PP7/2020-1

190 Woodrowvale Road ELLIMINYT

Lot: 29 PS: 322547 V/F: 10124/941

Subdivision of Land into Four (4) Lots

R Monaco & V Monaco

Officer - Ravi Ayyagari

EXHIBITION FILE

Submissions to this planning application will be accepted until a decision is made on the application.

If you would like to make a submission relating to a planning permit application, you must do so in writing to the Planning Department

ROD BRIGHT & ASSOCIATES PTY. LTD.
LAND SURVEYORS & TOWN PLANNERS
A.C.N. 007 206 975 A.B.N. 50 007 206 975

26 Murray Street,
Colac 3250
P.O. Box 371

Tel. (03) 5231 4883
Fax. (03) 5231 4883

7th January 2020.

REF: 19-18

Planning Coordinator,
Colac Otway Shire,
P.O. Box 283,
COLAC...VIC. 3250

Dear Sir,

RE: PLAN OF PROPOSED SUBDIVISION
PART OF CROWN ALLOTMENT 52
PARISH OF ELLIMINYT
190 WOODROWVALE ROAD, ELLIMINYT
RE: V & R MONACO

Please find enclosed a summary page of the application for a Planning Permit of the Plan of Proposed Subdivision for the above property, which has been submitted to Colac Otway Shire using **SPEAR.**

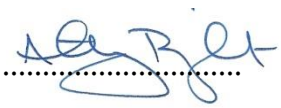
The application comprises the following documents:

- Copy of Title;
- Plan of Proposed Subdivision;
- Existing Conditions Diagram;
- Site Description & Design Response;
- LCA reports prepared by 2020 Engineering Solutions;

We have attached our client's cheque for $1318.10 covering Planning Permit fees.

We kindly await receipt of the Planning Permit in due course.

Yours faithfully,



A.E.Bright,
ROD BRIGHT & ASSOCIATES
encl.
copy: V & R Monaco

Application for Planning Permit for a Subdivision

Supplied by	Anthony Bright
Submitted Date	07/01/2020

Application Details

Application Type	Planning Permit for a Subdivision Version 1
Applicant Reference Number	19-18
Application name or Estate name	Monaco
Responsible Authority Name	Colac Otway Shire
Responsible Authority Reference Number(s)	PP7/2020-1
SPEAR Reference Number	S152005T
Application Status	Lodged with Responsible Authority
Planning Permit Issue Date	NA
Planning Permit Expiry Date	NA

The Land

Primary Parcel

190 WOODROWVALE ROAD, ELLIMINYT VIC 3250
Lot 29/Plan PS322547
Volume 10124/Folio 941
SPI 29\PS322547
CPN 10526

Zone:	32.03 Low Density Residential
Overlay:	42.03 Significant Landscape 42.02 Vegetation Protection

The Proposal

Plan Number	(Not Supplied)
Number of lots	4
Proposal Description	Four (4) Lot Subdivision
Estimated cost of the development for which a permit is required $	0

Existing Conditions

Existing Conditions Description	Existing dwelling with associated shedding and cleared grazing land on 2.3 hectares.
Title Information - Does the proposal breach an encumbrance on Title?	The proposal does not breach an encumbrance on title, such as a restrictive covenant, section 173 agreement or other obligation such as an easement or building envelope.

Applicant Contact

Applicant Contact

Mr Anthony Bright
Rod Bright and Associates Pty Ltd
26 Murray Street, Colac, VIC, 3250
Business Phone: 03 5231 4883
Email: rodbright@iprimus.com.au

Applicant

Applicant

V & R Monaco
190 Woodhowalle Road, Elimmyt, VIC, 3250
Australia
Mobile Phone: 0437 967 832
Email: vincemarco@hotmail.com

Owner

Owner

(Owner details as per Applicant)

Declaration

I, Anthony Bright, declare that the owner (if not myself) has been notified about this application.

I, Anthony Bright, declare that all the information supplied is true.

Authorised by

Anthony Bright

Organisation

Rod Bright and Associates Pty Ltd

PLAN OF PROPOSED SUBDIVISION
PART OF CROWN ALLOTMENT 52
PARISH OF ELLIMINYT
COUNTY OF POLWARTH
RE: V. & R. MONACO
SCALE 1:1250 (Original Sheet Size A3)

ROD BRIGHT & ASSOCIATES PTY LTD
LICENSED SURVEYORS & TOWN PLANNERS
26 MURRAY STREET COLAC 3250
TEL 5231 4883 ACN 007 206 975

NOTE:
Certain dimensions shown hereon are subject to survey.
Certain areas shown hereon are subject to survey.
Land contained within C/T Vol. 10124 Fol. 941

denotes possible building envelope.

denotes possible effluent disposal envelope.

denotes possible driveway envelope.

N

REF. 19-18

Existing Condition Diagram

Amended 19th November 2019 to show Building, Effluent & Driveway Envelopes

LAND CAPABILITY ASSESSMENT

Lot 1 190 Woodrowvale Road
Elliminyt, Victoria. 3250

2020 Engineering Solutions Report ES19201
10/7/2019

Welcome to our new format LCA.

Section 1.

Contains relevant information is presented in a concise, logical, trail following from regional perspective to site specific characteristics. Sample water balance calculations are incorporated to inform the Land Application Area tables

Section 2.

Contains the balance of information required under the DWMP, MAV and EPA 891.4

Section 3.

Property Management Report.

REPORT CONTENTS

REPORT SUMMARY/EXECUTIVE SUMMARY

This Report is to Lot 1, being 4482m2 allotment, of a 4 Lot subdivision of the subject land. The first portion of the report will address issues associated with the total subject land while the balance of the Report will focus on issues specific to Lot 1.

As is a typical allowance for wastewater disposal areas a maximum of 20% or 900m2 will be the limiting factor.

Colac Otway DWMP Tables indicate, and shire soil mapping, a 1-3 bedroom dwelling, on town water, the proposed allotment will require 900m2 of drip irrigation or;

294m2, base area of ETA trenches or 490 lineal meters, or ;

133m2 of base area of wick trench, 83 lineal metres.

SECTION ONE

1.0 INTRODUCTION & BACKGROUND

PLANNING PROPERTY REPORT

VICTORIA State Government | Environment, Land, Water and Planning

From www.planning.vic.gov.au on 25 September 2019 11:33 AM

PROPERTY DETAILS

Address:	190 WOODROWVALE ROAD ELLIMINYT 3250
Lot and Plan Number:	Lot 29 PS322547
Standard Parcel Identifier (SPI):	29\PS322547
Local Government Area (Council):	COLAC OTWAY www.colacotway.vic.gov.au
Council Property Number:	10526
Planning Scheme:	Colac Otway planning-schemes.delwp.vic.gov.au/schemes/colacotway
Directory Reference:	VicRoads 92 B7

UTILITIES

Rural Water Corporation:	Southern Rural Water
Urban Water Corporation:	Barwon Water
Melbourne Water:	outside drainage boundary
Power Distributor:	POWERCOR

STATE ELECTORATES

Legislative Council:	WESTERN VICTORIA
Legislative Assembly:	POLWARTH

Planning Zones

LOW DENSITY RESIDENTIAL ZONE (LDRZ)

SCHEDULE TO THE LOW DENSITY RESIDENTIAL ZONE (LDRZ)

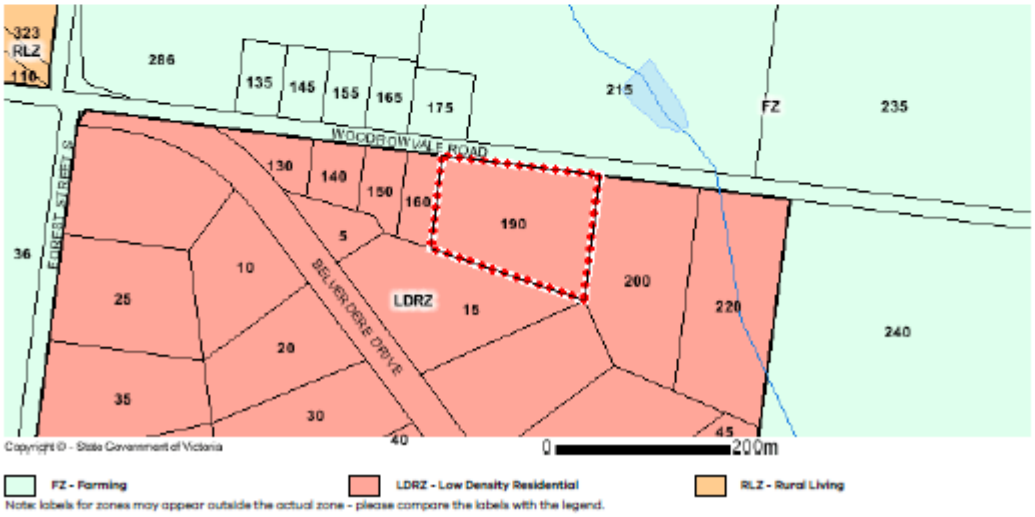


Fig 1.Subject Land Planning Details, (VicPlan)

Parent title, comprises a total of 2.3151Ha.

Proposed Lot 1 comprises 4482m2, as detailed in the following sections.

1.1. Overlays

SLO VPO Designated Bushfire Prone Area.

No other overlays or Planning Controls are indicated on the proposed allotment or parent allotment.

1.1.1 Location

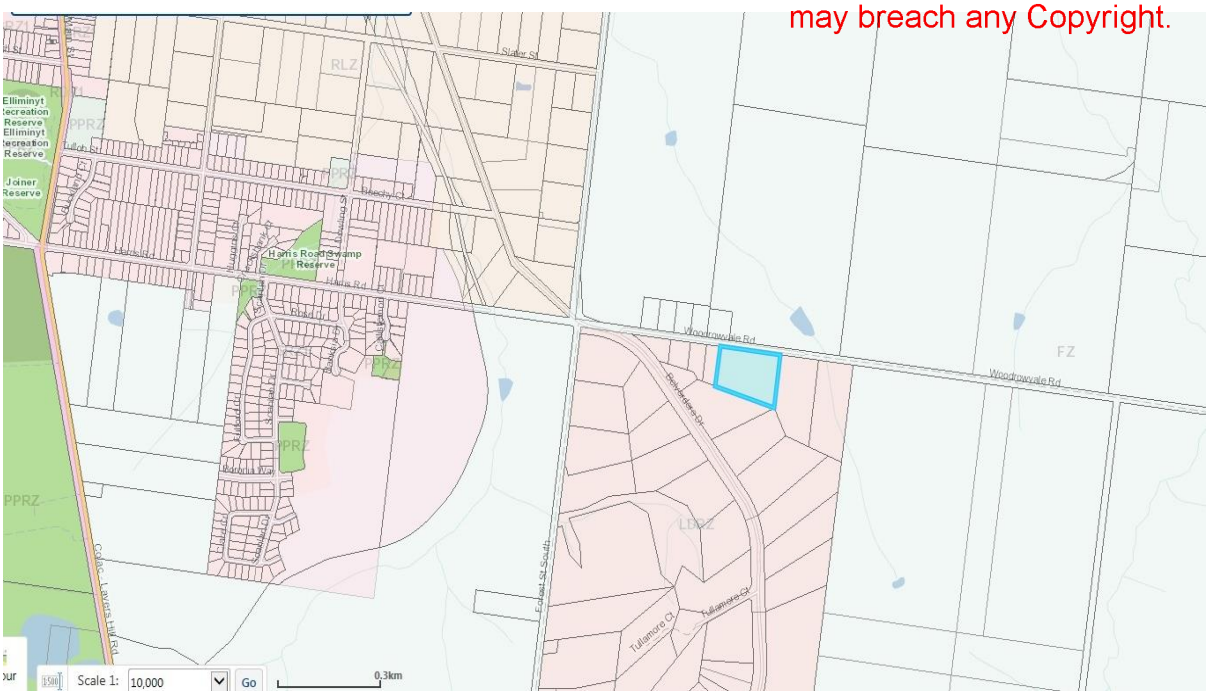


Fig 2.Parent title, Subject Land site location, (in blue outline). (VicPlan)

Subject land comprises a large, cleared, aprox 2.3Ha, semi rural allotment on the northern side of Woodrowvale Road.

Fig 3. Subject land, in red outline, and surrounding landuse, principally low density residential and open grazing land. (Google Maps)

1.2. Proposed Subdivision

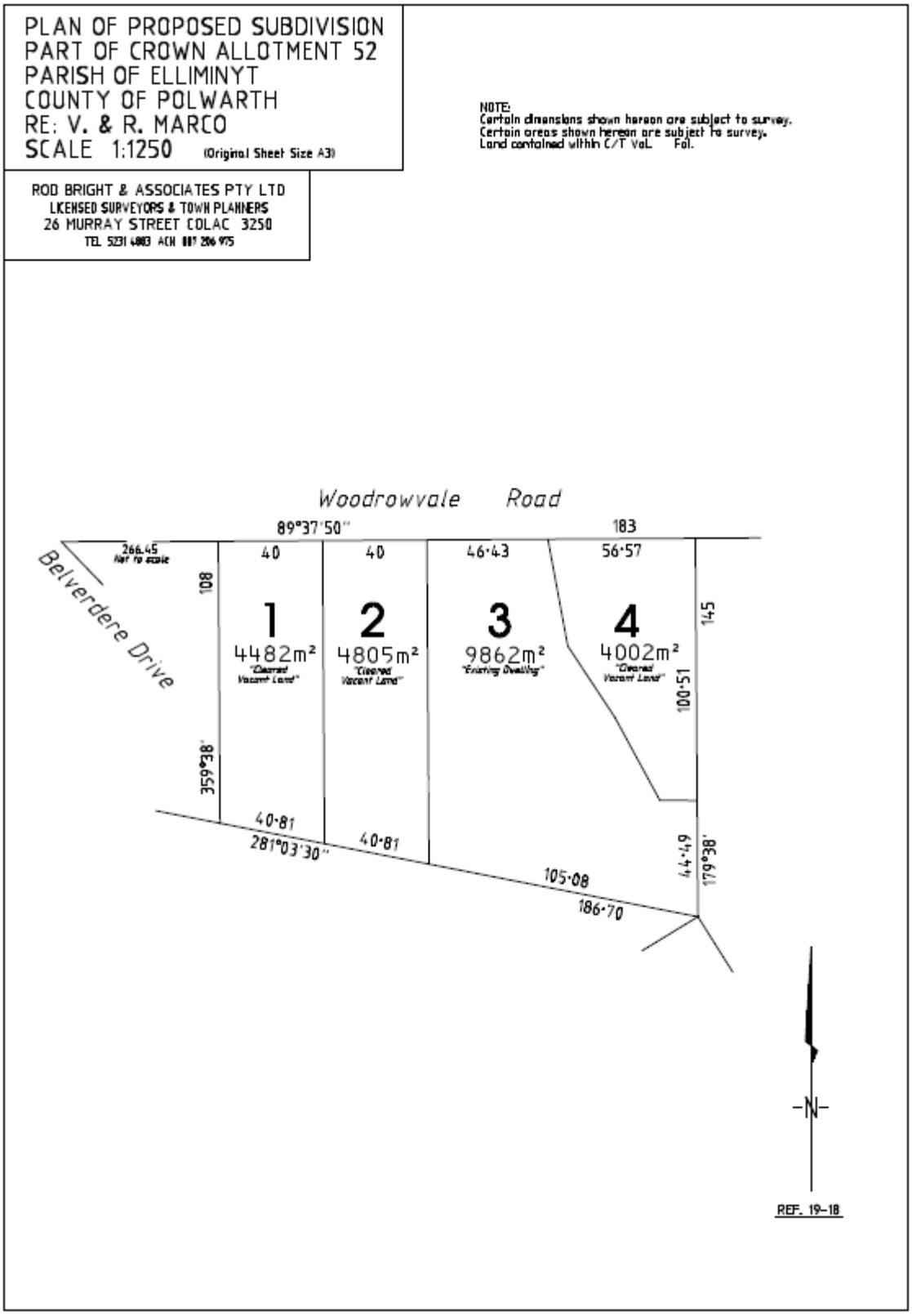


Fig. 4. Subject Land and proposed subdivision. (Rod Bright & Ass.)

2.0 DWMP Sensitivity Analysis Rating

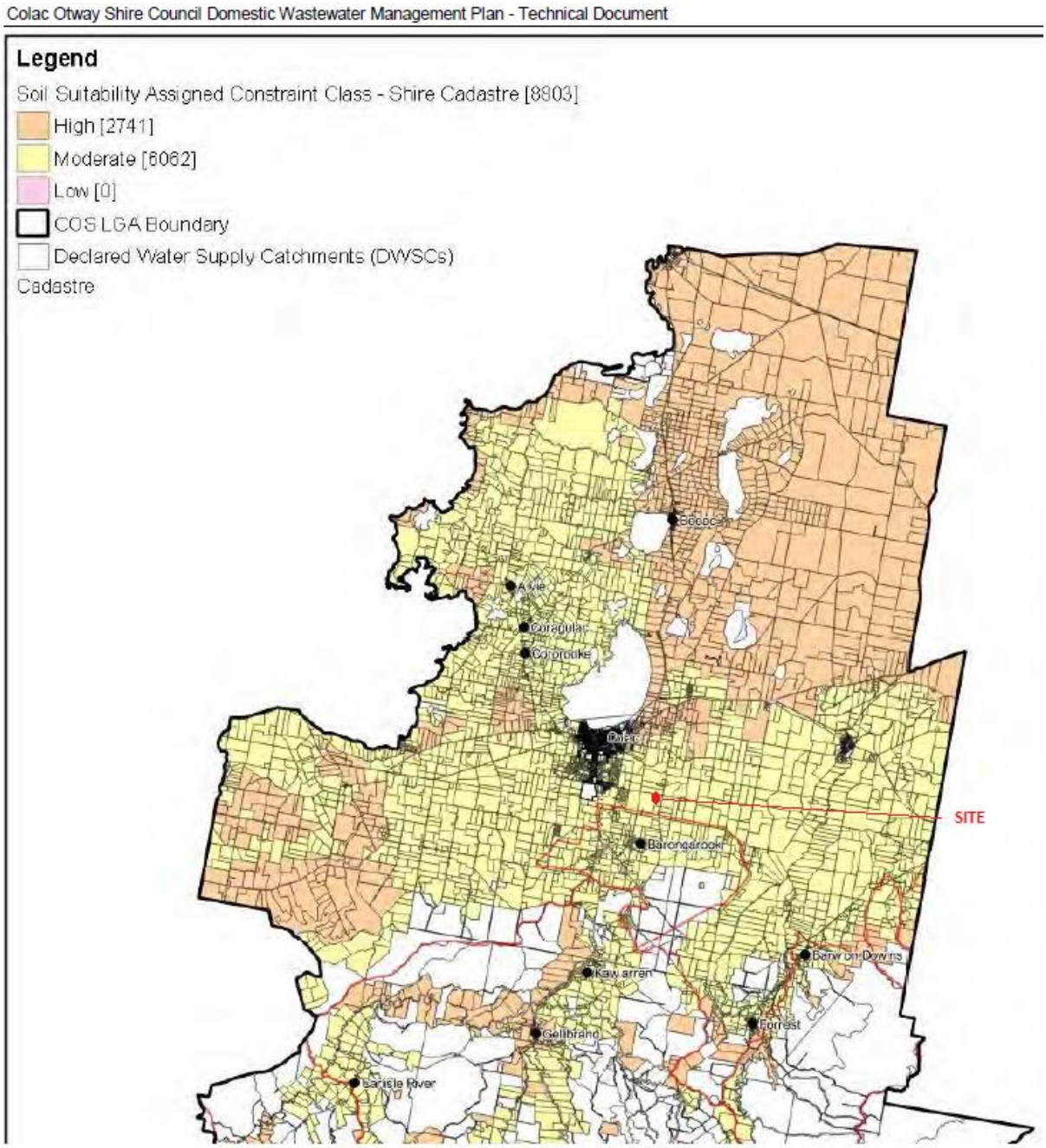


Fig 5. DWMP Sensitivity analysis rating

Sensitivity mapping indicates subject land rated moderate sensitivity.

