019 and mean evaporation data for Lake Eildon. The rainfall and evaporation data were obtained from the National Climate Centre, Bureau of Meteorology. The data was subsequently analysed and applied to our water and nutrient balance analyses.

4. CAPABILITY ASSESSMENT

Slope and Aspect
The subject allotment varies from undulating to hilly, majority of the property is greater than 15% slope. The proposed irrigation area (LAA) is located on undulating land approx. 25-35m north-north-west of the existing building and approx. 50m off the north-west boundary. The grounds slope varies between 10 and 17% predominantly in a north-north-west direction and is exposed to winds and sunshine throughout the year. Refer to figure 1.

Slope Stability
The ground slopes stability within the proposed irrigation area is unlikely to be compromised by hydraulic loadings or slope degree due to the soil structure.

Climate
The general area receives a mean annual rainfall of 707.2mm and the redistribution of rainfall (9th Decile) of 931mm and a mean annual evaporation of 1156mm.

Vegetation
The proposed irrigation area is vegetated with a mixture of pasture grasses including ryegrass and clover, as shown in Figure 1 and Appendix D.

Subsurface Profile
The general subsurface profile consists of;
- A-horizon; layer of dark brown, sandy silt (loam), with a soil reaction trend of 5.92 pH and electrical conductivity of 0.23 dS/m, to a depth of 120mm

- B_1-horizon; layer of brown, sandy silty clay (clay loam), with a soil reaction trend of 5.68 pH and electrical conductivity of 0.21 dS/m, between the depths of 120-410mm

- B_2-horizon; layer of light orange-brown sandy silty clay (light clay), with a soil reaction trend of 5.53 pH and electrical conductivity of 0.20 dS/m, between the depths of 410-1000mm.

The soil horizon profile can be seen in Appendix E.

Soil Permeability
The soil profiling tests were conducted on the 5th of June 2023 as seen in Appendix E Constant head permeameter tests were undertaken and prepared in accordance with AS/NZS 1547:2012 as shown in Appendix D.

Profile analysis in accordance with Table 5.1 in AS/NZS 1547:2012 and the EPA Code of Practice, Table 9- Appendix A and our laboratory determined swell potential shows the B-horizon soils to be weakly structured clay loam with an indicative permeability (Ksat) in the range of 0.12 to 0.5m/day.

The constant head permeameter testing on the 5th of June 2023 resulted in a Ksat of .22m/day.

For the weakly structured clay loam soils, we have adopted a conservative design loading rate of 3.5mm/day with a seepage loss (Peak) of 3.4mm.

Soil Classification
In accordance with *AS/NZS1547:2012* and *EPA* Code of Practice, Table 9- Appendix A, the soil can be classified as Category 4b soil (weakly structured clay loam).

Surface Waters
The proposed irrigation area slopes predominantly to the north-north-west and the nearest drainage line is located at least 65m away to the west, nearest watercourse is located at least 70m away to the north-west and the closest dam is located at least 70m away to the north-north-west of the proposed irrigation area.

Groundwater Bores
There are no groundwater bores within 20m of the proposed irrigation area and no visible evidence of groundwater use for domestic purposes within 100m of the proposed irrigation area.

Watertable
One bore hole was drilled to a depth of 1m and no sign of ground water was visible.

5. LAND CAPABILITY AND CAPABILITY ASSESSMENT TABLE

Land features	Land Capability Risk Rating				Mitigation
	LOW	MEDIUM	HIGH	LIMITING	
Site Drainage: Run off/run on	No actual or potential	Low potential	High Potential	Cut-off drain not possible	Minor cut-off drain required upslope.
Flooding	Never	<1 in100	>1 in 100 and <1 in 20	<1 in 20	N/A
Proximity to waterway	>100m	70-100	40-70m	<40m	Secondary treatment
Proximity to drainage depression	>60m	40-60	<40		Secondary treatment
Slope % - Trenches & beds	~~<5%~~	~~5%-10%~~	~~10%-15%~~	~~>15%~~	Not suitable for trenches.
Slope% - Subsurface Irrigation	<10%	10%-30%	30%-40%	>40%	Install irrigation along contours.
Landslip	No actual or potential	Low potential	Potential	Present	N/A
Groundwater (m)	>2.0	2-1.5	<1.5	Surface	N/A
Compaction	No potential	Moderate	High	Severe potential	Vehicle & livestock barriers required.
Exposure	High sun and wind	Moderate	Low sun and wind		N/A
Landform - AS1547:2000 figure 4.1b2	Convex side slope and plains	Straight sided slopes	Concave side slopes	Floodplains	N/A
Vegetation	Pasture/turf	Sparse grasses	Dense forest		Gypsum required.
Rainfall (mm/yr) site 083020	<500	500-750	750-1000	>1000	Refer to water Balance table
Pan evaporation (mm/yr) BOM site 083023	>1250	1000-1250	750-1000	<750	Refer to water Balance table
Fill	No fill			Fill present	N/A
Permeability (m/day)	<0.3	0.3-3	3-5	>5.0	Gypsum required in excavated trenches
Presence of mottling	None	Slight		Extensive	N/A
Coarse fragments %	<10	10-20	>20		N/A
pH	6-8	4.5-6	<4.5, >8		N/A
Emerson aggregate class	3,4,5,6	7,8	2	1	N/A
Free Swell (%)	<30	30-80	80-120	>120	N/A

Note: Site assessments and soil test results are within the coloured range.

The above results indicate disposal of effluent is achievable by secondary treated effluent via on-site subsurface irrigation system.

The overall above assessment can be reduced to **medium** due to mitigation measures.

6. RISK ASSESSMENT

Land Feature	Land Capability Risk Rating				Remarks
	LOW	MEDIUM	HIGH	RISK RATING	
Distance to reservoir (km)	>15	2-15	<2	2	Approx. 12.3km to Lake Eildon FSL
Soil type rating (from LCA assessment table above)	1	2	3	2	Shallow Profile with low hydraulic conductivity of weakly structured soil.
Distance to river (m)	>80	40-80	<40	1	No river within 100m+
Distance to stream (m)	>80	40-80	<40	2	Approx. 70m to nearest watercourse.
Distance to drain (m)	>40	10-40	<10	1	>40m to nearest drain/drainage depression.
Lot size (ha)	>10	2-10	0.2-2	2	6.86ha
Density (houses/km^2)	<20	20-40	>40	1	<20 dwellings in the km^2 area.
LCA rating (from LCA assessment table above)	1 (LOW)	2 (MEDIUM)	3 (HIGH)	2	Refer to LCA table above.
System fail rate (%)	<5	5-10	>10	1	Assumed conservative rating due to secondary treatment.

We have assessed the proposed site using the Edis Risk Assessment, Dr Robert Edis identified major factors which influence the level of risk posed by an on-site system. These factors have a differing level of importance, or weighting, when considered relative to other factors and that the interaction between factors must also be considered.

The individual factors can be rated as;

1. **Low risk** (Rn<2.5) which reflects the range in which there is no expected consequential impact on water quality,
2. **Medium risk** (Rn2.5-5) which reflects the range in which the factor may influence the risk to water quality, though as a minor component of the overall risk, and
3. **High risk** (Rn>5) which represents a significant influence on the risk to water quality.