3.0 DECLARED WATER CATCHMENT AREA

Site is not within DWCA (DWMP)

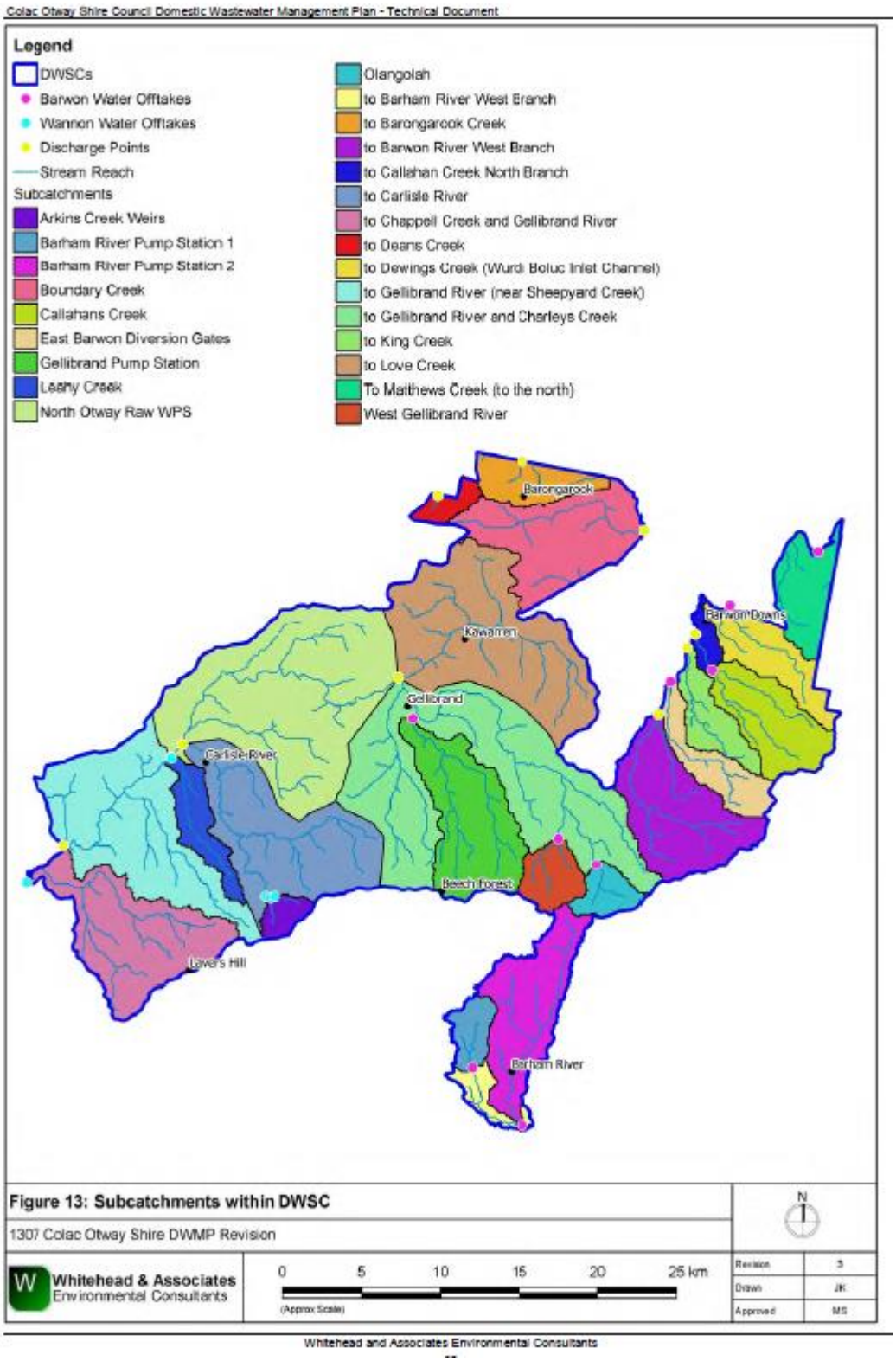


Fig 6. DWMP water supply mapping.

4.0 TOPOGRAPHY (VicPlan)

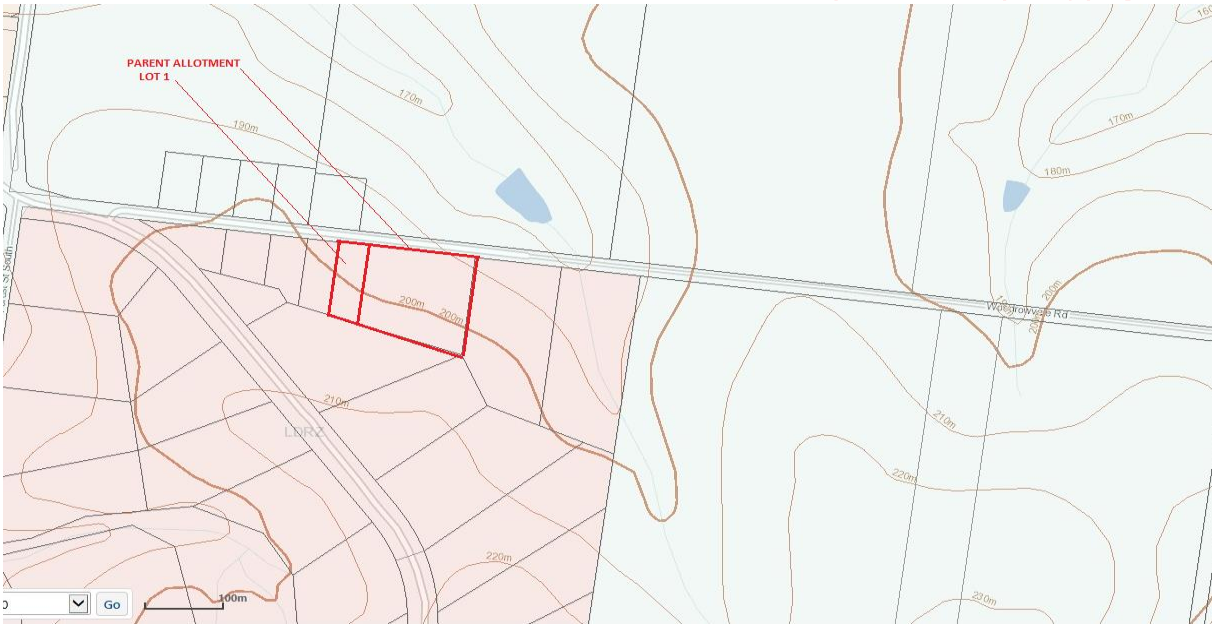


Fig 7.Topography and surface water/s. (VicPlan)

Comment

Generally the subject land comprises an elevated portion of a broad hillside and displays a north-eastern aspect with excellent solar and wind exposure.

Fig 8. Nearest surface water to proposed Lot 1 is 192m.

5.0 GROUNDWATER BORES (VVG)

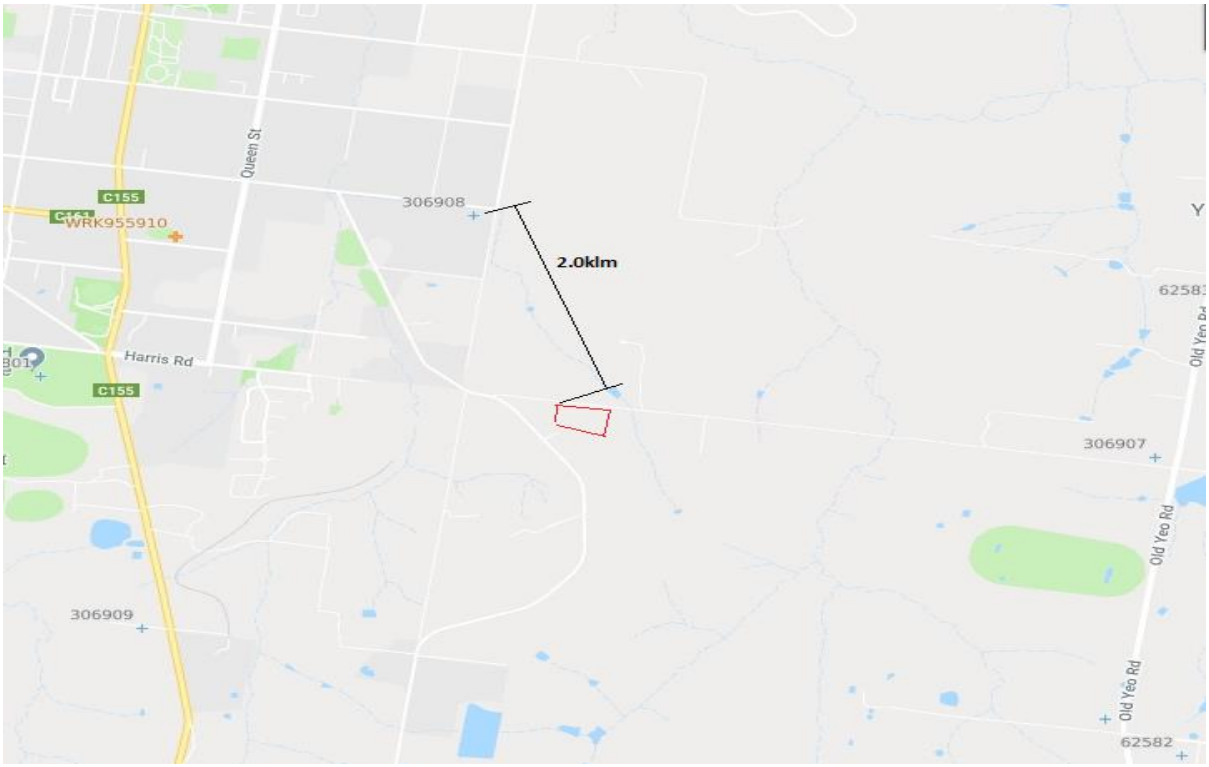


Fig 9.No bores near or within buffer zones of subject land, (in red), closest 2.0klm to NW.

5.1 Groundwater(VVG)

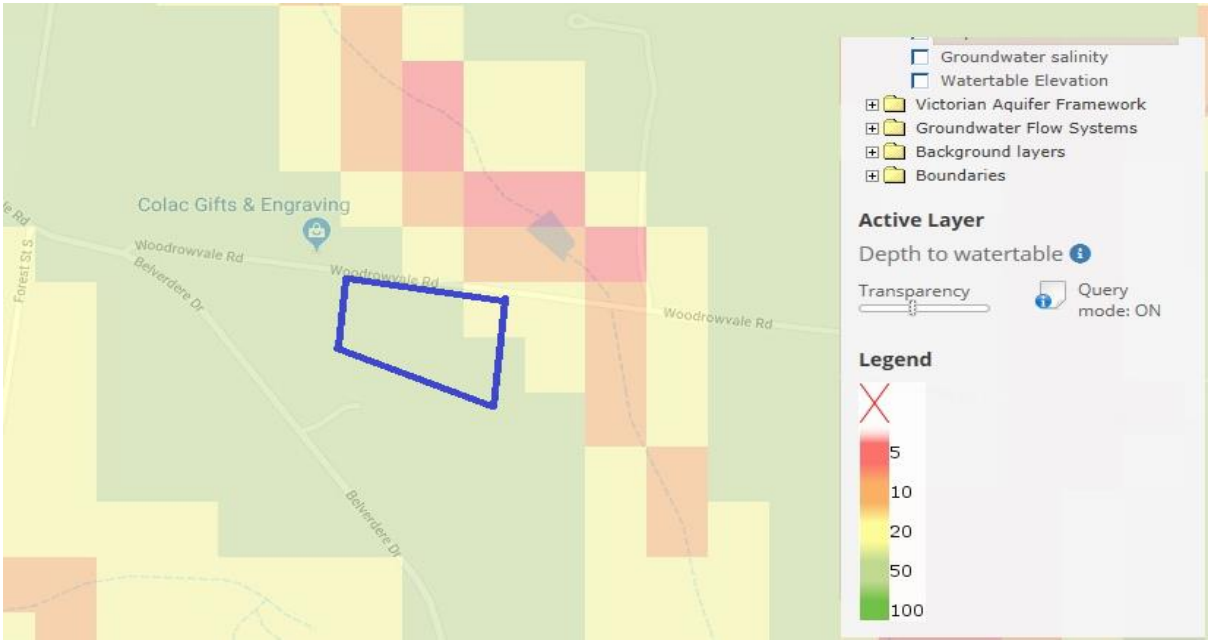


Fig. 10 Groundwater indicated at 20m-50m depth under subject land, about 50m under Lot 1.

7.0 SITE INSPECTION & FIELD INVESTIGATIONS

PROPOSAL

As per included Proposed Plan of Subdivision, Lot 1 comprises a 4482m2 allotment, of which 20% or 900m2 is to be set aside for wastewater disposal. Back analysis from this number will inform the number of bedrooms that could be in a development on this site.

Fig. 11. View to south of Lot 1 showing surface coverage of grasses.

Surface comprises an open, flat, cleared area of grassland part of an extensive grazing operation.

Site vegetation comprises grasses and weeds. No evidence of groundwater discharge or salinity was noted.

Proposed LAA site displays good to excellent solar and wind exposure.

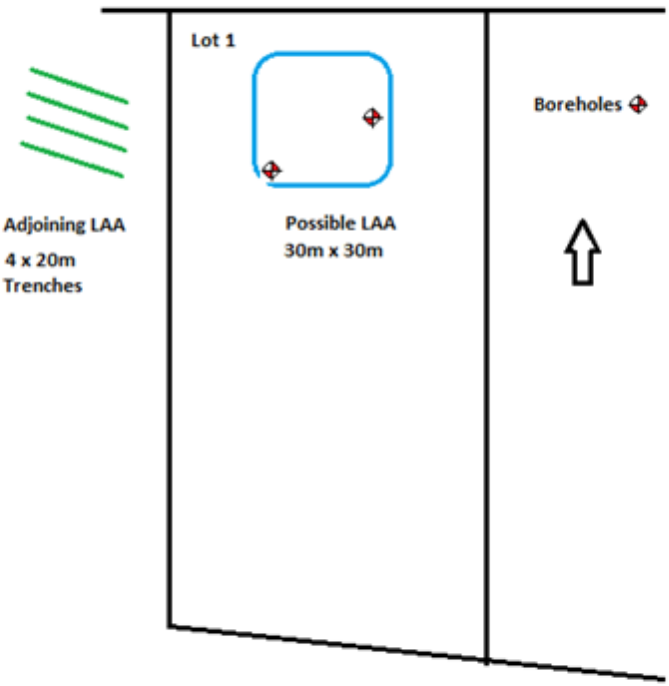
System sizing tables for Barongarook will be used as specific tables for Elliminyt are not avaiable, Barongarook has a slightly higher rainfall than Elliminyt.

8.0 BORELOG

2020 ENGINEERING SOLUTIONS DATE 19Sep19

BORELOG REPORT ES SITE Woodrowvale Rd.

Depth in mm			
000	000		SAND SILTY Cat 2a
500	500		CLAY SANDY Cat 5b*
1800 END	1800 END		



*As advised by Health Dept.

9.0SOIL ANALYSIS

Nutrient Advantage
Knowledge | Productivity | Responsibility

SOIL ANALYSIS REPORT

ASPAC

Report Number: 599244

2020 ENGINEERING SOLUTIONS L
DELAHUNTY
1745 COLAC FORREST RD
COLAC
VIC 3249

NATA
ACCREDITED FOR TECHNICAL COMPETENCE

Report Authorised
Paul Kennelly
Laboratory Manager
NATA Accredited Laboratory Number: 11958

Sample Number:	021908837	**Paddock Name:**	1 WOOD	**Date Sampled:**	19-Sep-2019
Test Code:	2014-022	**Sample Name:**	AS1289 1 2 1 1998 6 5 2 6 5 3	**Date Received:**	24-Sep-2019
Purchase Order No:	AS1289	**Sample Depth:**	0 to 10 cm	**Date of Report:**	2-Oct-2019
Grower Name:	2020 ENGINEERING SOLUT				

Analyte	Result	Units	Method Code	Comments
Available Potassium ^	68	mg/kg	04-026-ICP8	Calculation
Emerson Class ^	2			Emerson, AS 1289.3.8.1
pH (1:5 CaCl2)	4.9		04-031-PH	1:5 soil/0.01M CaCl2
Potassium (Amm-acet.)	0.17	cmol(+)/kg	04-026-ICP8	
Calcium (Amm-acet.)	4.3	cmol(+)/kg	04-026-ICP8	
Magnesium (Amm-acet.)	1.7	cmol(+)/kg	04-026-ICP8	
Sodium (Amm-acet.)	0.20	cmol(+)/kg	04-026-ICP8	
Aluminium (KCl)	11	mg/kg	04-027-ICP9	
Aluminium (KCl)	0.12	cmol(+)/kg	04-027-ICP9	
Cation Exchange Capacity (Amm-acet.)	6.49	cmol(+)/kg	04-026-ICP8	Calculation
Sodium % of cations	3.0	%	04-026-ICP8	Calculation
Aluminium % of Cations	1.9	%	04-026-ICP8	Calculation
Calcium/Magnesium Ratio	2.5		04-026-ICP8	Calculation
pH (1:5 Water)	6.0		04-031-PH	1:5 soil/water
Electrical Conductivity (1:5 water)	0.05	dS/m	04-031-PH	1:5 soil/water

The results pertain only to the sample submitted.
This document shall not be reproduced except in full.
Analyses performed on soil dried at 40 °C and ground to 2mm or less.
^ NATA accreditation does not cover the performance of this service.
Accredited for compliance with ISO/IEC 17025 - Testing.
This results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national