The Edis risk algorithm weights the major factors appropriately in the context of protecting the integrity of the potable water supply, as shown below:

Formula $R_n = ((R_{Res} + R_{Soil}) \times (R_{Riv} + R_{Str} + R_{Drain} + R_{Lot}) + (2 \times R_{LCA}) + (3 \times R_{Fail} + R_{Den}))/10$
Where
R_n = Combined Risk Number,
R_{Res} = Distance to reservoir risk rating
R_{Soil} = Soil risk rating
R_{Driv} = Distance to river risk rating
R_{Dstr} = Distance to stream risk rating
R_{Drain} = Distance to drain risk rating
R_{Lot} = Lot size risk rating
R_{LCA} = Land capability assessment risk rating
R_{Fail} = System fail rate risk rating
R_{Dens} = Density of development risk rating

The combined risk number for this site is **3.2 (Medium Risk)**

7. WATER NITROGEN BALANCE

WATER/NITROGEN BALANCE (20/30 irrigation): With no wet month storage.

Rainfall Station: Mansfield **Evaporation Station: Eildon**

Location: 152 Davies Road, Merrijig

Date: 5-6-23

Client: T. Roussos

ITEM	UNIT	#	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
Days in month:		D	31	28	31	30	31	30	31	31	30	31	30	31	365
Evaporation (Mean)	mm	A	173	159	121	76	44	31	33	53	68	105	130	163	1156
Rainfall (9th Decile wet year adjusted)	mm	B1	49	40	63	61	84	91	102	112	94	98	76	60	931
Effective rainfall	mm	B2	39	32	50	49	67	73	82	90	75	79	61	48	745
Peak seepage Loss[1]	mm	B3	105	95	105	102	105	102	105	105	102	105	102	105	1241
Evapotranspiration(IXA)	mm	C1	138	127	85	53	26	19	20	32	48	84	104	130	866
Waste Loading(C1+B3-B2)	mm	C2	205	190	140	107	64	48	43	48	74	111	145	188	1362
Net evaporation from lagoons (10(0.8A-B1xlagoon area(ha)))	L	NL	0	0	0	0	0	0	0	0	0	0	0	0	0
Volume of Wastewater	L	E	18600	16800	18600	18000	18600	18000	18600	18600	18000	18600	18000	18600	219000
Total Irrigation Water(E-NL)/G	mm	F	44	40	44	42	44	42	44	44	42	44	42	44	515
Irrigation Area(E/C2)annual.	m^2	G													425
Surcharge	mm	H	-161	-151	-96	-64	-21	-5	0	-4	-32	-67	-103	-144	0
Actual seepage loss	mm	J	-56	-55	9	38	85	97	106	102	70	38	-1	-38	544
Direct Crop Coefficient:		I	0.8	0.8	0.7	0.7	0.6	0.6	0.6	0.6	0.7	0.8	0.8	0.8	MAV:
Rainfall Retained: 80	%	K													
Lagoon Area: 0	ha	L						CROP FACTOR							
Wastewater(Irrigation): 600	L	M	0.7	0.7	0.7	0.6	0.5	0.45	0.4	0.45	0.55	0.65	0.7	0.7	Pasture:
Seepage Loss (Peak): 3.4	mm	N	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	Shade:
Irrig'n Area(No storage): 425	m^2	P2	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	Fescue:
Application Rate: 1.4	mm	Q	0.8	0.8	0.7	0.7	0.6	0.6	0.6	0.6	0.7	0.8	0.8	0.8	MAV:
Nitrogen in Effluent: 30	mg/L	R													
Denitrification Rate: 40	%	S													
Plant Uptake: 230	kg/ha/yr	T													
Mean daily seepage loss: 1.5	mm	U													
Annual N load: 3.94	kg/yr	V													
Area for N uptake: 171	m^2	W													
Application Rate: 3.5	mm	X													

NITROGEN UPTAKE:

Species:	Kg/ha.yr	pH	Species:	Kg/ha.yr	pH	Species:	Kg/ha.yr	pH
Ryegrass	200	5.6-8.5	Bent grass	170	5.6-6.9	Grapes	200	6.1-7.9
Eucalyptus	90	5.6-6.9	Couch grass	280	6.1-6.9	Lemons	90	6.1-6.9
Lucerne	220	6.1-7.9	Clover	180	6.1-6.9	C cunn'a	220	6.1-7.9
Tall fescue	150-320	6.1-6.9	Buffalo (soft)	150-320	5.5-7.5	P radiata	150	5.6-6.9
Rye/clover	220		Sorghum	90	5.6-6.9	Poplars	115	5.6-8.5

Summary statistics for all years Information about climate statistics

Statistic	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Mean	44.5	40.3	51.6	50.5	62.3	65.7	71.2	76.1	67.3	69.2	58.2	50.3	706.0
Lowest	0.0	0.0	1.0	0.0	0.0	3.8	16.0	4.9	10.3	0.8	4.3	0.5	318.4
5th %ile	2.9	1.6	6.2	6.5	14.7	24.3	32.2	22.8	21.7	14.6	11.8	9.1	455.4
10th %ile	6.5	4.2	8.4	10.6	20.9	26.6	35.7	32.1	29.5	24.2	20.0	11.4	496.5
Median	36.5	28.0	40.0	42.0	56.0	64.6	68.0	72.3	66.4	68.4	51.5	41.1	723.2
90th %ile	88.4	96.5	115.0	99.9	113.8	105.2	107.6	117.7	104.6	115.6	108.1	101.9	906.5
95th %ile	111.7	110.7	135.4	118.8	125.8	126.6	126.3	132.6	120.8	134.0	114.1	123.2	993.7
Highest	190.6	212.6	193.8	227.4	178.7	158.4	156.8	174.9	163.0	169.2	173.3	263.3	1093.2

The water nitrogen balance table requires 425m^2

8. SIZING CACULATIONS

The irrigation area has been determined from the results of the water and nutrient balance analyses, Victorian Land Capability Assessment Framework January 2014 and AS/NZS 1547:2012, Appendix M.

For the wastewater load of 600 litres produced from the proposed development, the water and nutrient balance tables require the effluent to be applied to an irrigation area of 425m^2 with an application rate of 1.4mm/day.

9. RECOMMENDATIONS

The following recommendations are based on the results of our assessment and are made in accordance with the *Code of Practice - Onsite Wastewater Management,* E.P.A. Publication 891.4, M.A.V. Model Land Capability Assessment Report and *AS/NZS 1547:2012*.
They are based on the limiting clay materials, wastewater load and are designed to demonstrate the viability of on-site effluent disposal of 600 litres per day.

SUBSURFACE IRRIGATION

General

Based on the results of the water and nutrient balance analysis, subsurface conditions including soil profile, soil laboratory tests, slope and adequate site drainage, on-site subsurface drip irrigation is appropriate after secondary treatment for effluent disposal.

Effluent

The effluent generated from the proposed dwelling will be black and grey water classed as 'all waste' and will be treated using an AWTS and pressure-compensating sub-surface drip irrigation system.

Domestic Water Supply

Onsite roof water collection only and no reticulated water supply available or likely to be provided at any stage in the future.

Anticipated Wastewater Load

Design wastewater load is calculated on a three-bedroom dwelling and therefore (3 + 1) x 150L/person/day = 600L/day. This design is sourced from the Code of Practice - Onsite Wastewater Management, E.P.A. Publication 891.4, table 4 and adopts 150L/person/day as a household with full water reduction fixtures. Refer to Appendix B.

Organic Material Loading (g B.O.D/person/day)

The BOD produced from the proposed 3-bedroom dwelling (four persons) will be a total of 240g per day. The treatment system will need to be able to treat at least 240g of BOD per day and this will need to be confirmed with the treatment system manufactures specification sheet.

AWTS Installation

AWTS to be installed on natural soils (not fill), all inspection opening brought up above ground surface level and after installing the tank it must be two-thirds filled with clean water to provide ballast in the tank and prevent groundwater lifting the tank out of the ground.

Irrigation Area

The irrigation area and application rate has been determined from the results of the laboratory tests, water and nutrient balance analyses and *AS/NZS 1547:2012.*

Ground Preparation and Excavations

Results of the Emerson Crumb Test show the residual clay soils have a low slaking and low shrink-swell potential and are non-dispersive. It is recommended that gypsum be broadcasted over the excavated irrigation disposal trenches prior to the installation of the dripper lines at the rate of 1kg/m^2. Irrigation disposal trenches shall not be backfilled with clay or heavy soil (use topsoil) and shall be installed along the contours, not exceeding 200mm in depth with 1m separation between trenches. Gypsum shall be reapplied every 4-5 years to assist in soil renovation.

Landscaping and Maintenance

On completion of irrigation installation, the area will require seeding of clover and rye grass seed mixture to assist in the nitrogen uptake. The area should be mowed frequently to increase grass growth rate, which again will assist in the nitrogen uptake.

Site Drainage

A minor cut-off drain shall be placed upslope of the proposed irrigation area and all potential stormwater run-on be discharged down slope well away of the proposed irrigation area.

Site Compaction

As the proposed irrigation area is located in an open area (paddock), it will need to be fenced to prevent any vehicles or livestock from causing compaction or damage to the area.

Reserve Area

In accordance with EPA Publication 891.4, no reserve area is required.

General Requirements
For secondary treated effluent, it is assumed that the design, construction, operation and maintenance are carried out in accordance with *AS/NZS1547:2012,* Code of Practice - Onsite Wastewater Management, EPA Publication 891.4 and Council Permit to Install/use.

Inspections and Monitoring
The 'permit to use' issued by the local shire council should state the required inspection periods. we recommend that the AWTS is inspected every 3 months and a service report be issued to the local shire council to ensure the ongoing effectiveness of the system.

Setback Distances
All setbacks referred to in Table 5- *Code of Practice – Onsite Wastewater Management,* E.P.A. Publication 891.4 are achievable using secondary treatment.

Permit to Install Septic Tank
Before any works commence, a 'Permit to install' must be obtained from the local shire council for all wastewater generated on the premises.

SUMMARY OF RECOMMENDATIONS
Our capability and risk assessment indicate that primary effluent and trench systems are not appropriate for this development and effluent shall be treated to a minimum 20/30 standard by an AWTS. Sufficient space exists for retention of all wastewater on the allotment and is achievable by using the principle of sub-surface irrigation after secondary treatment.
This assessment concludes the proposal for on-site wastewater management system to be sustainable, with minimal risk to the environment and human health as required by state environment protection policies.

10. CONCLUSION

We have assessed the development site and proposed irrigation area for existing and potential risks. The Edis risk algorithm has a combined risk assessment rating of **3.2 (Medium Risk)** and due to several risk factors including the degree of slope, weak soil profile and reduced setback to waterway and dam, we recommend an AWTS be installed to treat effluent to a minimum 20/30 quality which will maintain sustainable onsite effluent management with appropriate buffer protection to sensitive receptors.

The effluent applied to land via a total of **425m^2** of pressure-compensating sub-surface drip irrigation system and the size of LAA is conservative as it takes into consideration the limiting factors of the site and potential volume of wastewater and will provide a further increase in confidence that the system will be able to contain all wastewater.

The irrigation design is to be in accordance with AS/NZS 1547:2012 On-site domestic wastewater management, refer to Appendix H.

The irrigation pipe to be Netafim Bioline dripper system or equivalent as the Netafim Bioline dripper system is a pressure compensating system that will allow even distribution across the irrigation field.

11. MANAGEMENT PROGRAMME

To ensure for the most effective use of any effluent system the following measures are recommended:

Wastewater treatment systems serving the proposed dwelling must comply with the EPA conditions indicated in approval conditions or equivalent.

The plumber installing the system shall provide a Plumbing Industry compliance certificate and an as-laid plan to the local Council in order to obtain a Permit to Use.

For best practice:

1. Trenches to be monitored for signs of any surcharge or seepage;
2. Sink strainer to be used to catch food particles;
3. Front-loading washing machine be used when possible;
4. Surge loads be avoided (letting out large volumes of water at the same time);
5. Use biodegradable soaps;
6. Environmentally-friendly, low-phosphate laundry products to be used;
7. Scrape all dishes to remove grease and fats before washing;
8. Do not install a garbage grinder waste disposal system;
9. Do not allow sanitary napkins or hygiene products to enter the system;
10. Do not dispose of aggressive toxic cleaning agents in the system;
11. Do not dispose of any solvents or paints in the system;
12. Do not allow bleach, whiteners, nappy soakers, spot removers or disinfectants to enter the system;
13. Water saving devices should be used where practicable, eg: shower head, aerator on sink outlet, pressure regulating valve;
14. If a spa or insinkerator is to be installed, additional trench length(s) shall be added to the system;
15. A maintenance and service contract, with a service technician accredited by the manufacturer, is in place to ensure the system is regularly serviced in accordance with the relevant EPA CA and local council permit (Approval to Use Septic Tank System).

12. ***REFERENCES***

AS/NZS 1547:2012 On-site domestic wastewater management
Environment Protection Act 1970 (Victoria)
EPA Victoria (1996), *Code of Practice – Septic Tanks (Publication 451)*
EPA Victoria (2003), *Septic Tanks Code of Practice (Publication 891)*
EPA Victoria (2003), *Land Capability Assessment for Onsite Domestic Wastewater Management (Publication 746.1)*
EPA Victoria (2016), *Code of Practice – Onsite Wastewater Management (Publication 891.4)*
Municipal Association of Victoria (2006), *Model Land Capability Assessment Report,* MAV & DSE
Land Capability Assessment for On-site Wastewater Management 2010- Joe Whitehead
Mansfield Shire Council On-site Wastewater Management Plan 2022.