Discussion

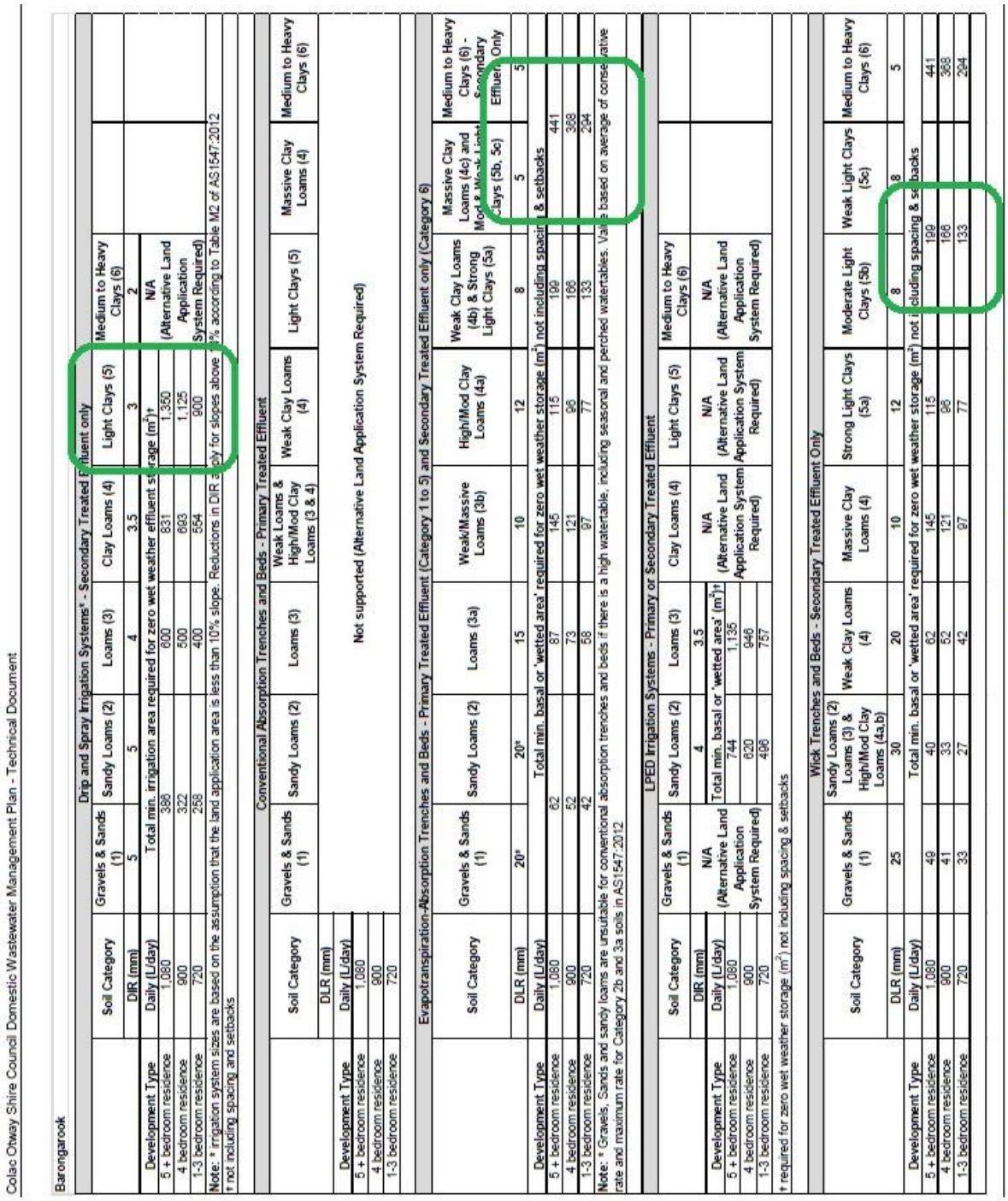
Results are typical for agricultural soils of this region and flag no major concerns or constraints, Emerson Class aside, individual results are discussed within MAV Tables in following sections.

10.0 SYSTEM SELECTION

10.1 DWMP Considerations

Given the proposed development is located in a developing residential area, this Report recommends installation of a secondary treatment system.

11.0 SIZING THE EFFLUENT DISPOSAL SYSTEM (DWMP)



Colac Otway Shire Council Domestic Wastewater Management Plan - Technical Document

Barongarook

Drip and Spray Irrigation Systems* - Secondary Treated Effluent only

	Soil Category	Gravels & Sands (1)	Sandy Loams (2)	Loams (3)	Clay Loams (4)	Light Clays (5)	Medium to Heavy Clays (6)		
	DIR (mm)	5	5	4	3.5	3	2		
Development Type	Daily (L/day)	Total min. irrigation area required for zero wet weather effluent storage (m^2)†					N/A (Alternative Land Application System Required)		
5 + bedroom residence	1,080	388	600	831	1,350				
4 bedroom residence	900	322	500	693	1,125				
1-3 bedroom residence	720	258	400	554	900				

Note: * Irrigation system sizes are based on the assumption that the land application area is less than 10% slope. Reductions in DIR apply for slopes above 10% according to Table M2 of AS1547:2012
† not including spacing and setbacks

Conventional Absorption Trenches and Beds - Primary Treated Effluent

	Soil Category	Gravels & Sands (1)	Sandy Loams (2)	Loams (3)	Weak Loams & High/Mod Clay Loams (3 & 4)	Weak Clay Loams (4)	Light Clays (5)	Massive Clay Loams (4)	Medium to Heavy Clays (6)
	DLR (mm)	Not supported (Alternative Land Application System Required)							
Development Type	Daily (L/day)								
5 + bedroom residence	1,080								
4 bedroom residence	900								
1-3 bedroom residence	720								

Evapotranspiration-Absorption Trenches and Beds - Primary Treated Effluent (Category 1 to 5) and Secondary Treated Effluent only (Category 6)

	Soil Category	Gravels & Sands (1)	Sandy Loams (2)	Loams (3a)	Weak/Massive Loams (3b)	High/Mod Clay Loams (4a)	Weak Clay Loams (4b) & Strong Light Clays (5a)	Massive Clay Loams (4c) and Mod & Weak Light Clays (5b, 5c)	Medium to Heavy Clays (6) - Secondary Effluent Only
	DLR (mm)	20*	20*	15	10	12	8	5	5
Development Type	Daily (L/day)	Total min. basal or 'wetted area' required for zero wet weather storage (m^2) not including spacing & setbacks							
5 + bedroom residence	1,080	62		87	145	115	199	441	
4 bedroom residence	900	52		73	121	96	166	368	
1-3 bedroom residence	720	42		58	97	77	133	294	

Note: * Gravels, Sands and sandy loams are unsuitable for conventional absorption trenches and beds if there is a high watertable, including seasonal and perched watertables. Value based on average of conservative rate and maximum rate for Category 2b and 3a soils in AS1547:2012

LPED Irrigation Systems - Primary or Secondary Treated Effluent

	Soil Category	Gravels & Sands (1)	Sandy Loams (2)	Loams (3)	Clay Loams (4)	Light Clays (5)	Medium to Heavy Clays (6)		
	DIR (mm)	N/A (Alternative Land Application System Required)	4	3.5	N/A (Alternative Land Application System Required)	N/A (Alternative Land Application System Required)	N/A (Alternative Land Application System Required)		
Development Type	Daily (L/day)		Total min. basal or 'wetted area' (m^2)†						
5 + bedroom residence	1,080		744	1,135					
4 bedroom residence	900		620	946					
1-3 bedroom residence	720		496	757					

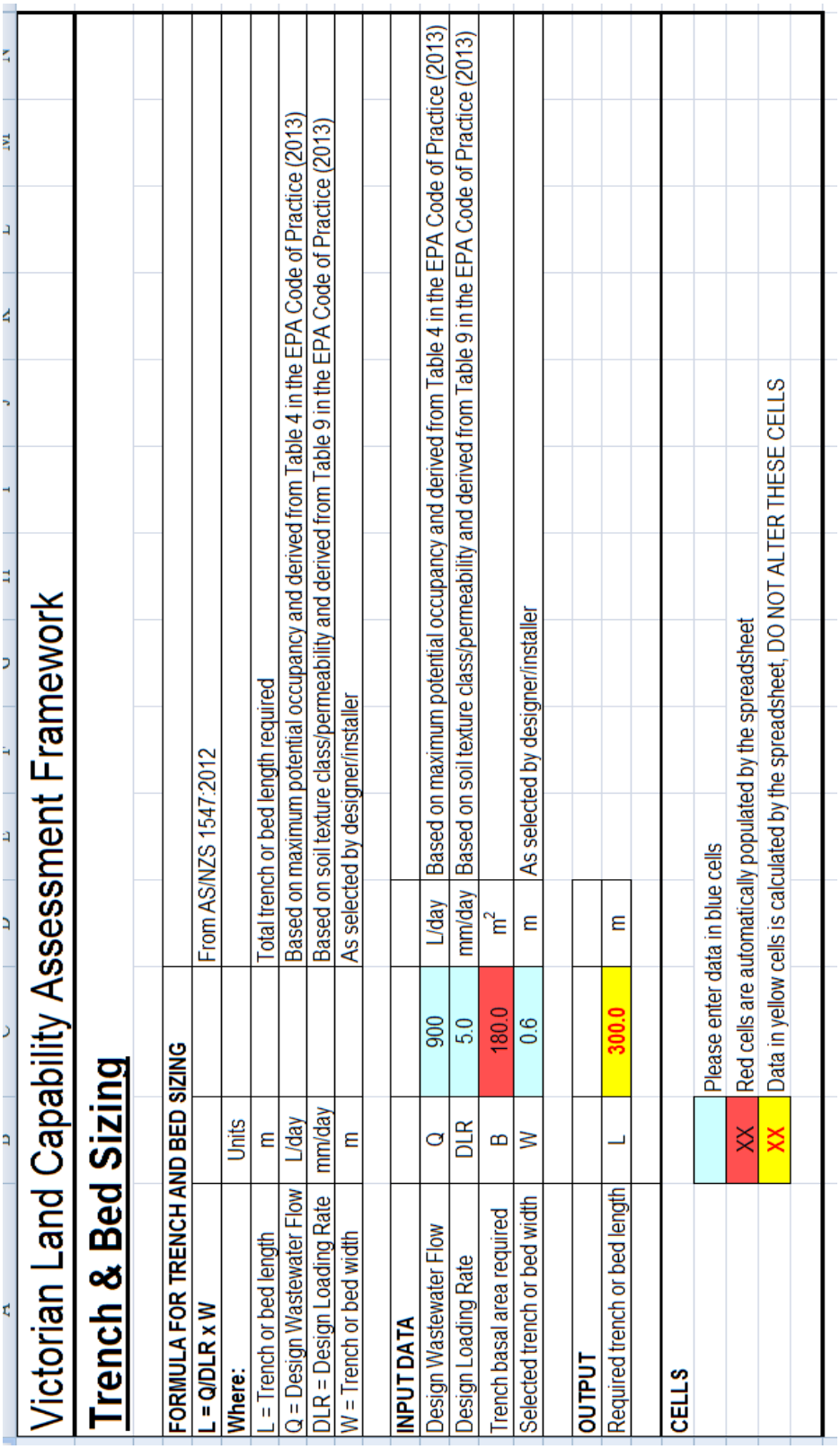
† required for zero wet weather storage (m^2) not including spacing & setbacks

Wick Trenches and Beds - Secondary Treated Effluent Only

	Soil Category	Gravels & Sands (1)	Sandy Loams (2) Loams (3) & High/Mod Clay Loams (4a,b)	Weak Clay Loams (4)	Massive Clay Loams (4)	Strong Light Clays (5a)	Moderate Light Clays (5b)	Weak Light Clays (5c)	Medium to Heavy Clays (6)
	DLR (mm)	25	30	20	10	12	8	8	5
Development Type	Daily (L/day)	Total min. basal or 'wetted area' required for zero wet weather storage (m^2) not including spacing & setbacks							
5 + bedroom residence	1,080	49	40	62	145	115	199	441	
4 bedroom residence	900	41	33	52	121	96	166	368	
1-3 bedroom residence	720	33	27	42	97	77	133	294	

Whitehead and Associates Environmental Consultants

11.1 SIZING THE EFFLUENT DISPOSAL SYSTEM (MAV)



Victorian Land Capability Assessment Framework

Trench & Bed Sizing

FORMULA FOR TRENCH AND BED SIZING				
L = Q/DLR x W			From AS/NZS 1547:2012	
Where:	Units			
L = Trench or bed length	m		Total trench or bed length required	
Q = Design Wastewater Flow	L/day		Based on maximum potential occupancy and derived from Table 4 in the EPA Code of Practice (2013)	
DLR = Design Loading Rate	mm/day		Based on soil texture class/permeability and derived from Table 9 in the EPA Code of Practice (2013)	
W = Trench or bed width	m		As selected by designer/installer	
INPUT DATA				
Design Wastewater Flow	Q	900	L/day	Based on maximum potential occupancy and derived from Table 4 in the EPA Code of Practice (2013)
Design Loading Rate	DLR	5.0	mm/day	Based on soil texture class/permeability and derived from Table 9 in the EPA Code of Practice (2013)
Trench basal area required	B	180.0	m^2	
Selected trench or bed width	W	0.6	m	As selected by designer/installer
OUTPUT				
Required trench or bed length	L	300.0	m	
CELLS				
		Please enter data in blue cells		
	XX	Red cells are automatically populated by the spreadsheet		
	XX	Data in yellow cells is calculated by the spreadsheet, DO NOT ALTER THESE CELLS		

Comment

Based solely upon shire soil mapping and a 1-3 bedroom dwelling, the proposed allotment will require 900m2 of drip irrigation or

294m2, base area of ETA trenches or 490 lineal meters, or

133m2 of base area of wick trench, 83 lineal metres.

These requirements grossly exceed the LAA on the adjoining property, which comprises 80 lineal metres of conventional disposal trench, a system which appears to be operating safely.

MAV spread sheet indicates 300m of trench would be required for a 5 bedroom development.

Nitrogen balance is generally less than water balance in high rainfall areas and so is not a constraining factor.

12.0 Site Plan.

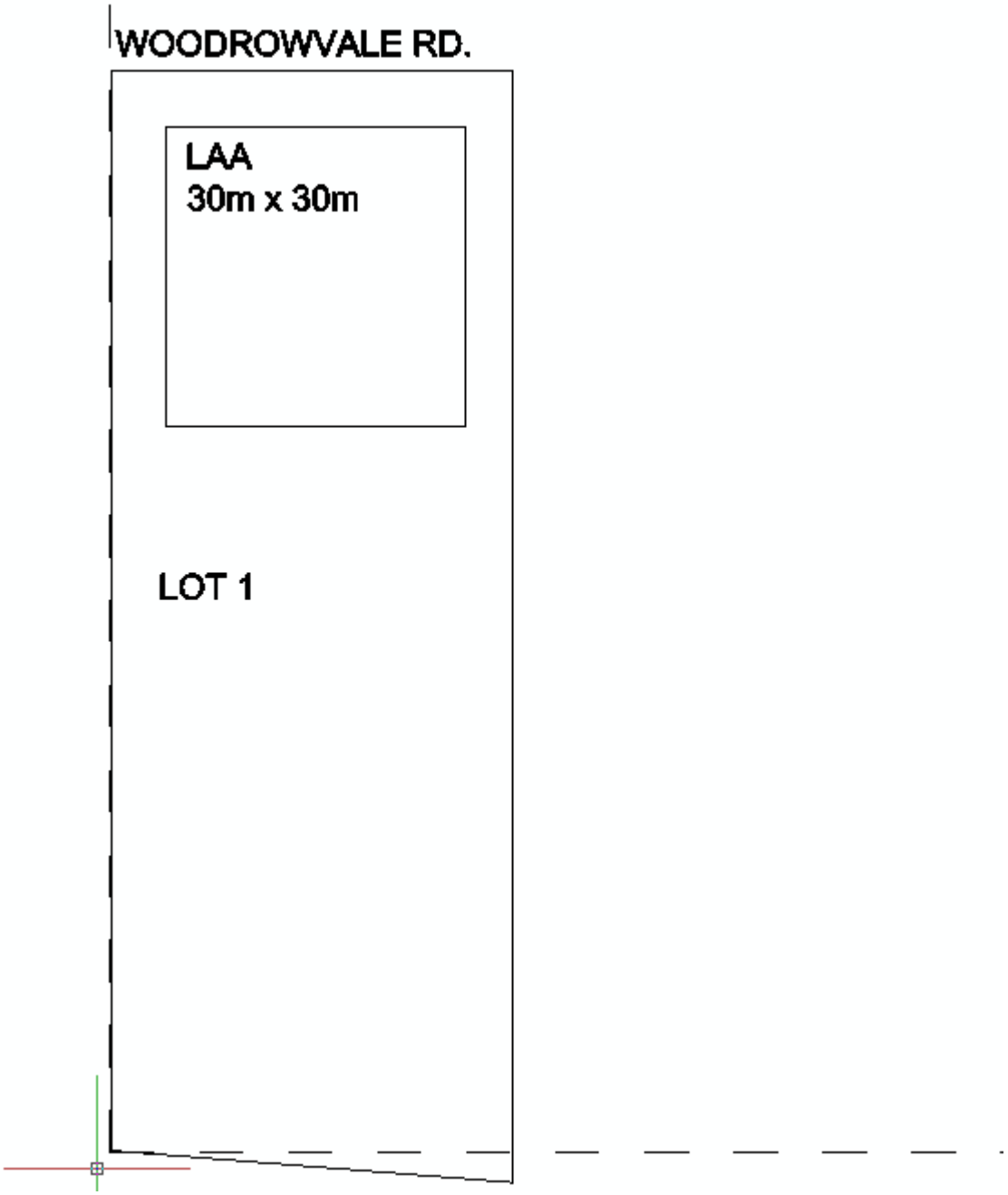


Fig 10. Site Plan, to scale (Author)

Final location and position of dwelling, treatment plant, shedding etc will be at direction of developer.