This report was prepared by:

Emma Layfield
B.Sc(Agr)

Reviewed by:

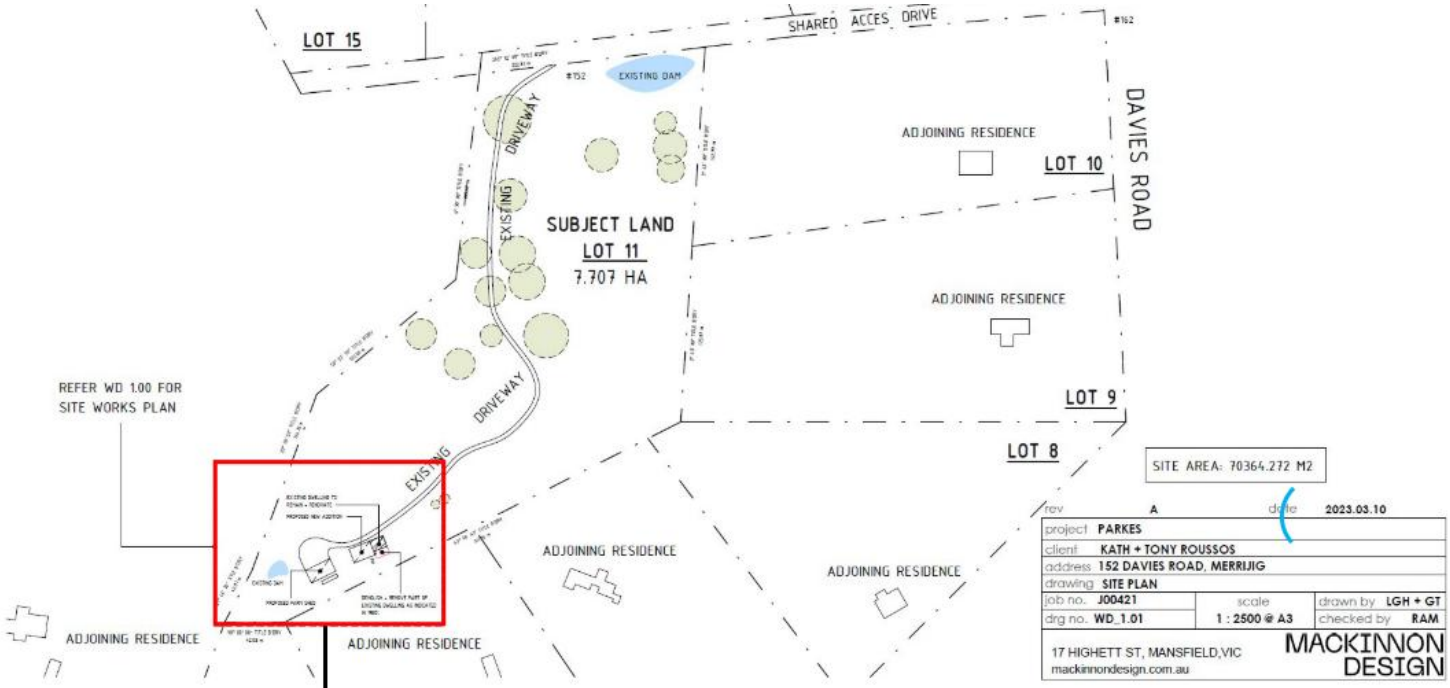
Adam Layfield

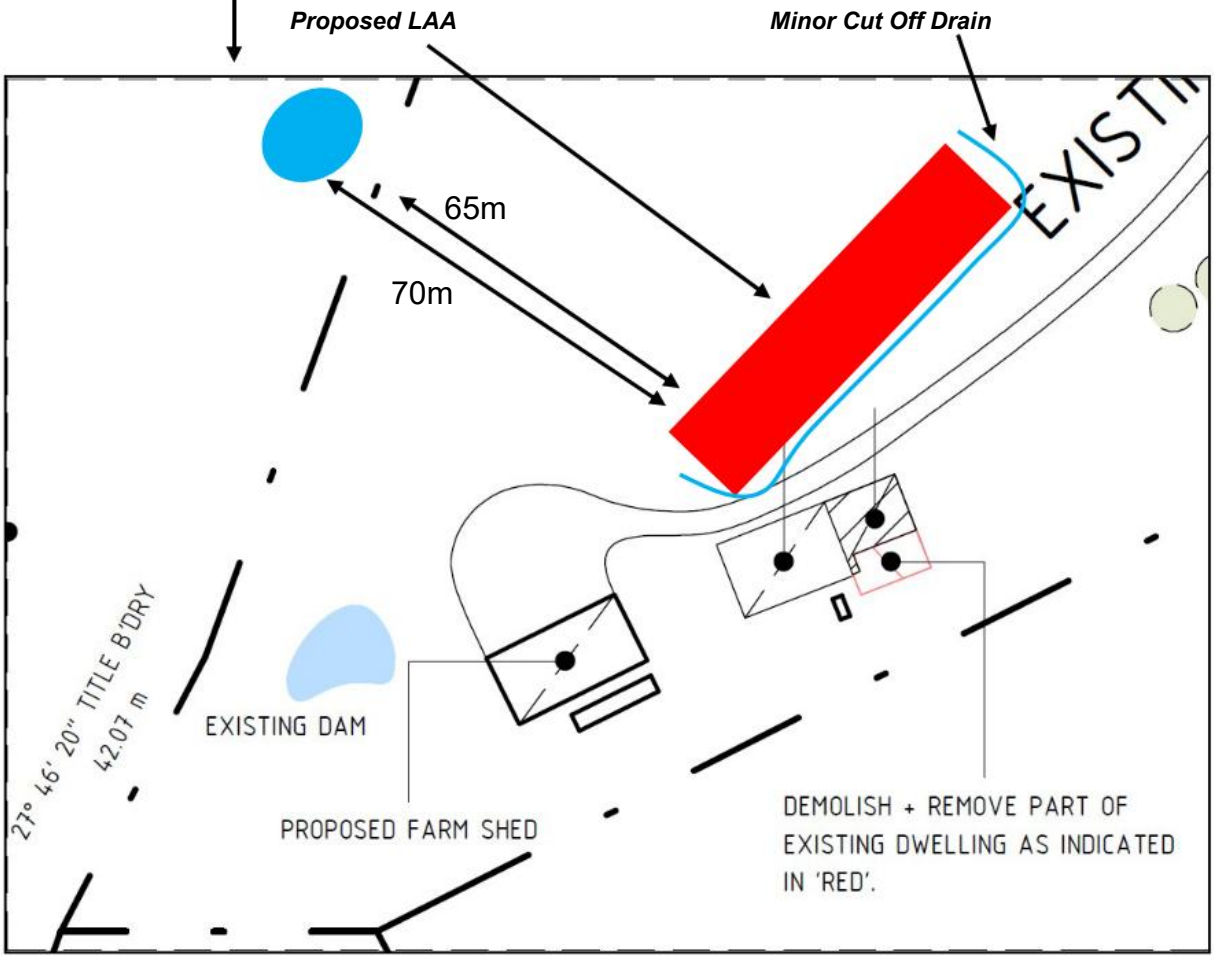
Member of:
Member of Victorian Construction Materials Laboratories Association (VCMLA)
Member of Australian Water Association (AWA)
Member of the Foundation and Footings Society (Vic) Inc. (FFSV)
Victorian Building Authority Licence No 32561

Mansfield Land Capability & Soil Assessments
23rd June 2023.

Appendix A

Site Plan
Not to Scale

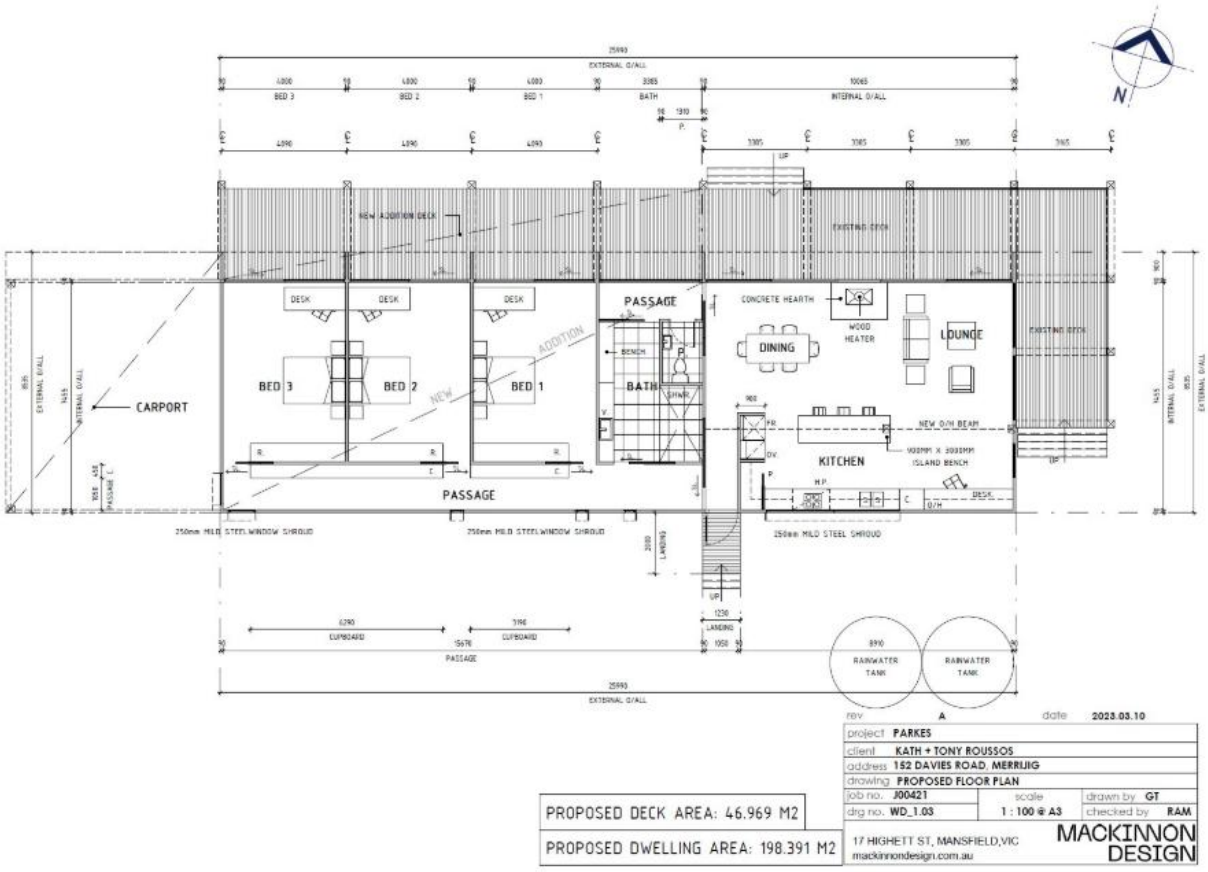




Appendix B

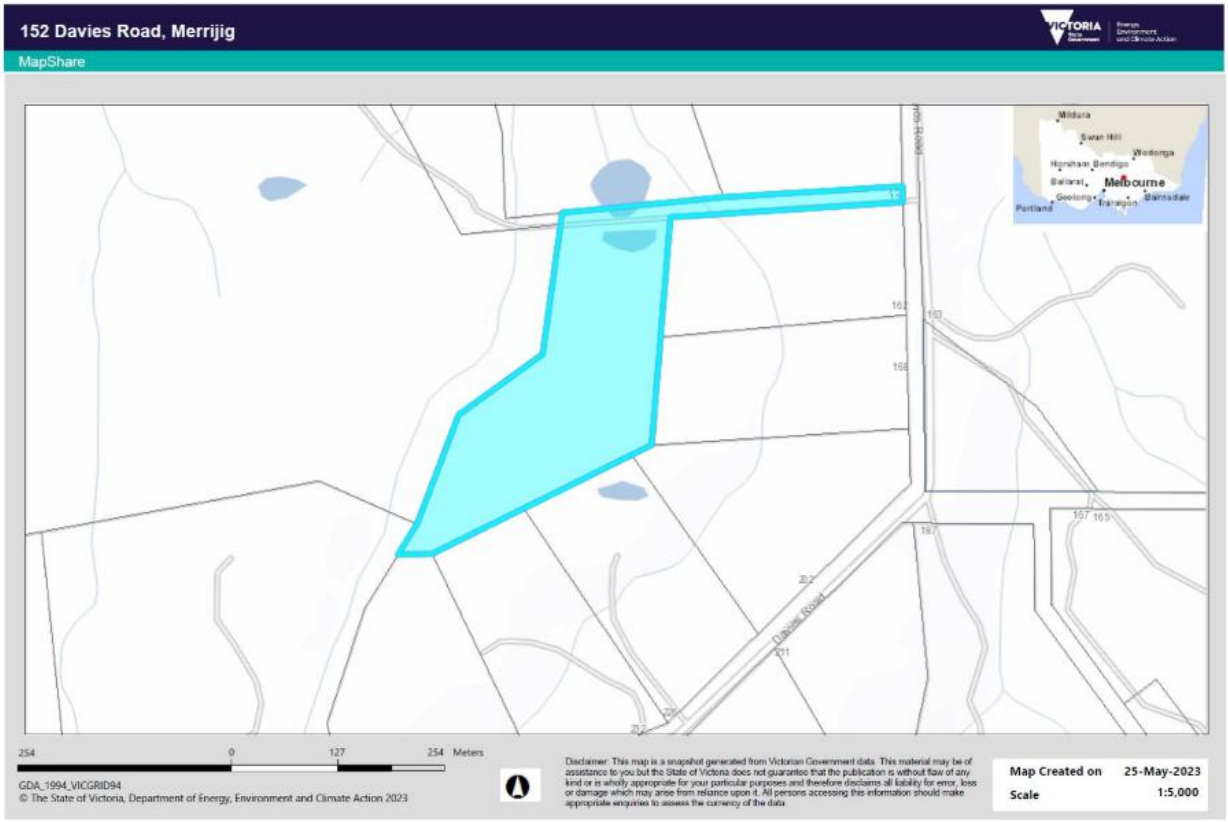
Floor Plan

Not to Scale



Appendix C

Map from DELWP of 152 Davies Road, Merrijig.



Appendix D

Photo of constant head permeameter tests conducted on the 5th of June 2023.