12.1 Applicable Setback Distances (from AS1547:2012)

Landscape Feature / Structure	* Setback Distances (m)					
	Primary Treated Effluent		Secondary Sewage &Grey water Effluent		Advanced Secondary Grey water Effluent	
BUILDING						
Wastewater field up-slope of building		6	x	3		3
Wastewater field down-slope of building		3	x	1.5		1.5
Wastewater field up-slope of cutting/escarpment		15	x	15		15
ALLOTMENT BOUNDARY						
Wastewater field up-slope of adjacent lot		6	x	3		1
Wastewater field down-slope of adjacent lot		3	x	1.5		0.5
SERVICES						
Water supply pipe		3	x	1.5		1.5
Wastewater field up-slope of potable supply channel		300	x	150		150
Wastewater field down-slope of potable supply channel		20	x	10		10
Gas supply pipe		3	x	1.5		1.5
In-ground water tank		15	x	4		3
Stormwater drain		6	x	3		2
RECREATION AREAS						
Children's grassed playground		6	x	3		2
In-ground swimming pool		6	x	3		2
SURFACE WATERS UP-SLOPE OF						
Dam, lake or reservoir (potable water supply)		300	x	150		150
Waterways (potable water supply)		100	x	100		50
Waterways, wetlands (continuous or ephemeral, non-potable); estuaries, ocean beach at high-tide mark; dams, lakes or reservoirs (stock & domestic, non-potable)		60	x	30		30
GROUNDWATER BORES						
Category 1 & 2a soils		NA		50		20
Category 2b – 6 soils		20	x	20		20
WATERTABLE						
Vertical depth from base of trench to highest seasonal water table		1.5	x x	1.5		1.5
Vertical depth from irrigation pipes to highest seasonal water table		NA	x x	1.5		1.5

*X indicates compliance can be achieved

SECTION TWO

MAV TABLES

Table 1: Key Site Features		
Feature	**Explanation**	**Assessment Process**
Aspect	The aspect or the direction that a slope is facing influences solar exposure.	North aspect Excellent solar and wind exposure
Climate	Seasonal rainfall, evaporation and temperature patterns influence potential evapotranspiration in land application areas.	Incorporated into water balance spread sheet/s and LAA sizing.
Erosion and Landslip	Unstable areas (steep, unvegetated, dispersive soils etc.) are usually unsuitable for LAAs without mitigation.	No.
Fill (imported)	Capacity to assimilate effluent depends on the physical and chemical characteristics of the imported fill material(s).	No fill.
Flooding	Requirements for siting onsite wastewater infrastructure (including LAAs) away from areas subject to flooding can vary between Councils.	No, LAA not in inundation zone.
Ground-water	Adequate depth of soil to protect groundwater resources largely depends on soil type and climate.	Not noted in boreholes VVG indicates at 20 - 50m
LandSuitability	An LCA is used to determine which land is suitable and unsuitable for LAAs.	All land, except within buffer zones, suitable.
Landform	Landform shape and the position of LAAs on slopes influence drainage and runoff characteristics both onto any potential LAAs as well as downslope of them (i.e. will runoff be evenly shed, or concentrated or dispersed flows?).	See contour map attached Landscape with north aspect for LAA. Broad run-off

Feature	Explanation	Assessment Process
Rock Outcrops	Rock outcrops displace soil horizons and therefore can limit the assimilative capacity of LAAs for effluent. Outcrops can indicate shallow bedrock. Some rocks are strongly fissured and permeable and others are not.	No Rock
Setback Distances	Determining the most appropriate position for LAAs should be prioritised over placement of building areas.	See table from AS1547;2012 All compliant
Site Drainage	LAAs should be located in areas of good surface and subsurface (soil) drainage.	Good drainage, slight slope on land allowing slow run-off but no pooling.
Stormwater Run-on and Runoff	LAAs should not be located in areas with high run-on, without mitigation such as upslope diversion structures. Downslope runoff diversion may be useful.	Due to broad hillside, soil type and extensive vegetation and building envelope upslope from LAA, no concentrated run-on.
Slope	Land application of effluent becomes increasingly constrained with increasing slope gradient, increasing the chances of effluent runoff or subsurface seepage.	Slope of LAA land generally around 5.0%
Surface Waters	Whether the setback distances specified in the Code can be achieved from LAAs.	Adequate setback from surface water/inundation zones.
Vegetation	Good vegetation cover is important to prevent erosion as well as for uptake of water and nutrients from effluent.	Grasses.

Table 2: Description of Key Chemical and Physical Soil Features		
Feature	**Explanation**	**Assessment Process**
Cation Exchange Capacity	Influences the ability of the soil to hold and exchange cations; a major controlling agent for soil structural stability, nutrient availability for plants and the soil's reaction to fertilisers and other ameliorants (refer to Hazelton & Murphy, 2007).	0.49(+)/kg Very low level, no constraint
Colour and Mottling	Gleyed soils indicate permanent saturation (permanent watertable), while orange, yellow and red mottles indicate seasonal saturation with intermittent periods of drying (perched or seasonal watertable).	No mottling noted
Electrical Conductivity **(EC)**	EC test result infers the salinity of the soil and its potential impact on plant growth on the LAA. Refer to Hazelton & Murphy (2007) for interpretation of EC test results. Application of effluent increases salt content of soils over time.	0.05dS/m <0.2 dS/m No constraint Very low level of soil salinity.

Feature	Explanation	Assessment Process
Emerson Aggregate Class	EAC results infer dispersibility (as ped slaking, soil dispersion or both). LAAs should not be installed in soils with moderate or high dispersibility, without adequate mitigation (e.g. addition of gypsum, use of irrigation).	2 Major constraint indicating some level of dispersion, mitigated by disposal infrastructure on contour.
Permeability and Design Loading Rate	The rate at which water moves through the soil reflects the soil's permeability and determines the rate at which effluent is applied to land in litres per square metre per day (mm per day). The application rate for each type of land dispersal and recycling system is listed in Table 9 in the Code. Whilst the loading rate for LAA design is based on the permeability, it is less than the true permeability.	Adopted DIR, 5. Based upon shire advised soil cat.
pH	Acid soils (pH <5) or alkaline soils (pH >8) may constrain plant growth and should be ameliorated by use of chemical additives (e.g. lime for acidity).	6.0 Optimum range of 5.5-7.5 No constraint
Rock Fragments	Coarse rock fragments displace soil volume and therefore can limit assimilative capacity of soils.	No
Sodicity **[Exchangeable Sodium Percentage (ESP)]**	The percentage of sodium compounds on cation exchange sites on soil particles. ESP >6% may cause damage to the soil structure. Refer to Hazelton & Murphy (2007). Effluent and greywater contain sodium.	3.0% < 6% No constraint.
Sodium Absorption Ratio (SAR)	The ratio of sodium to calcium and magnesium (beneficial elements) in the soil solution, with higher ratios potentially damaging to plants and soils.	300:1 High ratio of beneficial elements.

Feature	Explanation	Assessment Process
Soil Depth	Deeper soils generally have a greater assimilative capacity for effluent (depending on soil type).	>1.8m No constraint
Soil Texture	Soil textures are categorised as 1. Gravels and Sands 2. Sandy Loams 3. Loams 4. Clay Loams 5. Light Clays, or 6. Medium to Heavy Clays (AS/NZS1547:2012).	6 Medium to heavy clay advised by council Major constraint, mitigated by extensive LAA
Watertable (depth to)	The required soil depth to protect groundwater depends on soil type; high permeability soils generally require a greater separation distance (soil depth).	+20m >2.0m. No constraint

Comment;

Soil chemical analysis indicates one minor constraint in the form of Emerson Classification, mitigated by installation of disposal infrastructure on contour.

Table 5: Risk Assessment of Site Characteristics

Characteristic	Level of Constraint			Assessed Level of Constraint for Site
	Nil or Minor	Moderate	Major	
Aspect (affects solar radiation received)	North / North-East / North-West	East / West / South-East / South-West	South	NIL
Climate (difference between annual rainfall and pan evaporation)	Excess of evaporation over rainfall in the wettest months	Rainfall approximates to evaporation	Excess of rainfall over evaporation in the wettest months	**Major**
Erosion [1] (or potential for erosion)	Nil or minor	Moderate	Severe	NIL
Exposure to sun and wind	Full sun and/or high wind or minimal shading	Dappled light	Limited patches of light and little wind to heavily shaded all day	NIL
Fill [2] (imported)	No fill or minimal fill, or fill is good quality topsoil	Moderate coverage and fill is good quality	Extensive poor quality fill and variable quality fill	NIL
Flood frequency (ARI) [3]	Less than 1 in 100 years	Between 100 and 20 years	More than 1 in 20 years	NIL
Groundwater bores [4]	No bores onsite or on neighbouring properties	Setback distance from bore complies with requirements in EPA Code of Practice 891.3 (as amended)	Setback distance from bore does not comply with requirements in EPA Code of Practice 891.3 (as amended)	NIL

Characteristic	Level of Constraint			Assessed Level of Constraint for Site
	Nil or Minor		Major	
Land area available for LAA	Exceeds LAA and duplicate LAA and buffer distance requirements	Meets LAA and duplicate LAA and buffer distance requirements	Insufficient area for LAA	NIL
Landslip (or landslip potential) [5]	Nil	Minor to moderate	High or Severe	NIL
Rock outcrops (% of surface)	<10%	10-20%	>20%	NIL
Slope Form (affects water shedding ability)	Convex or divergent side-slopes	Straight side-slopes	Concave or convergent side-slopes	NIL
Slope gradient [6] (%)				
(a) for absorption trenches and beds	<6%	6-15%	>15%	**Moderate**
(b) for surface irrigation	<6%	6-10%	>10%	
(c) for subsurface irrigation	<10%	10-30%	>30%	NIL
Soil Drainage [7] (qualitative)	No visible signs or likelihood of dampness, even in wet season	Some signs or likelihood of dampness	Wet soil, moisture-loving plants, standing water in pit; water ponding on surface, soil pit fills with water	NIL

Characteristic	Level of Constraint			Assessed Level of Constraint for Site
	Nil or Minor	Moderate	Major	
Stormwater run-on	Low likelihood of stormwater run-on		High likelihood of inundation by stormwater run-on	MINOR
Surface waters - setback distance (m)[3]	Setback distance complies with requirements in EPA Code of Practice 891.3 (as amended)		Setback distance does not comply with requirements in EPA Code of Practice 891.3 (as amended)	MINOR
Vegetation coverage over the site	Plentiful vegetation with healthy growth and good potential for nutrient uptake	Limited variety of vegetation	Sparse vegetation or no vegetation	MINOR

Characteristic	Level of Constraint			Assessed Level of Constraint for Site
	Nil or Minor	Moderate	Major	
Soil Drainage [8] (Field Handbook definitions)	Rapidly drained. Water removed from soil rapidly in relation to supply, excess water flows downward rapidly. No horizon remains wet for more than a few hours after addition	Well drained. Water removed from the soil readily, excess flows downward. Some horizons may remain wet for several days after addition	Moderately well drained. Water removed somewhat slowly in relation to supply, some horizons may remain wet for a week or more after addition	Imperfectly drained. Water removed very slowly in relation to supply, seasonal ponding, all horizons wet for periods of several months, some mottling	Poorly/Very poorly drained. Water remains at or near the surface for most of the year, strong gleying. All horizons wet for several months	MINOR

Comment;

The above MAVtables indicates one Major and one Moderate constraint,climate and slope. Climate constraint mitigated by incorporating rainfall into LAA sizing.Slope is difficult to mitigate but suitable disposal infrastructure constructed along contours should be part of the installation process.

SECTION THREE

SITE MANAGEMENT PLAN

Attached

[X] Yes [ ] No

2020 ENGINEERING SOLUTIONS

2020 Engineering Solutions

1745 Colac–Forrest Road

COLAC VIC 3249

Ph: 0428 141 441 Fax: (03) 5233 4608

ABN 57 215 499 312 ACN 11 9460 865

www.2020es.com

PROPERTY MANAGEMENT PLAN

SITE: Lot 1, 190 Woodrowvale Rd.

DEVELOPER: V & R Monarco

REPORT NUMBER: ES19201

DATE: 25/09/2019

REPORTING TO: AS 1547:2012

On-site domestic wastewater management

EPA Publication 891.4 July 2016

Code of Practice Onsite Wastewater Management

Barwon Water / Wannon Water

CONTENTS

1 PREAMBLE

This Property Management Plan is intended for use by property ownersinBarwon/Wannon Water drinking water supply catchments. It is written for occupancies with onsite wastewater treatment systems, but also applies to other developments where management of risk to downstream water quality is required.

This document must not be considered a definitive plan or control for all properties and wastewater systems. The landowner property management plan is drafted with consideration to planning permit requirements, EPA Publication 891.4 “Code of Practice Onsite Wastewater Management”, the Land Capability Assessment, and AS1547:2012 “On-site domestic wastewater management”.

The plan must be maintained by the landowner and amended when required. Any increased loading on the property or system failure requires the review of the existing Land Capability Assessment and Waste Water Management System. Any amendment to the plan must be submitted to Barwon/Wannon Water for endorsement.

The plan must be kept on site and be available for inspection by Council or other government agencies.

1.1 Property Owner Responsibilities

Property owners and occupiers are responsible for reducing risks to downstream water quality that originate from their property. This includes:

- ensuring pipework & wastewater systems don’t leak;
- keeping wastewater systems well maintained & in good repair;
- appropriately managing herbicides, pesticides & other chemicals;
- minimising erosion & sediment movement;
- maintaining buffers of native vegetation around watercourses;
- compliance with Council and EPA requirements; and
- implementing this Property Management Plan.

2 EMERGENCY CONTACT NUMBERS

PROPERTY MANGEMENT PLAN	
EMERGENCY OR ONSITE WASTEWATER MAINTENANCE CONTACT NUMBERS	
POLICE, AMBULANCE, FIRE	000
PLUMBER	To be advised
ELECTRICIAN	To be advised
COUNCIL ENVIRONMENTAL HEALTH OFFICER	Colac Otway Shire.
EPA	1300 372 842
SYSTEM SUPPLIER	COLAC CEMENT PRODUCTS 03 5231 5231
SYSTEM SERVICE AGENT	COLAC CEMENT PRODUCTS 03 5231 5231
SEPTIC PUMPOUT TANKER	RICHARDSON'S LIQUID WASTE 03 5234 6585
BARWON WATER	1300 656 007

If any of the following incidents, which could impact on downstream water quality, occur on site they should be reported to Barwon Water immediately:

Chemical spill Fuel spill Bushfire Landslip

3 SITE PLAN

Site plans drawn to scale (attached) show dimensions and include the following details:

- the site address, including lot number & street number;
- title boundaries;
- direction of north;
- location of groundwater bores on the site & adjacent properties;
- contour lines (at 1 - 10 m intervals), or direction of slope & slope in percent;
- location of dams & waterways onsite & within 100m of the property;
- drainage lines & springs;
- stormwater cut-off drains adjacent to land application area & treatment system;
- location of actual & proposed buildings, sheds, driveways, paths & paddocks;
- location of actual & proposed infrastructure, especially drains;
- location& dimensions of the wastewater treatment plan; and
- location& dimensions of the land application area.

The site plan must be amended when any of the above details change (including on issue of as-constructed drawings), and the amended plan must be provided to Barwon/Wannon Water.

4 DETAILS OF THE WASTEWATER TREATMENT SYSTEM

The plan requires the following details of the wastewater treatment system:

- manufacturer's manuals & spare parts list;
- as-installed drawings;
- copy of EPA Certificate of Approval;
- copy of Council wastewater system permit;
- description of the maintenance regime, to meet manufacturer's recommendations & the maintenance, monitoring & reporting requirements of the Council permit & the EPA certificate of approval; and
- in the case of a secondary treatment system, a copy of a current service contract with an accredited or experienced trained service technician to implement the maintenance regime.

All details relevant to the above will be available and submitted after issue of the permit as they are post developmental.

Sewage Treatment Plants (example only)

Envirosep SP2000 technology delivers low maintenance & operating costs

Through a continual research and development program, Envirosep have designed and manufactured the SP2000. A unit that meets and exceeds consumer demands of an efficient, low maintenance wastewater treatment system.

SP2000 Features and Benefits

Economical
The efficiency of an aerated wastewater treatment system is measured by the transfer of air to the micro-organisms used in the biological process to remove waste.

Quiet Operation
Smooth agitation to ensure there are no dead pockets where bio-solids can build up and timed aeration for minimal maintenance.

Easily Hidden
Below ground multiple light weight tank construction makes for easier access to your site and provides more options for layout where space is restricted.

Maintenance

Access service pit allows easier maintenance of system and large bio -solids storage tank reduces the frequency of bio-solids pump-outs.

Great for your garden
The efficient fine bubble aeration combined with a unique Biotube design enhances the treatment. This will provide enough recycled water to irrigate a small to medium lawn area.

Performance Guaranteed
Warranty is provided on all components from date of installation and two years on electrical components against defects in manufacture.

Approved by the EPA – CA 125/14
Commercial models are also available with additional bio-media, back-up air pumps and water pumps for heavy duty domestic and/or trade use applications.

Specifications

Capacity – Primary pre-treatment tank:	3,200 litres
Aeration chamber:	2,200 litres
Humus tank:	1,000 litres
Contact tank:	300 litres
Total capacity:	6,700 litres
Tank construction:	Concrete
Tank dimensions:	1750mm dia x 2300mm
Weight of tanks:	3 tonnes each
Weight of Pump Well	1.2 Tonnes

Recommended for:

- Commercial installations
- EPA Approved, up to 5000 Litre daily
- System upgrades
- Existing homes
- Extensions
- New homes

Warranty

The Envirosep SP 2000 is fully guaranteed against any defects in manufacture. Electrical components of the system are warranted against defects in manufacture for two years from date of installation**.**

Service and Repairs

For more information about Envirosep service and repairs please contact:

SSA – Septic Systems Australia

Postal Address:
P.O. Box 432,
Montrose, VIC, 3765
Australia

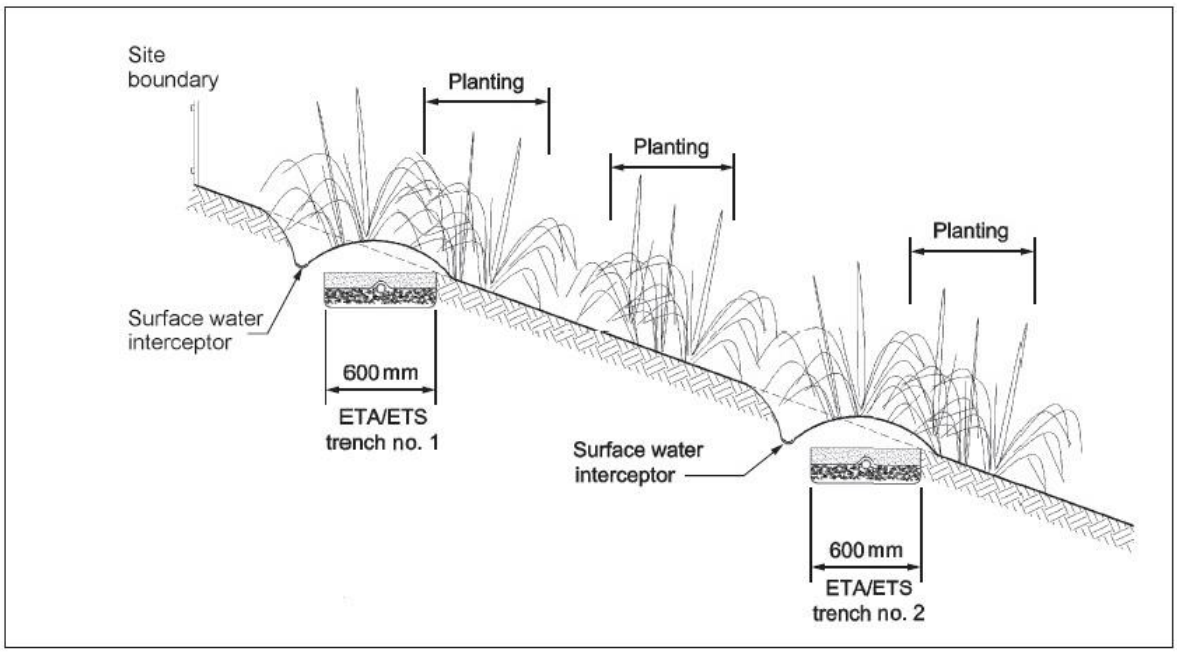
Phone: (03) 9509 6878
Fax: (03) 9509 6818
Mobile: 0438 118 445
Email:lmorley@septicsystemsaustralia.com.au

NOTE: Developer can supply treatment plant information post construction as most documentation relies upon approval to construct development and install a system. Included as example only. 2020Eng is independent and does not recommend particular systems.

5 DETAILS OF THE EFFLUENT DISPOSAL SYSTEM

NOTE: An LPED line can be used to dose load the ETA/ETS bed.