Appendix E

Soil Horizon

Appendix F

PROPERTY REPORT

VICTORIA State Government | Environment, Land, Water and Planning

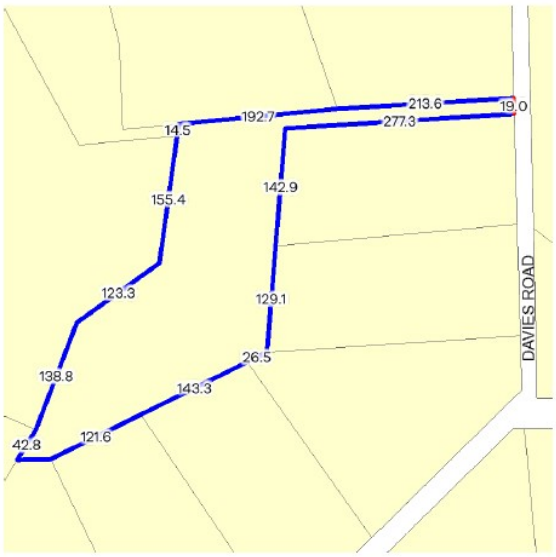
From www.planning.vic.gov.au at 25 May 2023 11:47 AM

PROPERTY DETAILS

Address:	**152 DAVIES ROAD MERRIJIG (MOUNT BULLER) 3723**
Lot and Plan Number:	**Lot 11 LP148582**
Standard Parcel Identifier (SPI):	**11\LP148582**
Local Government Area (Council):	**MANSFIELD** www.mansfield.vic.gov.au
Council Property Number:	**A9425**
Directory Reference:	**Vicroads 63 F4**

SITE DIMENSIONS

All dimensions and areas are approximate. They may not agree with those shown on a title or plan.



Area: 68553 sq. m (6.86 ha)
Perimeter: 1782 m
For this property:
— Site boundaries
— Road frontages

Dimensions for individual parcels require a separate search, but dimensions for individual units are generally not available.

1 overlapping dimension label is not being displayed

Calculating the area from the dimensions shown may give a different value to the area shown above

For more accurate dimensions get copy of plan at Title and Property Certificates

UTILITIES

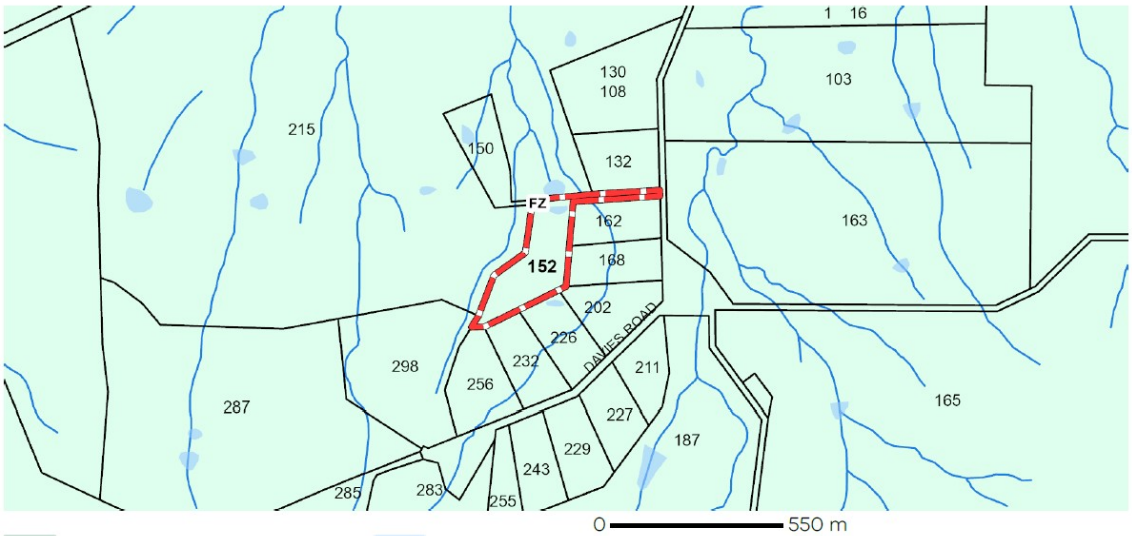
Rural Water Corporation:	**Goulburn-Murray Water**
Urban Water Corporation:	**Goulburn Valley Water**
Melbourne Water:	**Outside drainage boundary**
Power Distributor:	**AUSNET**

STATE ELECTORATES

Legislative Council:	**NORTHERN VICTORIA**
Legislative Assembly:	**EILDON**

Planning Zones

FARMING ZONE (FZ)
SCHEDULE TO THE FARMING ZONE (FZ)



Note: labels for zones may appear outside the actual zone - please compare the labels with the legend.

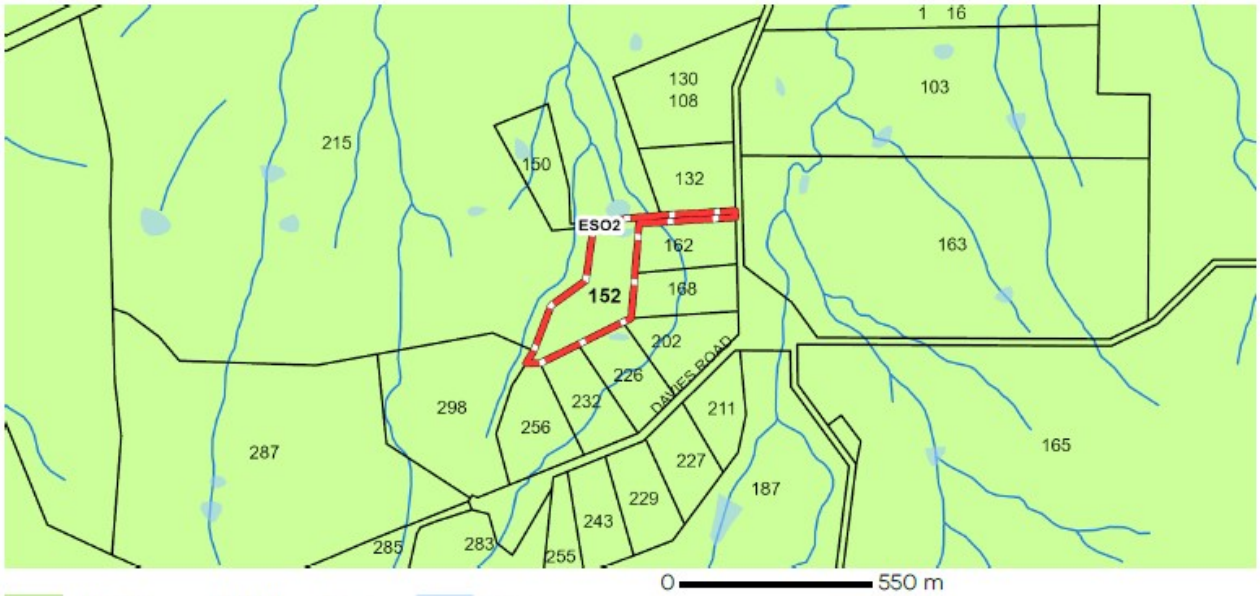
PLANNING PROPERTY REPORT

Environment, Land, Water and Planning

Planning Overlays

ENVIRONMENTAL SIGNIFICANCE OVERLAY (ESO)

ENVIRONMENTAL SIGNIFICANCE OVERLAY - SCHEDULE 2 (ESO2)