FIGURE L6 ETA/ETS BED DETAILS



NOTES:
1 An LPED line can be used to dose load the ETA/ETS trenches.
2 Each ETA/ETS trench is constructed to disperse effluent into downslope topsoil so that plantings can provide assistance by evapotranspiration.

The plan requires the following details of the effluent disposal system:

- manufacturer's manuals & spare parts list for components including pumps, valves, and filters;
- as-installed drawings; and
- description of the maintenance regime, to meet manufacturer's recommendations & the maintenance, monitoring & reporting requirements of Council & the EPA. At a minimum, visual inspection of the land application area is required whenever the treatment system is inspected.

All details relevant to the above will be available and submitted after issue of the permit as they are post developmental.

6 WASTEWATER TREATEMENT SYSTEM MAINTENANCE

The waste water treatment system, including its pipework shall:

- be inspected & maintained as per the maintenance regime;
- be protected from vehicle, farm machinery or livestock damage;
- have any grease trap inspected at least quarterly & cleaned out regularly;
- have any vents kept clear & access covers in working order;
- be visually checked for damage especially after being pumped out - damage is to be repaired; and
- be replaced if not operating adequately.

Inspections of treatment units are to be recorded on the operation and maintenance log as well as any defects and repairs undertaken.

7 LAND APPLICATION AREA (Effluent Disposal) OPERATION & MAINTENANCE

The following measures shall be implemented:

- the land application area & disposal system shall be inspected & maintained as per the maintenance regime;
- any evapotranspiration areas shall be designed to exclude vehicle, farm machinery, or stock access;
- surface water diversion drains shall be maintained upslope of & around the land application area & kept clean; and
- roof water drainage / hard stand drainage must be diverted away from the land application area.

Evapotranspiration and irrigation areas shall:

- have their grass mown & plants maintained to ensure these areas take up nutrients with maximum efficiency;
- be checked for wet spots, uneven grass colour 7 symptoms of emitter blockage (evidenced by under-irrigated dry areas or over-irrigated wet areas); and
- have blocked or damaged irrigation lines replaced.

Equipment shall be checked in the following manner:

- the manufacturer's instructions for maintaining & cleaning pumps, siphons & septic tank & outlet filters shall be followed;

- disc filters or filter screens on irrigation-dosing equipment shall be cleaned at least annually by rinsing back into the primary wastewater treatment unit; and

- irrigation lines shall be flushed at least annually to scour out any accumulated sediment.

Inspections are to be recorded on the Operations Log as well as any defects and repairs undertaken.

8 HOUSEHOLD MANAGEMENT OF WASTEWATER

The following measures should be implemented for optimum performance of system.

8.1 Sludge Build Up Reduction

- food waste including fats, grease & oils shall be disposed of in composting bin or worm farm
- no food waste disposal unit shall be installed
- sanitary napkins & hygiene products shall be disposed of in garbage

8.2 Encourage Bacteria

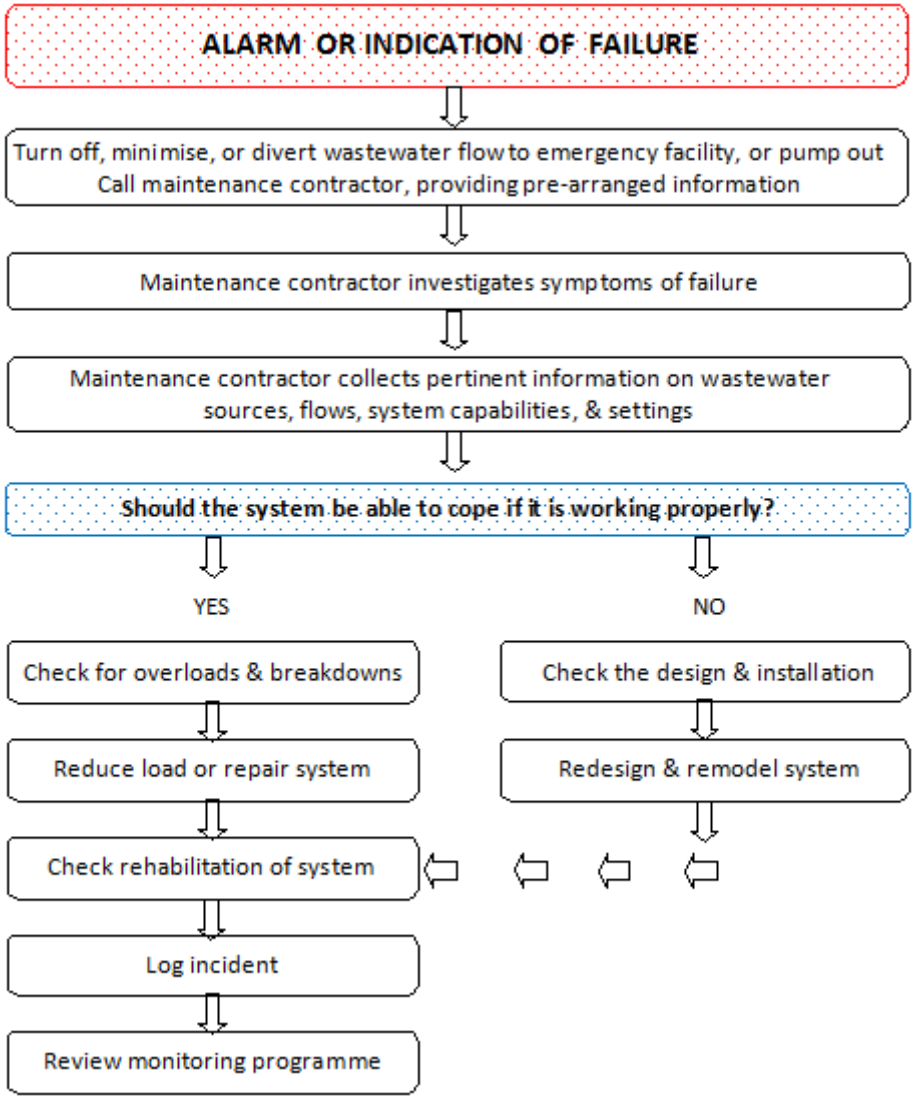
- use biodegradable soaps
- use low-phosphorus detergent
- use low-sodium detergent where soils are dispersive
- limit the use of cleaners such as bleaches, whiteners, nappy soakers & disinfectant, especially for toilet/shower cleaning
- do not put chemicals, thinners or paint down the drain or gulley trap

8.3 Reduce Effluent Volume Load

- install & use water conserving fittings ie. shower heads & appliances
- wash full loads only in dishwasher & washing machine
- avoid system overload ie. 1 washing machine load per day & run washing machine & dishwasher at different times
- do not install a spa bath

9 CONTINGENCY PLAN

The plan below shall be followed for a sudden failure of the wastewater system. A generalised flow chart of actions to be taken is:



(Figure 6.3 from AS1547:2012)

10 SITE OPERATIONS & MAINTENANCE LOG

A site operation and maintenance log shall be kept for any wastewater system. This will assist in the determination of recurring problems/trends. The maintenance log is to show when scheduled maintenance is due. Matters to be recorded in the log include:

- pump out records;
- service records;

- inspections; and
- records of all irregular operation & response actions.

Copies of programmed maintenance and pump out (desludging) works performed by maintenance contractors, as required by the Council (septic tank) permit, are to be forwarded to the Council Environmental Health Officer. A copy of the latest maintenance certificate is to be retained with this property management plan and recorded on the maintenance log.

11 IDENTIFICATION, RISK ASSESSMENT & CONTROLS FOR OTHER POTENTIAL THREATS TO DOWNSTREAM WATER QUALITY

The landholder is required to identify and assess the risk of other potential threats to downstream water quality, resulting from the development and use of the property ie.

- erosion risks; and
- risks from storage & application of chemicals.

Construction methods should be carried out in a manner which will minimise soil, sediment and nutrient movement from the property to water courses during development and use of the property. Potential sources of sediment movement to consider are:

- tracks& driveways;
- high traffic areas (vehicular, human, animal); and
- construction areas (occupancy, roads, fencing).

The design of stormwater run-off from the site should be described. Activities to encourage native vegetation retention and re-establishment within a 30 metre buffer zone along waterways, and to exclude stock from waterways, should be described. Activities to prevent the spread of noxious weeds should be described.

Chemicals such as herbicides and pesticides can be a risk to downstream water quality. The landowner should follow manufacturer's instructions and be familiar with the advice available from: http://www.depi.vic.gov.au/agriculture-and-food/farm-management/chemical-use. Procedures for chemical application and storage should be described in the Property Management Plan.

Businesses should contact Barwon/Wannon Water to determine if a water quality monitoring program immediately up and down stream of works that pose a significant threat to water quality is required. This may include:

- analytical monitoring of turbidity following large-scale activities that could potentially result in sediment movement (e.g. cultivation, harvesting); and

- monitoring of the active ingredients within herbicides and pesticides following intensive and broad scale herbicide/pesticide applications.

Appendix 1 Maintenance Log Template

Treatment System Inspections, Maintenance & Repairs			
Due Date (if scheduled)	Actual Date of Activity	Name of Inspector/ Contractor	Description of Work, Observations & Comments

Effluent Disposal Area Inspections, Maintenance & Repairs			
Due Date (if scheduled)	Actual Date of Activity	Name of Inspector/ Contractor	Description of Work, Observations & Comments

12 INSURANCE CERTIFICATE OF CURRENCY

Avaiable on request

13 DISCLAIMER

2020 Engineering Solutions Pty Ltd ("2020")
Geotechnical Report Limitations

The report to which this document has been attached assesses risks arising from land slope instability and proposes risk minimisation solutions. Absolute risk avoidance cannot be assured, principally due to assessment cost factors. It is therefore necessary to rely on instructions and make assumptions.

Changed Conditions

The report may be invalidated by changed conditions including:-

1. topography.
2. soil moisture content.
3. above or below ground structures.
4. soil and substrate profiles.
5. location of site boundaries.

Causes of Changed Conditions

Changed conditions may occur due to:-

1. extreme conditions such as flood, drought, cold, heat or fire.
2. human activities.
3. natural processes.
4. planning or design requirements.

Client to inform 2020 of any changes

2020 will endeavour to identify any reasonably foreseeable risk factors on the site which may cause changed conditions. Samples are taken at reasonable intervals bearing in mind the cost to the client. In the absence of specific instructions or patent conditions it will be assumed that conditions observed in samples are consistent across the site.

This document is provided to inform the client that their responsibility for risk is shared with 2020. The client will be responsible for inaccurate instructions or failure to instruct in relation to changed conditions, events that may cause changed conditions or when it becomes evident that assumptions may be invalid. Failure to do so could result in substantial and costly damage and disputes.

Interpretation

The report must be considered in its entirety. Each part of the report may be dependent on other parts for meaningful interpretation. The report should also only be used by the client. It may not be relied upon by any other person without first conferring with 2020. The report should only be acted upon and interpreted by persons qualified and competent in the activities contemplated in the report.

130433 - 13 05 31 Geotechnical Report Limitation

LAND CAPABILITY ASSESSMENT

Lot 2 190 Woodrowvale Road
Elliminyt, Victoria. 3250

2020Engineering Solutions Report ES19208
9/25/2019

Welcome to our new format LCA.

Section 1.

Contains relevant information is presented in a concise, logical, trail following from regional perspective to site specific characteristics. Samplewater balance calculations are incorporated to inform the Land Application Area tables

Section 2.

Contains the balance of information required under the DWMP, MAV and EPA 891.4

Section 3.

Property Management Report.

REPORT CONTENTS

REPORT SUMMARY/EXECUTIVE SUMMARY

This Report is to Lot 2, being 4805m2 allotment, of a 4 Lot subdivision of the subject land. The first portion of the report will address issues associated with the total subject land while the balance of the Report will focus on issues specific to Lot 2.

As is a typical allowance for wastewater disposal areas a maximum of 20% or 960m2 will be the limiting factor.

Colac Otway DWMP Tables, and shire soil mapping, indicate a 1-3 bedroom dwelling, on town water, the proposed allotment will require 900m2 of drip irrigation or

294m2, base area of ETA trenches or 490 lineal meters, or

133m2 of base area of wick trench, 83 lineal metres.

SECTION ONE

1.0 INTRODUCTION & BACKGROUND

PLANNING PROPERTY REPORT

VICTORIA State Government | Environment, Land, Water and Planning

From www.planning.vic.gov.au on 25 September 2019 11:33 AM

PROPERTY DETAILS

Address:	190 WOODROWVALE ROAD ELLIMINYT 3250
Lot and Plan Number:	Lot 29 PS322547
Standard Parcel Identifier (SPI):	29\PS322547
Local Government Area (Council):	COLAC OTWAY www.colacotway.vic.gov.au
Council Property Number:	10526
Planning Scheme:	Colac Otway planning-schemes.delwp.vic.gov.au/schemes/colacotway
Directory Reference:	VicRoads 92 B7

UTILITIES

Rural Water Corporation:	Southern Rural Water
Urban Water Corporation:	Barwon Water
Melbourne Water:	outside drainage boundary
Power Distributor:	POWERCOR

STATE ELECTORATES

Legislative Council:	WESTERN VICTORIA
Legislative Assembly:	POLWARTH

Planning Zones

LOW DENSITY RESIDENTIAL ZONE (LDRZ)

SCHEDULE TO THE LOW DENSITY RESIDENTIAL ZONE (LDRZ)

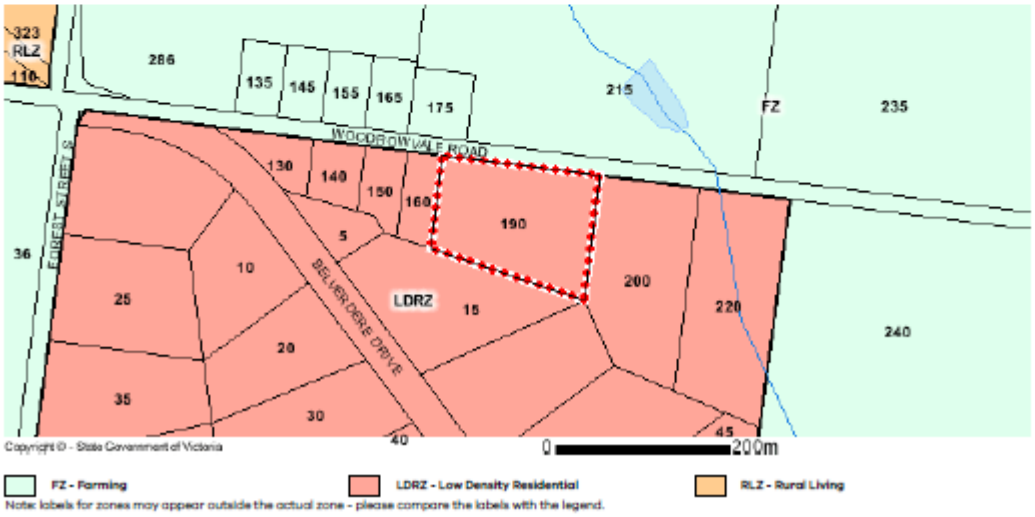


Fig 1.Subject Land Planning Details, (VicPlan)

Parent title, comprises a total of 2.3151Ha.

Proposed Lot 2 comprises 4805m2, as detailed in the following sections.

1.1. Overlays

SLO VPO Designated Bushfire Prone Area.

No other overlays or Planning Controls are indicated on the proposed allotment or parent allotment.

1.1.1 Location

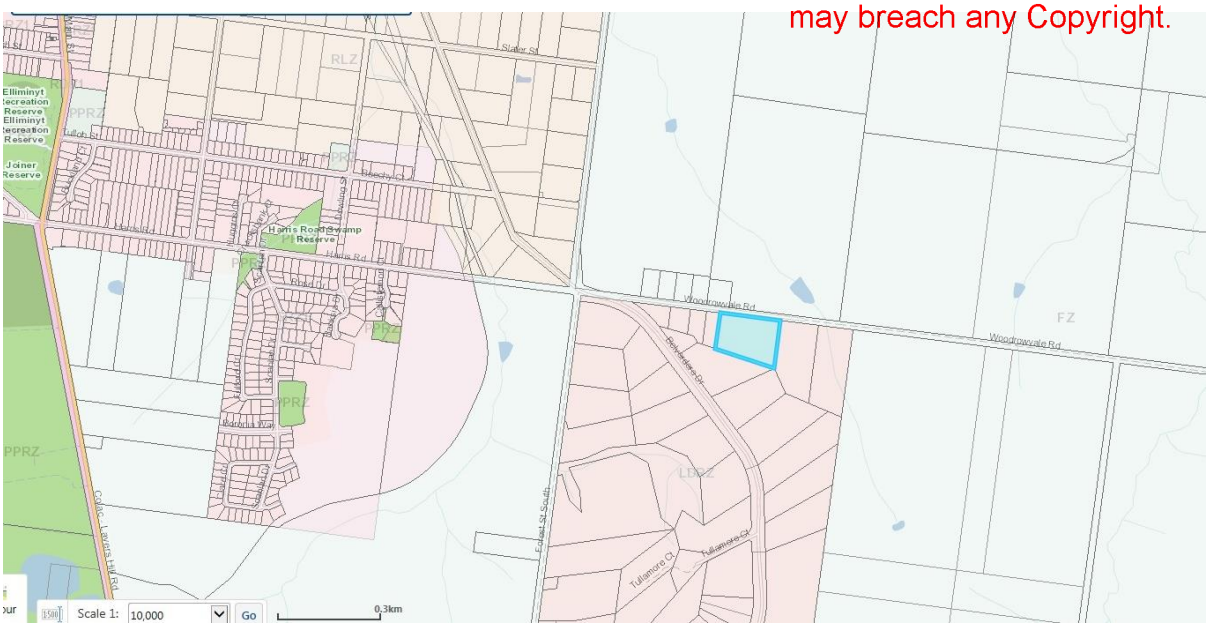


Fig 2.Parent title, Subject Land site location, (in blue outline). (VicPlan)

Subject land comprises a large, cleared, aprox 2.3Ha, semi rural allotment on the southern side of Woodrowvale Road.

Fig 3. Subject land, in red outline, and surrounding landuse, principally low density residential and open grazing land. (Google Maps)

1.2. Proposed Subdivision

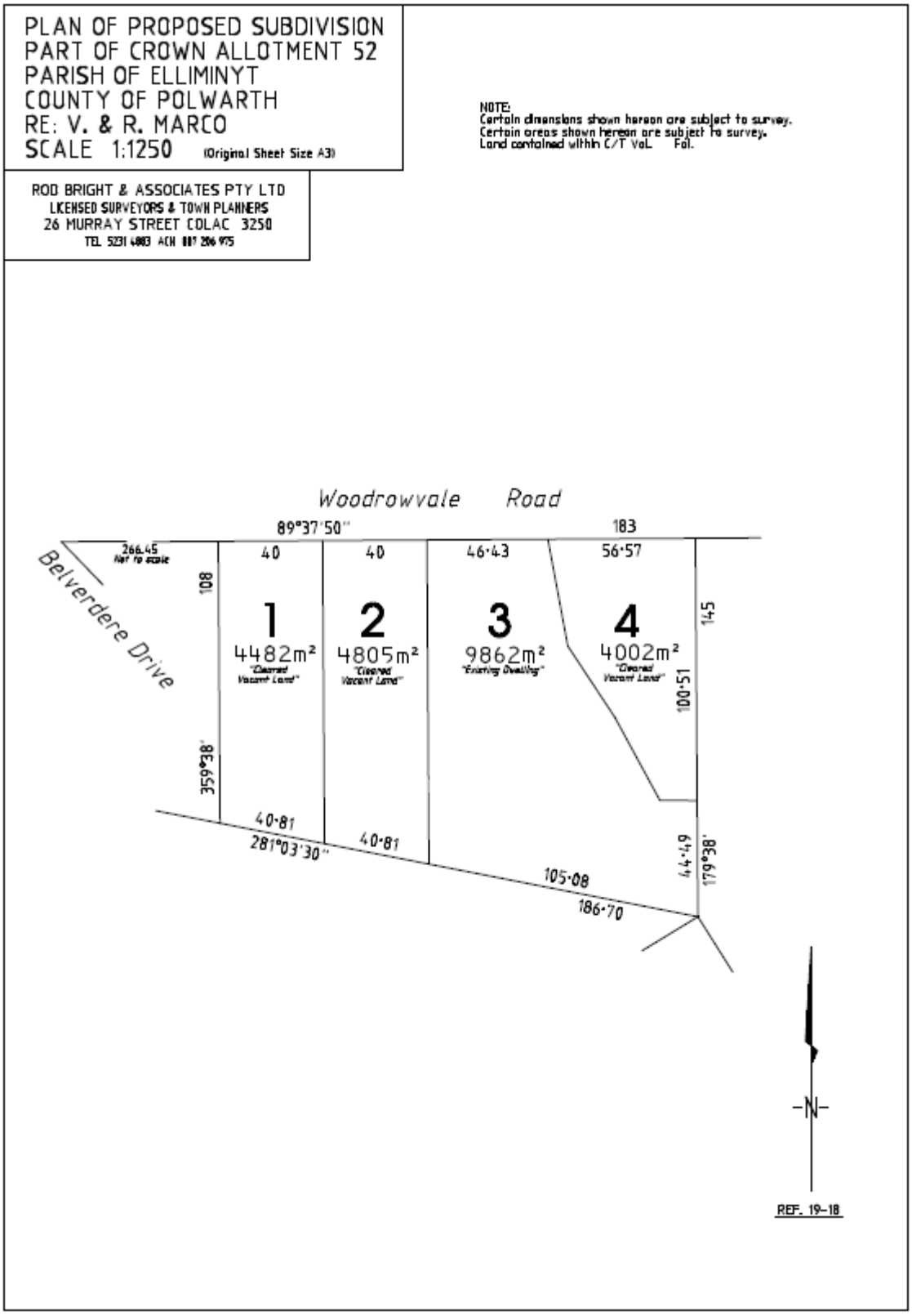


Fig. 4. Subject Land and proposed subdivision. (Rod Bright & Ass.)

2.0 DWMP Sensitivity Analysis Rating

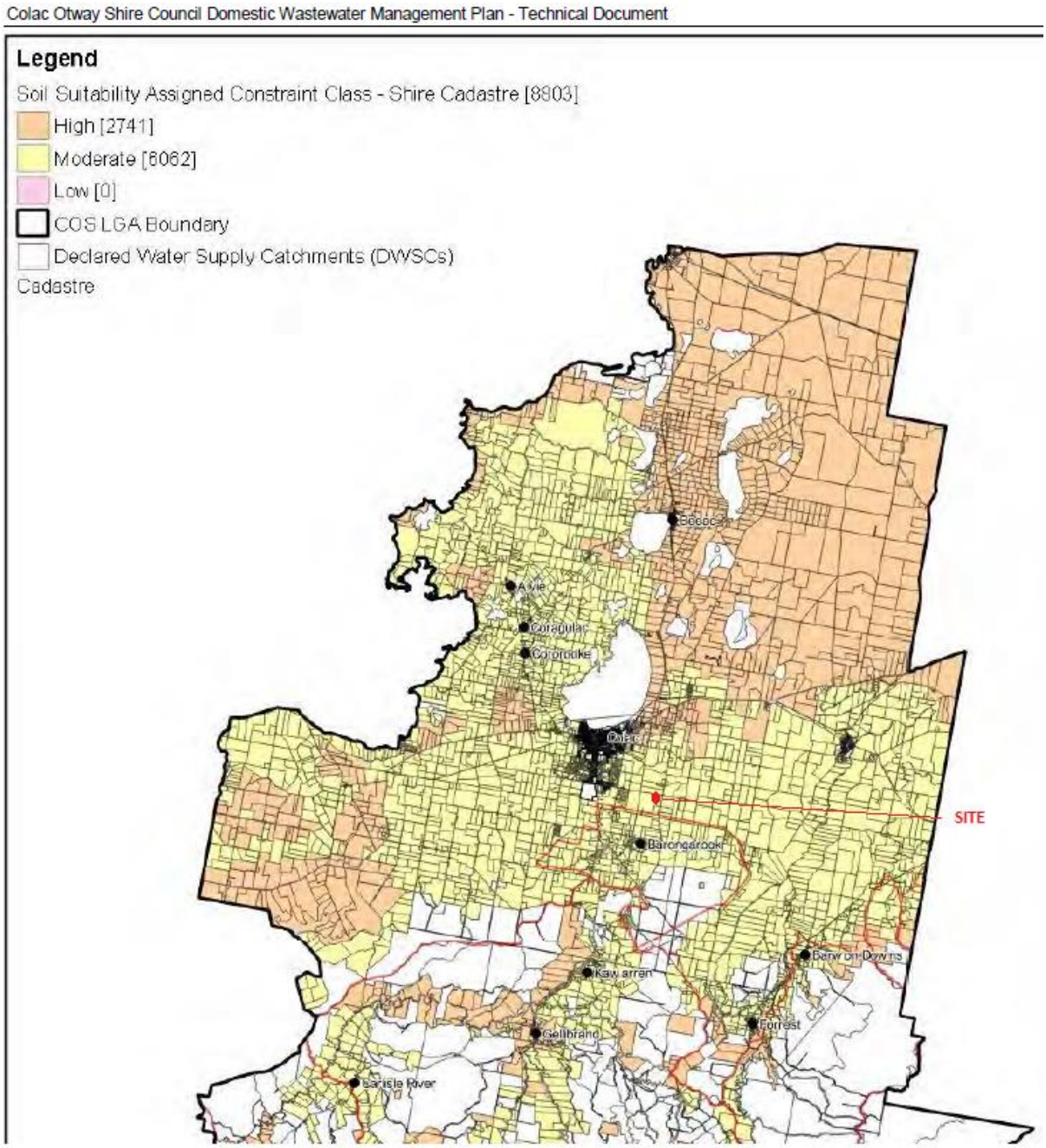


Fig 5. DWMP Sensitivity analysis rating

Sensitivity mapping indicates subject land rated moderate sensitivity.

3.0 DECLARED WATER CATCHMENT AREA

Site is not within DWCA (DWMP)

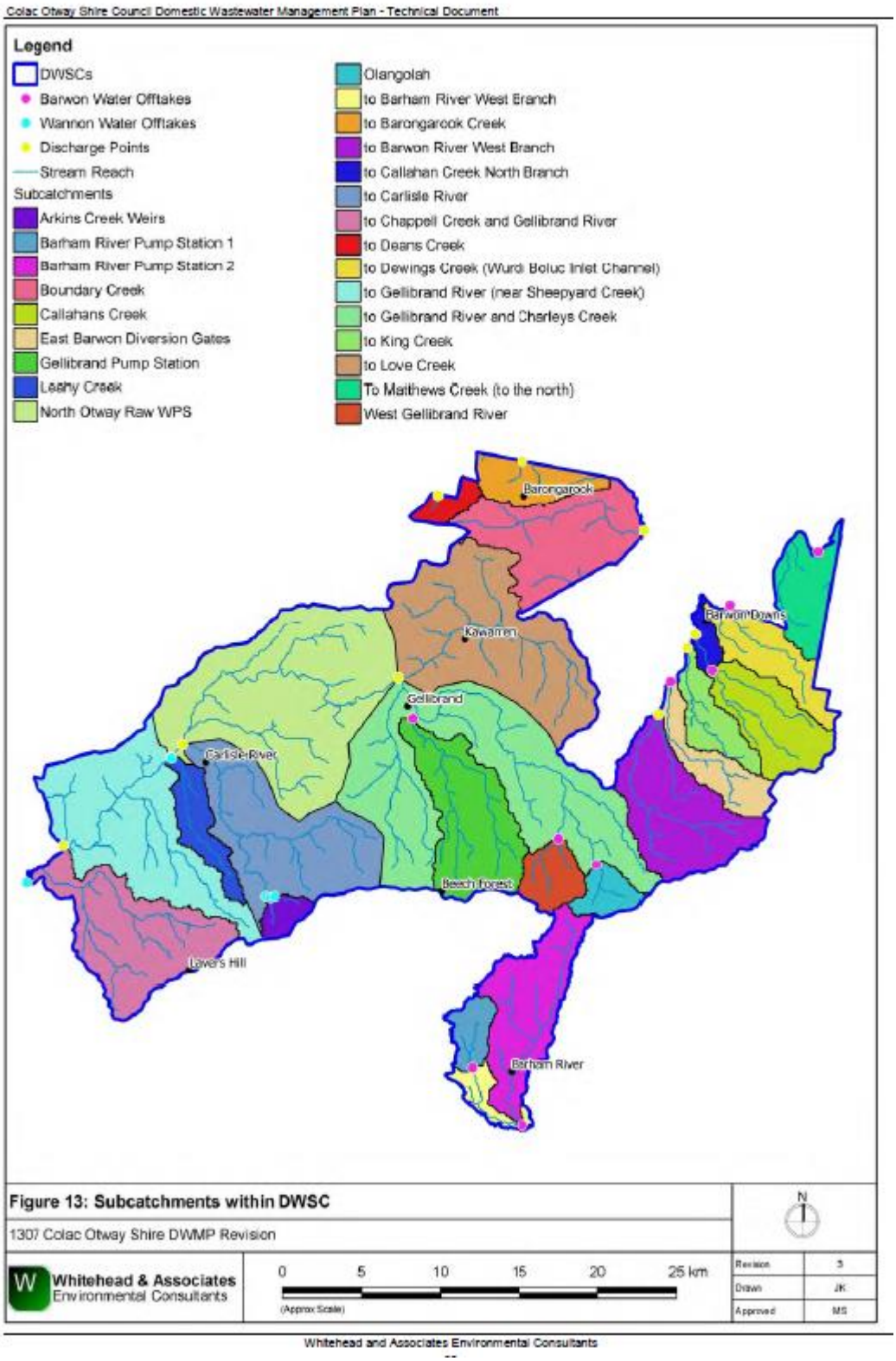


Fig 6. DWMP water supply mapping.

4.0 TOPOGRAPHY (VicPlan)

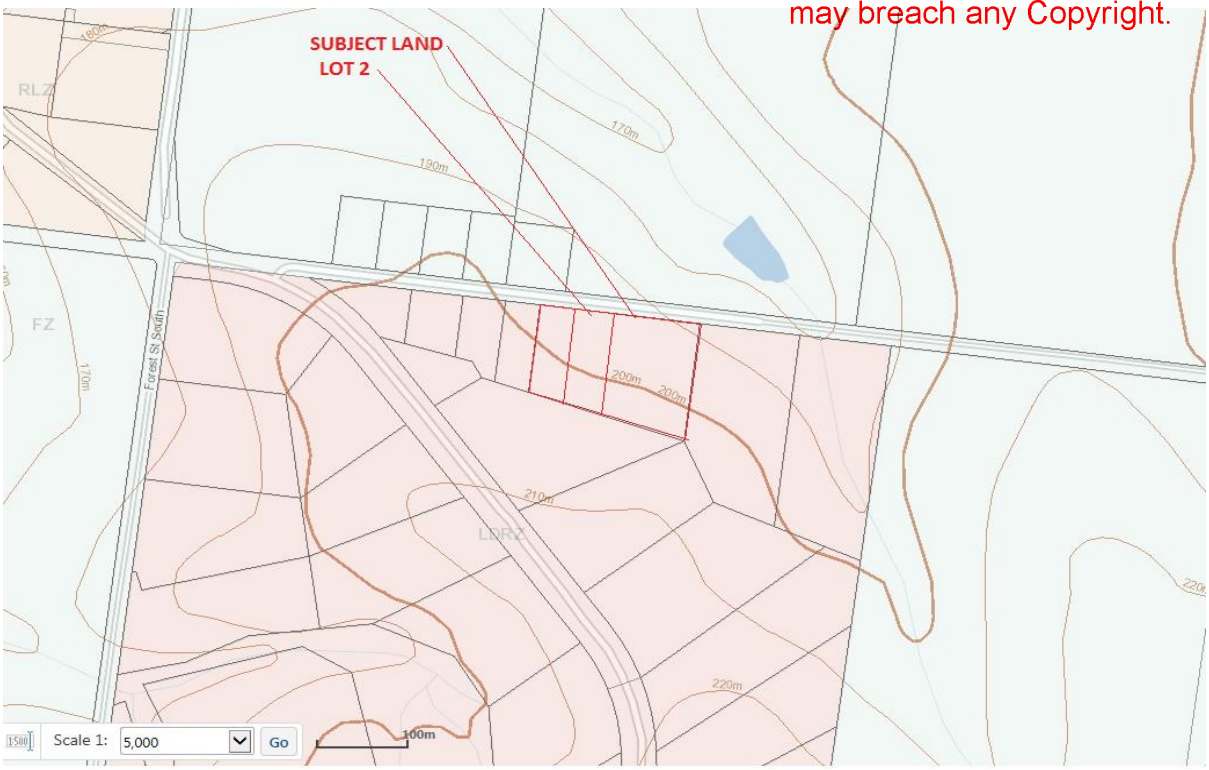


Fig 7.Topography and surface water/s. (VicPlan)

Comment

Generally the subject land comprises an elevated portion of a broad hillside and displays a north-eastern aspect with excellent solar and wind exposure.

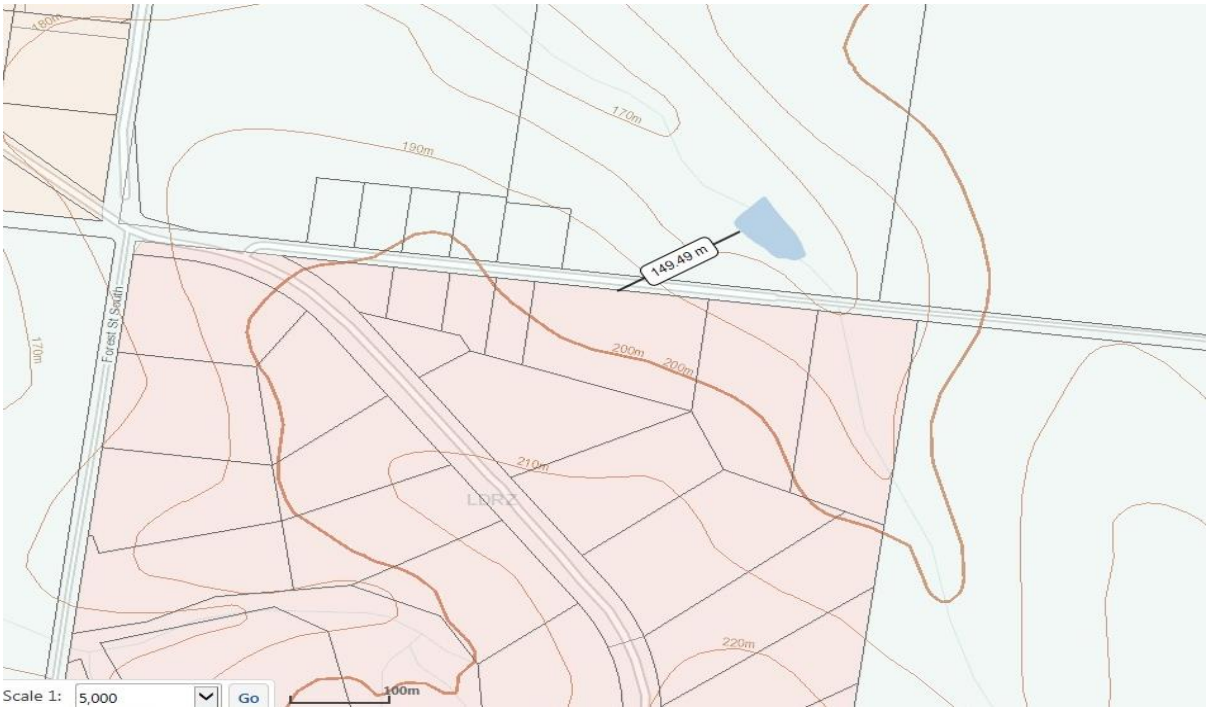


Fig 8. Nearest surface water to proposed Lot 2 is 150m.

5.0 GROUNDWATER BORES (VVG)

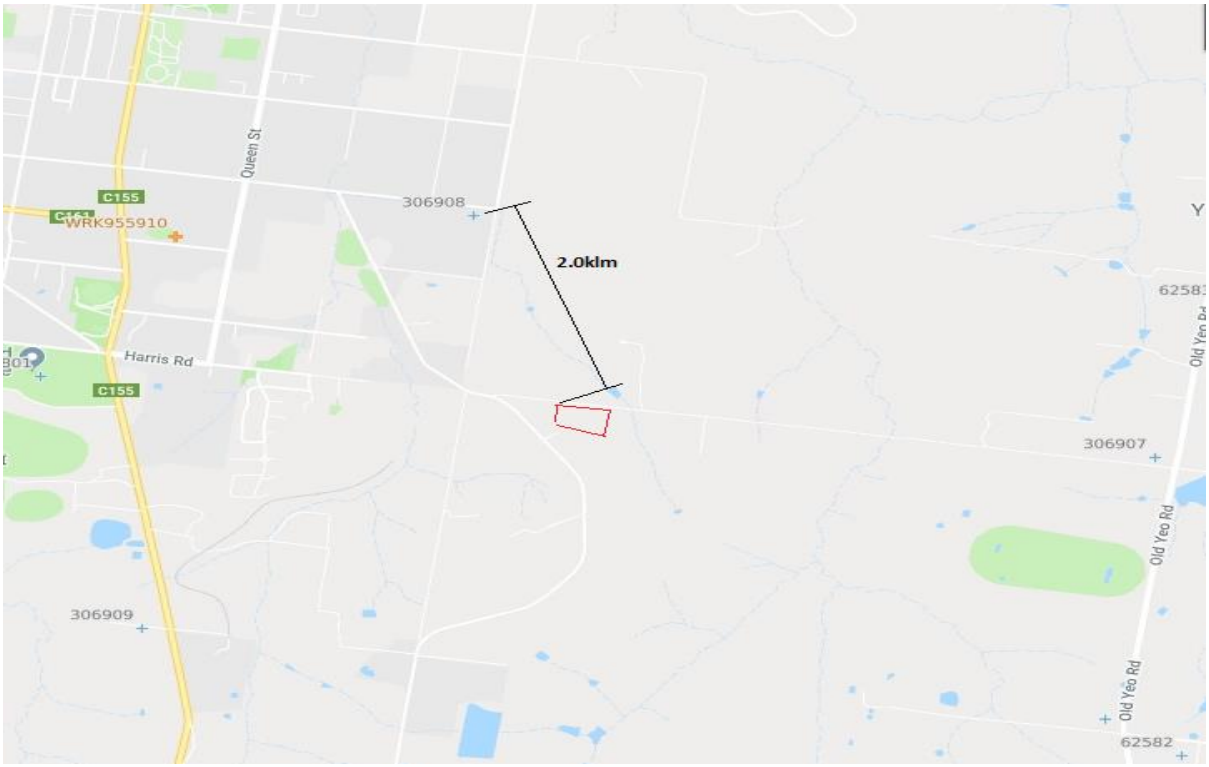


Fig 9.No bores near or within buffer zones of subject land, (in red), closest 2.0klm to NW.