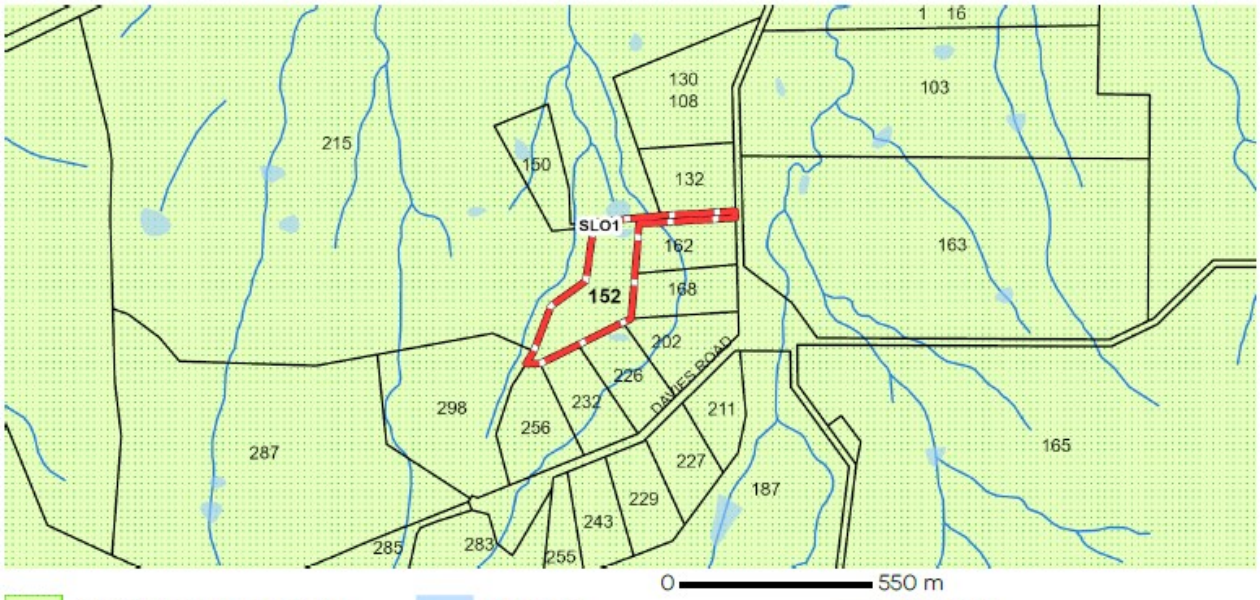
0 550 m

ESO - Environmental Significance Overlay | Water area | Water course

Note: due to overlaps, some overlays may not be visible, and some colours may not match those in the legend

SIGNIFICANT LANDSCAPE OVERLAY (SLO)

SIGNIFICANT LANDSCAPE OVERLAY - SCHEDULE 1 (SLO1)



0 550 m

SLO - Significant Landscape Overlay | Water area | Water course

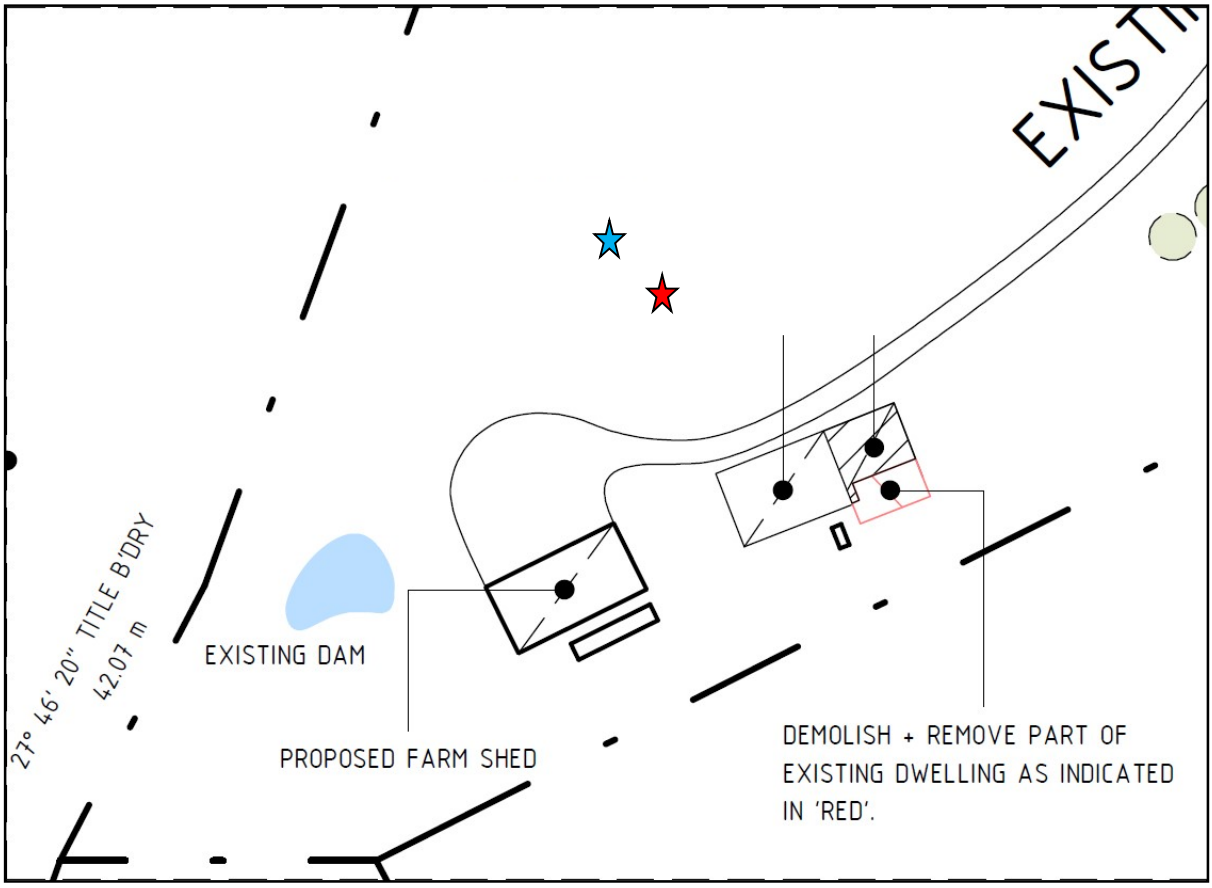
Note: due to overlaps, some overlays may not be visible, and some colours may not match those in the legend

Appendix G

Bore hole testing location

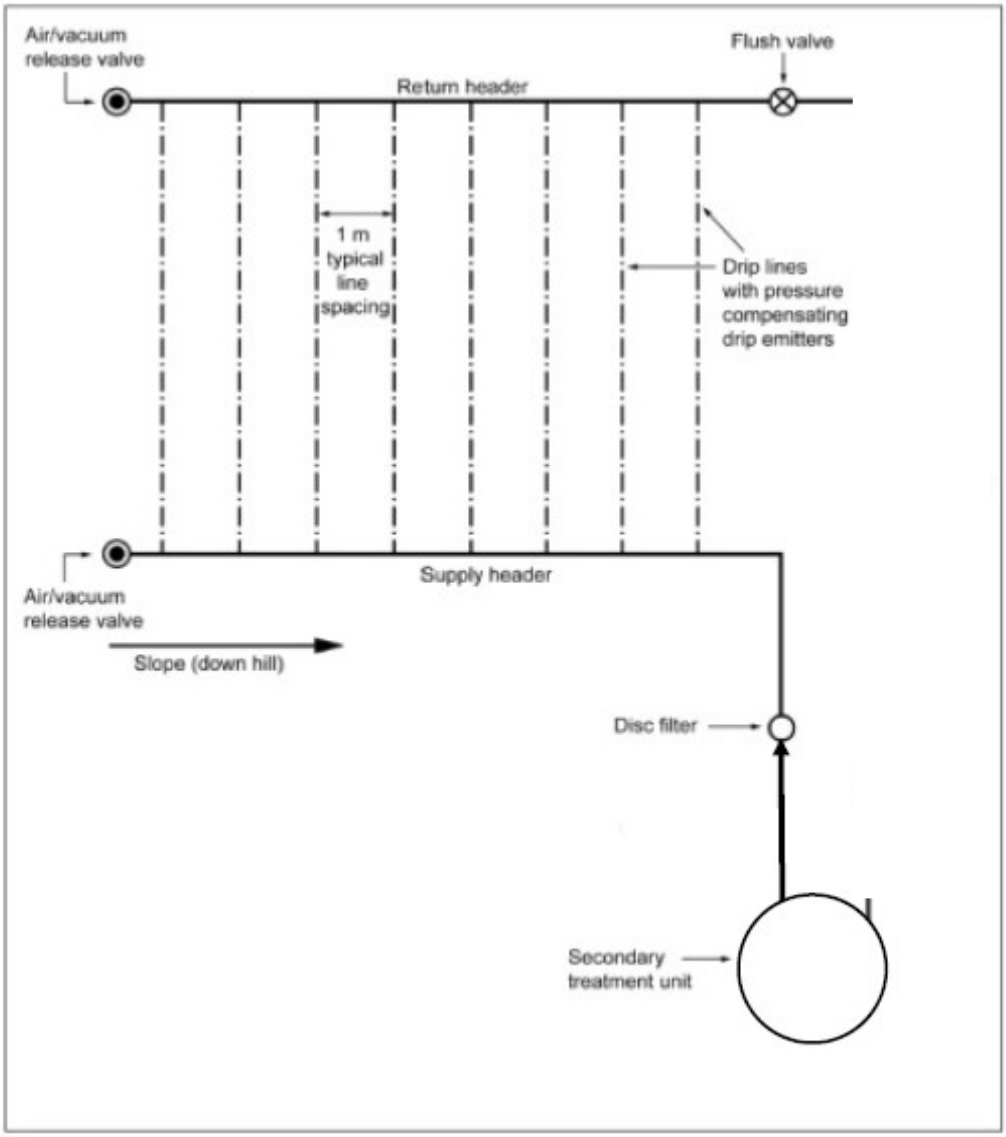
Bore Hole 1 – 37.1346^0 S
146.2618^0 E

Bore Hole 2 – 37.1344^0 S
146.2618^0 E



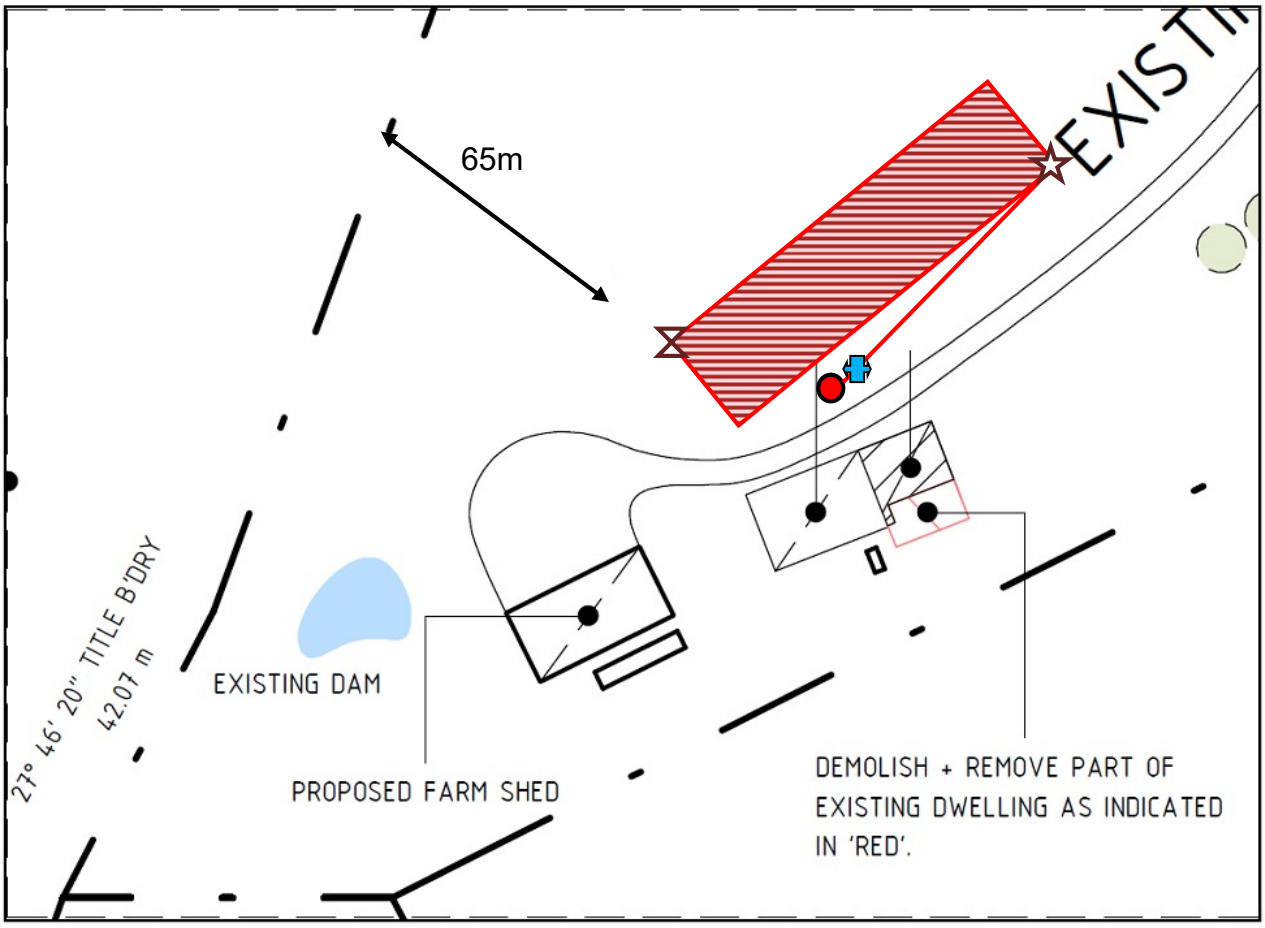
Appendix H

Drip Irrigation System



Appendix I

Drip Irrigation Design



120 micron inline irrigation filter

Vacuum break

Flush valve

Secondary treatment system (indicative location)

direct line from AWTS to irrigation field

Irrigation field (1m spacing between dripper lines)

Minor cut-off drain