5.1 Groundwater(VVG)

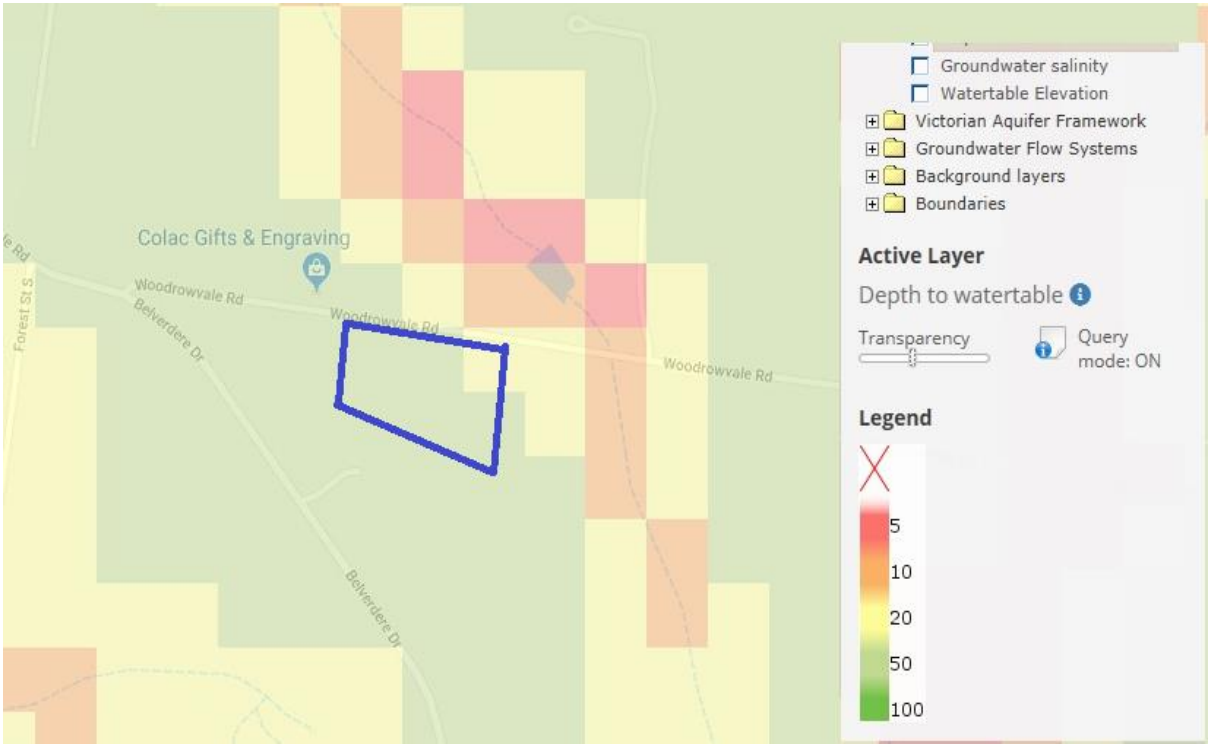


Fig. 10 Groundwater indicated at 20m-50m depth under subject land, about 50m under Lot 2.

7.0 SITE INSPECTION & FIELD INVESTIGATIONS

PROPOSAL

As per included Proposed Plan of Subdivision, Lot 2 comprises a 4805m2 allotment, of which 20% or 960m2 is to be set aside for wastewater disposal. Back analysis from this number will inform the number of bedrooms that could be in a development on this site.

Fig 11. View to west across Lot 2 showing surface coverage of grasses.

Surface comprises an open, flat, cleared area of grassland part of an extensive grazing operation.

Site vegetation comprises grasses and weeds. No evidence of groundwater discharge or salinity was noted.

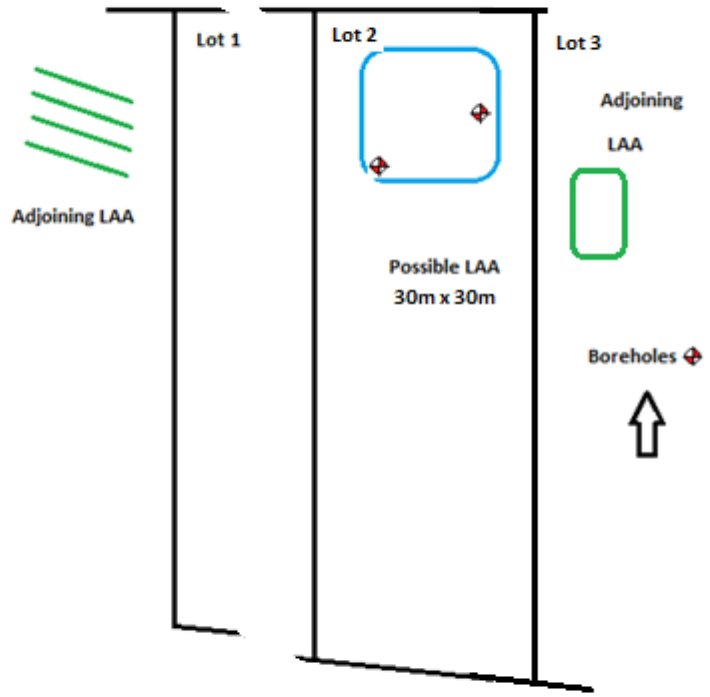
Proposed LAA site displays good to excellent solar and wind exposure.

System sizing tables for Barongarook will be used as specific tables for Elliminyt are not avaiable, Barongarook has a slightly higher rainfall than Elliminyt.

8.0 BORELOG

2020 ENGINEERING SOLUTIONS DATE 19Sep19
BORELOG REPORT ES SITE Woodrowvale Rd.

Depth in mm			
000	000		SAND SILTY Cat 2a
500	500		CLAY SANDY Cat 5b*
1800 END	1800 END		



*As advised by Health Dept.

9.0 SOIL ANALYSIS

Nutrient Advantage
Knowledge | Productivity | Responsibility

SOIL ANALYSIS REPORT

ASPAC

Report Number: 599245

2020 ENGINEERING SOLUTIONS L
DELAHUNTY
1745 COLAC FORREST RD
COLAC
VIC 3249

NATA
ACCREDITED FOR TECHNICAL COMPETENCE

Report Authorised
Paul Kennelly
Laboratory Manager
NATA Accredited Laboratory Number: 11958

Sample Number:	021908839	**Paddock Name:**	2 ROW	**Date Sampled:**	19-Sep-2019
Test Code:	2014-022	**Sample Name:**	AS1289 1 2 1 1998 6 5 2 6 5 3	**Date Received:**	24-Sep-2019
Purchase Order No:	AS1289	**Sample Depth:**	0 to 10 cm	**Date of Report:**	2-Oct-2019
Grower Name:	2020 ENGINEERING SOLUT				

Analyte	Result	Units	Method Code	Comments
Available Potassium ^	48	mg/kg	04-026-ICP8	Calculation
Emerson Class ^	3			Emerson, AS 1289.3.8.1
pH (1:5 CaCl2)	4.6		04-031-PH	1:5 soil/0.01M CaCl2
Potassium (Amm-acet.)	0.12	cmol(+)/kg	04-026-ICP8	
Calcium (Amm-acet.)	2.7	cmol(+)/kg	04-026-ICP8	
Magnesium (Amm-acet.)	1.0	cmol(+)/kg	04-026-ICP8	
Sodium (Amm-acet.)	0.18	cmol(+)/kg	04-026-ICP8	
Aluminium (KCl)	40	mg/kg	04-027-ICP9	
Aluminium (KCl)	0.45	cmol(+)/kg	04-027-ICP9	
Cation Exchange Capacity (Amm-acet.)	4.53	cmol(+)/kg	04-026-ICP8	Calculation
Sodium % of cations	4.1	%	04-026-ICP8	Calculation
Aluminium % of Cations	9.8	%	04-026-ICP8	Calculation
Calcium/Magnesium Ratio	2.7		04-026-ICP8	Calculation
pH (1:5 Water)	5.6		04-031-PH	1:5 soil/water
Electrical Conductivity (1:5 water)	0.05	dS/m	04-031-PH	1:5 soil/water

The results pertain only to the sample submitted.
This document shall not be reproduced except in full.
Analyses performed on soil dried at 40 °C and ground to 2mm or less.
^ NATA accreditation does not cover the performance of this service.
Accredited for compliance with ISO/IEC 17025 - Testing.
This results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national

Discussion

Results are typical for agricultural soils of this region and flag no major concerns or constraints, Emerson Class aside, individual results are discussed within MAV Tables in following sections.

10.0 SYSTEM SELECTION

10.1 DWMP Considerations

Given the proposed development is located in a developing residential area, this Report recommends installation of a secondary treatment system.

11.0 SIZING THE EFFLUENT DISPOSAL SYSTEM (DWMP)

Colac Otway Shire Council Domestic Wastewater Management Plan - Technical Document

Barongarook

Drip and Spray Irrigation Systems* - Secondary Treated Effluent only

	Soil Category	Gravels & Sands (1)	Sandy Loams (2)	Loams (3)	Clay Loams (4)	Light Clays (5)	Medium to Heavy Clays (6)
	DIR (mm)	5	5	4	3.5	3	2
Development Type	Daily (L/day)	Total min. irrigation area required for zero wet weather effluent storage (m^2)†					N/A (Alternative Land Application System Required)
5 + bedroom residence	1,080	388	600	831	1,350		
4 bedroom residence	900	322	500	693	1,125		
1-3 bedroom residence	720	258	400	554	900		

Note: * Irrigation system sizes are based on the assumption that the land application area is less than 10% slope. Reductions in DIR apply for slopes above 10% according to Table M2 of AS1547:2012
† not including spacing and setbacks

Conventional Absorption Trenches and Beds - Primary Treated Effluent

	Soil Category	Gravels & Sands (1)	Sandy Loams (2)	Loams (3)	Weak Loams & High/Mod Clay Loams (3 & 4)	Weak Clay Loams (4)	Light Clays (5)	Massive Clay Loams (4)	Medium to Heavy Clays (6)
	DLR (mm)	Not supported (Alternative Land Application System Required)							
Development Type	Daily (L/day)								
5 + bedroom residence	1,080								
4 bedroom residence	900								
1-3 bedroom residence	720								

Evapotranspiration-Absorption Trenches and Beds - Primary Treated Effluent (Category 1 to 5) and Secondary Treated Effluent only (Category 6)

	Soil Category	Gravels & Sands (1)	Sandy Loams (2)	Loams (3a)	Weak/Massive Loams (3b)	High/Mod Clay Loams (4a)	Weak Clay Loams (4b) & Strong Light Clays (5a)	Massive Clay Loams (4c) and Mod & Weak Light Clays (5b, 5c)	Medium to Heavy Clays (6) - Secondary Effluent Only
	DLR (mm)	20*	20*	15	10	12	8	5	5
Development Type	Daily (L/day)	Total min. basal or 'wetted area' required for zero wet weather storage (m^2) not including spacing & setbacks							
5 + bedroom residence	1,080	62		87	145	115	199	441	
4 bedroom residence	900	52		73	121	96	166	368	
1-3 bedroom residence	720	42		58	97	77	133	294	

Note: * Gravels, Sands and sandy loams are unsuitable for conventional absorption trenches and beds if there is a high watertable, including seasonal and perched watertables. Value based on average of conservative rate and maximum rate for Category 2b and 3a soils in AS1547:2012

LPED Irrigation Systems - Primary or Secondary Treated Effluent

	Soil Category	Gravels & Sands (1)	Sandy Loams (2)	Loams (3)	Clay Loams (4)	Light Clays (5)	Medium to Heavy Clays (6)	
	DIR (mm)	N/A	4	3.5				
Development Type	Daily (L/day)	(Alternative Land Application System Required)	Total min. basal or 'wetted area' (m^2)†		N/A (Alternative Land Application System Required)	N/A (Alternative Land Application System Required)	N/A (Alternative Land Application System Required)	
5 + bedroom residence	1,080		744	1,135				
4 bedroom residence	900		620	946				
1-3 bedroom residence	720		496	757				

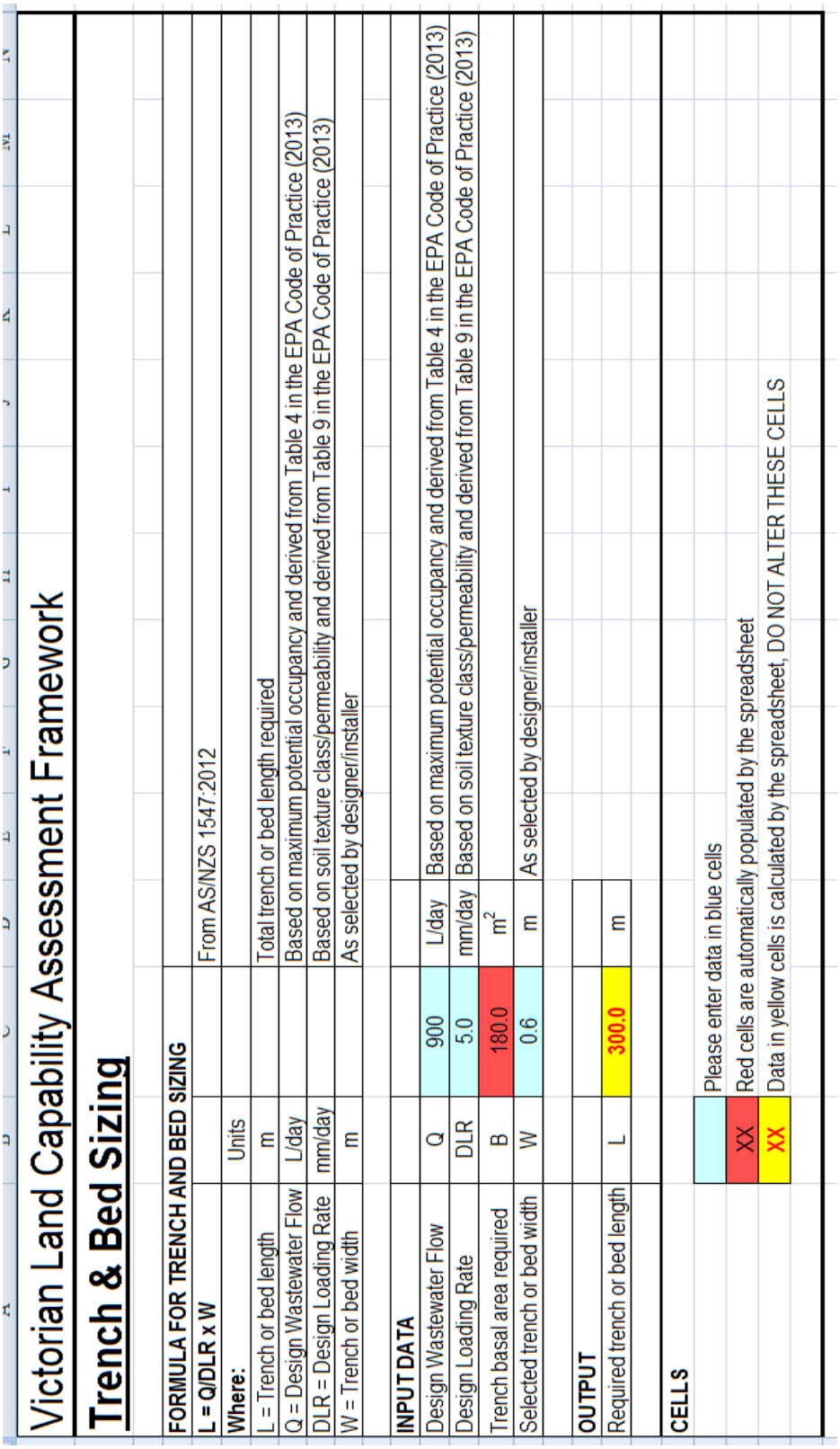
† required for zero wet weather storage (m^2) not including spacing & setbacks

Wick Trenches and Beds - Secondary Treated Effluent Only

	Soil Category	Gravels & Sands (1)	Sandy Loams (2) Loams (3) & High/Mod Clay Loams (4a,b)	Weak Clay Loams (4)	Massive Clay Loams (4)	Strong Light Clays (5a)	Moderate Light Clays (5b)	Weak Light Clays (5c)	Medium to Heavy Clays (6)
	DLR (mm)	25	30	20	10	12	8	8	5
Development Type	Daily (L/day)	Total min. basal or 'wetted area' required for zero wet weather storage (m^2) not including spacing & setbacks							
5 + bedroom residence	1,080	49	40	62	145	115	199	441	
4 bedroom residence	900	41	33	52	121	96	166	368	
1-3 bedroom residence	720	33	27	42	97	77	133	294	

Whitehead and Associates Environmental Consultants

11.1 SIZING THE EFFLUENT DISPOSAL SYSTEM (MAV)



Victorian Land Capability Assessment Framework

Trench & Bed Sizing

FORMULA FOR TRENCH AND BED SIZING				
L = Q/DLR x W			From AS/NZS 1547:2012	
Where:	Units			
L = Trench or bed length	m		Total trench or bed length required	
Q = Design Wastewater Flow	L/day		Based on maximum potential occupancy and derived from Table 4 in the EPA Code of Practice (2013)	
DLR = Design Loading Rate	mm/day		Based on soil texture class/permeability and derived from Table 9 in the EPA Code of Practice (2013)	
W = Trench or bed width	m		As selected by designer/installer	
INPUT DATA				
Design Wastewater Flow	Q	900	L/day	Based on maximum potential occupancy and derived from Table 4 in the EPA Code of Practice (2013)
Design Loading Rate	DLR	5.0	mm/day	Based on soil texture class/permeability and derived from Table 9 in the EPA Code of Practice (2013)
Trench basal area required	B	180.0	m^2	
Selected trench or bed width	W	0.6	m	As selected by designer/installer
OUTPUT				
Required trench or bed length	L	300.0	m	
CELLS				
		Please enter data in blue cells		
	XX	Red cells are automatically populated by the spreadsheet		
	XX	Data in yellow cells is calculated by the spreadsheet, DO NOT ALTER THESE CELLS		

Comment

Based solely upon shire soil mapping and a 1-3 bedroom dwelling, the proposed allotment will require 900m2 of drip irrigation or

294m2, base area of ETA trenches or 490 lineal meters, or

133m2 of base area of wick trench, 83 lineal metres.

These requirements grossly exceed the LAA on an adjoining property, 150 Woodrowvale Road, which comprises 80 lineal metres of conventional disposal trench, a system which appears to be operating safely.

MAV spread sheet indicates 300m of trench would be required for a 5 bedroom development.

Nitrogen balance is generally less than water balance in high rainfall areas and so is not a constraining factor.

Lot 2 adjoins Lot 1 a vacant allotment to the west, and Lot 3 to the east. Lot 3 contains an existing dwelling with a primary wastewater treatment system and an overloaded disposal area, however there is ample area for a reserve area to be developed to bring Lot 3 into complaisance.

12.0 Site Plan.

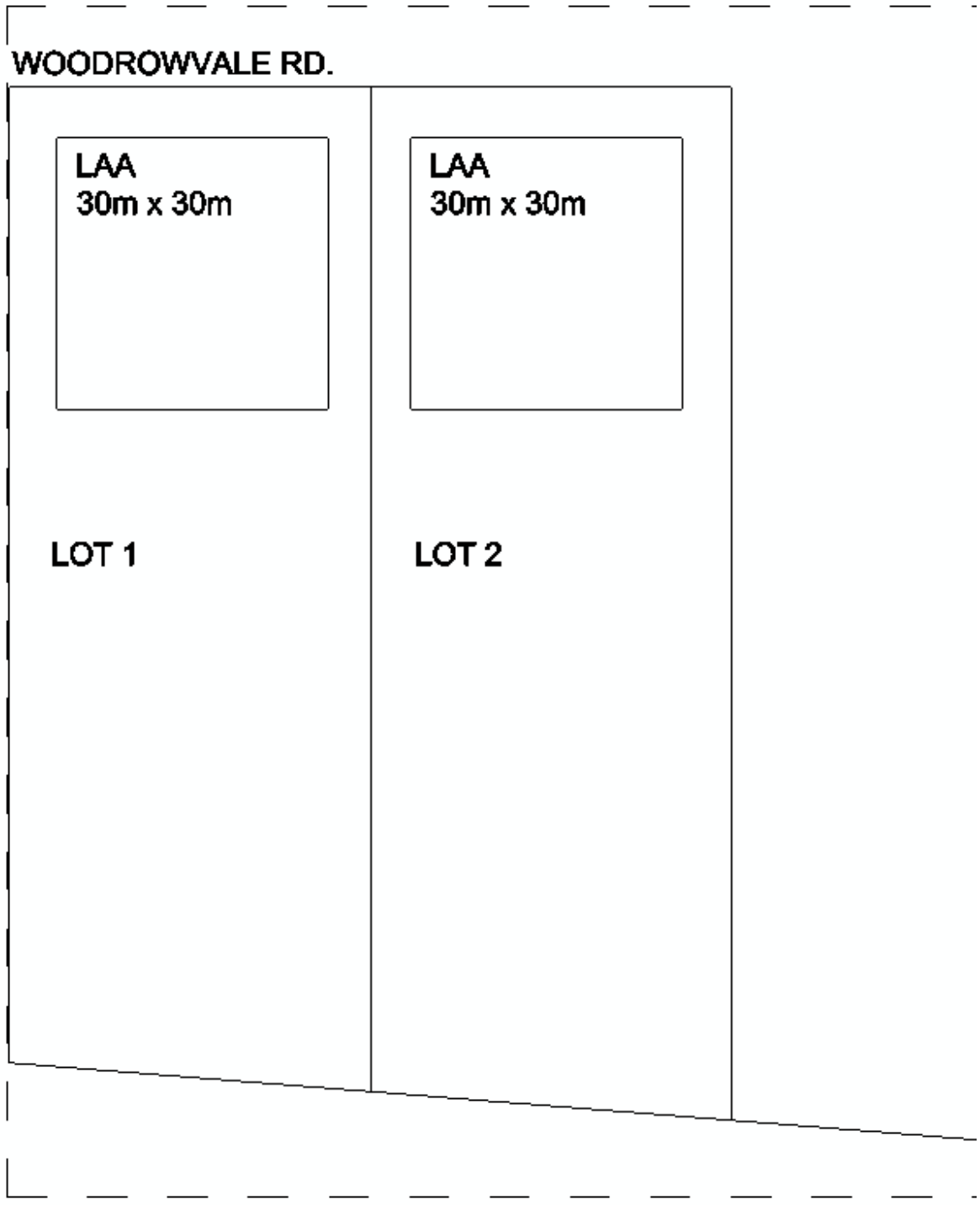


Fig 10. Site Plan, to scale (Author)

Final location and position of dwelling, treatment plant, shedding etc will be at direction of developer.

12.1 Applicable Setback Distances (from AS1547:2012)

Landscape Feature / Structure	* Setback Distances (m)					
	Primary Treated Effluent		Secondary Sewage &Grey water Effluent		Advanced Secondary Grey water Effluent	
BUILDING						
Wastewater field up-slope of building		6	x	3		3
Wastewater field down-slope of building		3	x	1.5		1.5
Wastewater field up-slope of cutting/escarpment		15	x	15		15
ALLOTMENT BOUNDARY						
Wastewater field up-slope of adjacent lot		6	x	3		1
Wastewater field down-slope of adjacent lot		3	x	1.5		0.5
SERVICES						
Water supply pipe		3	x	1.5		1.5
Wastewater field up-slope of potable supply channel		300	x	150		150
Wastewater field down-slope of potable supply channel		20	x	10		10
Gas supply pipe		3	x	1.5		1.5
In-ground water tank		15	x	4		3
Stormwater drain		6	x	3		2
RECREATION AREAS						
Children's grassed playground		6	x	3		2
In-ground swimming pool		6	x	3		2
SURFACE WATERS UP-SLOPE OF						
Dam, lake or reservoir (potable water supply)		300	x	150		150
Waterways (potable water supply)		100	x	100		50
Waterways, wetlands (continuous or ephemeral, non-potable); estuaries, ocean beach at high-tide mark; dams, lakes or reservoirs (stock & domestic, non-potable)		60	x	30		30
GROUNDWATER BORES						
Category 1 & 2a soils		NA		50		20
Category 2b – 6 soils		20	x	20		20
WATERTABLE						
Vertical depth from base of trench to highest seasonal water table		1.5	x	1.5		1.5
			x			
Vertical depth from irrigation pipes to highest seasonal water table		NA	x	1.5		1.5
			x			

*X indicates compliance can be achieved

SECTION TWO

MAV TABLES

Table 1: Key Site Features		
Feature	**Explanation**	**Assessment Process**
Aspect	The aspect or the direction that a slope is facing influences solar exposure.	North aspect Excellent solar and wind exposure
Climate	Seasonal rainfall, evaporation and temperature patterns influence potential evapotranspiration in land application areas.	Incorporated into water balance spread sheet/s and LAA sizing.
Erosion and Landslip	Unstable areas (steep, unvegetated, dispersive soils etc.) are usually unsuitable for LAAs without mitigation.	No.
Fill (imported)	Capacity to assimilate effluent depends on the physical and chemical characteristics of the imported fill material(s).	No fill.
Flooding	Requirements for siting onsite wastewater infrastructure (including LAAs) away from areas subject to flooding can vary between Councils.	No, LAA not in inundation zone.
Ground-water	Adequate depth of soil to protect groundwater resources largely depends on soil type and climate.	Not noted in boreholes VVG indicates at 20 - 50m
LandSuitability	An LCA is used to determine which land is suitable and unsuitable for LAAs.	All land, except within buffer zones, suitable.
Landform	Landform shape and the position of LAAs on slopes influence drainage and runoff characteristics both onto any potential LAAs as well as downslope of them (i.e. will runoff be evenly shed, or concentrated or dispersed flows?).	See contour map attached Landscape with north aspect for LAA. Broad run-off

Feature	Explanation	Assessment Process
Rock Outcrops	Rock outcrops displace soil horizons and therefore can limit the assimilative capacity of LAAs for effluent. Outcrops can indicate shallow bedrock. Some rocks are strongly fissured and permeable and others are not.	No Rock
Setback Distances	Determining the most appropriate position for LAAs should be prioritised over placement of building areas.	See table from AS1547;2012 All compliant
Site Drainage	LAAs should be located in areas of good surface and subsurface (soil) drainage.	Good drainage, slight slope on land allowing slow run-off but no pooling.
Stormwater Run-on and Runoff	LAAs should not be located in areas with high run-on, without mitigation such as upslope diversion structures. Downslope runoff diversion may be useful.	Due to broad hillside, soil type and extensive vegetation and building envelope upslope from LAA, no concentrated run-on.
Slope	Land application of effluent becomes increasingly constrained with increasing slope gradient, increasing the chances of effluent runoff or subsurface seepage.	Slope of LAA land generally around 5.0%
Surface Waters	Whether the setback distances specified in the Code can be achieved from LAAs.	Adequate setback from surface water/inundation zones.
Vegetation	Good vegetation cover is important to prevent erosion as well as for uptake of water and nutrients from effluent.	Grasses.

Table 2: Description of Key Chemical and Physical Soil Features		
Feature	**Explanation**	**Assessment Process**
Cation Exchange Capacity	Influences the ability of the soil to hold and exchange cations; a major controlling agent for soil structural stability, nutrient availability for plants and the soil's reaction to fertilisers and other ameliorants (refer to Hazelton & Murphy, 2007).	4.53(+)/kg Low level, no constraint
Colour and Mottling	Gleyed soils indicate permanent saturation (permanent watertable), while orange, yellow and red mottles indicate seasonal saturation with intermittent periods of drying (perched or seasonal watertable).	No mottling noted
Electrical Conductivity **(EC)**	EC test result infers the salinity of the soil and its potential impact on plant growth on the LAA. Refer to Hazelton & Murphy (2007) for interpretation of EC test results. Application of effluent increases salt content of soils over time.	0.05dS/m <0.2 dS/m No constraint Very low level of soil salinity.

Feature	Explanation	Assessment Process
Emerson Aggregate Class	EAC results infer dispersibility (as ped slaking, soil dispersion or both). LAAs should not be installed in soils with moderate or high dispersibility, without adequate mitigation (e.g. addition of gypsum, use of irrigation).	3 Slightly dispersive probably due to moderate levels of Al. Minor constraint overall as the pH is close to optimum range.
Permeability and Design Loading Rate	The rate at which water moves through the soil reflects the soil's permeability and determines the rate at which effluent is applied to land in litres per square metre per day (mm per day). The application rate for each type of land dispersal and recycling system is listed in Table 9 in the Code. Whilst the loading rate for LAA design is based on the permeability, it is less than the true permeability.	Adopted DIR, 5. Based upon shire advised soil cat.
pH	Acid soils (pH <5) or alkaline soils (pH >8) may constrain plant growth and should be ameliorated by use of chemical additives (e.g. lime for acidity).	5.6 Optimum range of 5.5-7.5 No constraint
Rock Fragments	Coarse rock fragments displace soil volume and therefore can limit assimilative capacity of soils.	No
Sodicity **[Exchangeable Sodium Percentage (ESP)]**	The percentage of sodium compounds on cation exchange sites on soil particles. ESP >6% may cause damage to the soil structure. Refer to Hazelton & Murphy (2007). Effluent and greywater contain sodium.	4.1% < 6% No constraint.
Sodium Absorption Ratio (SAR)	The ratio of sodium to calcium and magnesium (beneficial elements) in the soil solution, with higher ratios potentially damaging to plants and soils.	20:1 High ratio of beneficial elements.

Feature	Explanation	Assessment Process
Soil Depth	Deeper soils generally have a greater assimilative capacity for effluent (depending on soil type).	>1.8m No constraint
Soil Texture	Soil textures are categorised as 1. Gravels and Sands 2. Sandy Loams 3. Loams 4. Clay Loams 5. Light Clays, or 6. Medium to Heavy Clays (AS/NZS1547:2012).	6 Medium to heavy clay advised by council Major constraint, mitigated by extensive LAA
Watertable (depth to)	The required soil depth to protect groundwater depends on soil type; high permeability soils generally require a greater separation distance (soil depth).	+20m No constraint

Comment;

Analysis indicates major constraint in Emerson Class of 3, mitigated by installation of disposal infrastructure on contour.

Table 5: Risk Assessment of Site Characteristics

Characteristic	Level of Constraint			Assessed Level of Constraint for Site
	Nil or Minor	Moderate	Major	
Aspect (affects solar radiation received)	North / North-East / North-West	East / West / South-East / South-West	South	NIL
Climate (difference between annual rainfall and pan evaporation)	Excess of evaporation over rainfall in the wettest months	Rainfall approximates to evaporation	Excess of rainfall over evaporation in the wettest months	**Major**
Erosion [1] (or potential for erosion)	Nil or minor	Moderate	Severe	NIL
Exposure to sun and wind	Full sun and/or high wind or minimal shading	Dappled light	Limited patches of light and little wind to heavily shaded all day	NIL
Fill [2] (imported)	No fill or minimal fill, or fill is good quality topsoil	Moderate coverage and fill is good quality	Extensive poor quality fill and variable quality fill	NIL
Flood frequency (ARI) [3]	Less than 1 in 100 years	Between 100 and 20 years	More than 1 in 20 years	NIL
Groundwater bores [4]	No bores onsite or on neighbouring properties	Setback distance from bore complies with requirements in EPA Code of Practice 891.3 (as amended)	Setback distance from bore does not comply with requirements in EPA Code of Practice 891.3 (as amended)	NIL

Characteristic	Level of Constraint		Assessed Level of Constraint for Site
	Nil or Minor	Major	
Land area available for LAA	Exceeds LAA and duplicate LAA and buffer distance requirements	Meets LAA and duplicate LAA and buffer distance requirements	Insufficient area for LAA	NIL
Landslip (or landslip potential) [5]	Nil	Minor to moderate	High or Severe	NIL
Rock outcrops (% of surface)	<10%	10-20%	>20%	NIL
Slope Form (affects water shedding ability)	Convex or divergent side-slopes	Straight side-slopes	Concave or convergent side-slopes	NIL
Slope gradient [6] (%)				
(a) for absorption trenches and beds	<6%	6-15%	>15%	**Moderate**
(b) for surface irrigation	<6%	6-10%	>10%	
(c) for subsurface irrigation	<10%	10-30%	>30%	NIL
Soil Drainage [7] (qualitative)	No visible signs or likelihood of dampness, even in wet season	Some signs or likelihood of dampness	Wet soil, moisture-loving plants, standing water in pit; water ponding on surface, soil pit fills with water	NIL

Characteristic	Level of Constraint			Assessed Level of Constraint for Site
	Nil or Minor	Moderate	Major	
Stormwater run-on	Low likelihood of stormwater run-on		High likelihood of inundation by stormwater run-on	MINOR
Surface waters - setback distance (m)[3]	Setback distance complies with requirements in EPA Code of Practice 891.3 (as amended)		Setback distance does not comply with requirements in EPA Code of Practice 891.3 (as amended)	MINOR
Vegetation coverage over the site	Plentiful vegetation with healthy growth and good potential for nutrient uptake	Limited variety of vegetation	Sparse vegetation or no vegetation	MINOR

Characteristic	Level of Constraint			Assessed Level of Constraint for Site
	Nil or Minor	Moderate	Major	
Soil Drainage [8] (Field Handbook definitions)	Rapidly drained. Water removed from soil rapidly in relation to supply, excess water flows downward rapidly. No horizon remains wet for more than a few hours after addition	Well drained. Water removed from the soil readily, excess flows downward. Some horizons may remain wet for several days after addition	Moderately well drained. Water removed somewhat slowly in relation to supply, some horizons may remain wet for a week or more after addition	Imperfectly drained. Water removed very slowly in relation to supply, seasonal ponding, all horizons wet for periods of several months, some mottling	Poorly/Very poorly drained. Water remains at or near the surface for most of the year, strong gleying. All horizons wet for several months	MINOR

Comment;

The above MAV tables indicates one Major, constraint, climate, mitigated by incorporating rainfall into LAA sizing. Slope gradient would be a minor constraint for trenches.

SECTION THREE

SITE MANAGEMENT PLAN

Attached

[X] Yes [ ] No

2020 ENGINEERING SOLUTIONS

2020 Engineering Solutions

1745 Colac–Forrest Road

COLAC VIC 3249

Ph: 0428 141 441 Fax: (03) 5233 4608

ABN 57 215 499 312 ACN 11 9460 865

www.2020es.com

PROPERTY MANAGEMENT PLAN

SITE: Lot 1, 190 Woodrowvale Rd.

DEVELOPER: V & R Monarco

REPORT NUMBER: ES19201

DATE: 25/09/2019

REPORTING TO: AS 1547:2012

On-site domestic wastewater management

EPA Publication 891.4 July 2016

Code of Practice Onsite Wastewater Management

Barwon Water / Wannon Water

CONTENTS

1 PREAMBLE

This Property Management Plan is intended for use by property owners in Barwon/Wannon Water drinking water supply catchments. It is written for occupancies with onsite wastewater treatment systems, but also applies to other developments where management of risk to downstream water quality is required.

This document must not be considered a definitive plan or control for all properties and wastewater systems. The landowner property management plan is drafted with consideration to planning permit requirements, EPA Publication 891.4 "Code of Practice Onsite Wastewater Management", the Land Capability Assessment, and AS1547:2012 "On-site domestic wastewater management".

The plan must be maintained by the landowner and amended when required. Any increased loading on the property or system failure requires the review of the existing Land Capability Assessment and Waste Water Management System. Any amendment to the plan must be submitted to Barwon/Wannon Water for endorsement.

The plan must be kept on site and be available for inspection by Council or other government agencies.

1.1 Property Owner Responsibilities

Property owners and occupiers are responsible for reducing risks to downstream water quality that originate from their property. This includes:

- ensuring pipework & wastewater systems don't leak;
- keeping wastewater systems well maintained & in good repair;
- appropriately managing herbicides, pesticides & other chemicals;
- minimising erosion & sediment movement;
- maintaining buffers of native vegetation around watercourses;
- compliance with Council and EPA requirements; and
- implementing this Property Management Plan.

2 EMERGENCY CONTACT NUMBERS

PROPERTY MANAGEMENT PLAN	
EMERGENCY OR ONSITE WASTEWATER MAINTENANCE CONTACT NUMBERS	
POLICE, AMBULANCE, FIRE	000
PLUMBER	To be advised
ELECTRICIAN	To be advised
COUNCIL ENVIRONMENTAL HEALTH OFFICER	Colac Otway Shire.
EPA	1300 372 842
SYSTEM SUPPLIER	COLAC CEMENT PRODUCTS 03 5231 5231
SYSTEM SERVICE AGENT	COLAC CEMENT PRODUCTS 03 5231 5231
SEPTIC PUMPOUT TANKER	RICHARDSON'S LIQUID WASTE 03 5234 6585
BARWON WATER	1300 656 007

If any of the following incidents, which could impact on downstream water quality, occur on site they should be reported to Barwon Water immediately:

Chemical spill Fuel spill Bushfire Landslip

3 SITE PLAN

Site plans drawn to scale (attached) show dimensions and include the following details:

- the site address, including lot number & street number;
- title boundaries;
- direction of north;
- location of groundwater bores on the site & adjacent properties;
- contour lines (at 1 - 10 m intervals), or direction of slope & slope in percent;
- location of dams & waterways onsite & within 100m of the property;
- drainage lines & springs;
- stormwater cut-off drains adjacent to land application area & treatment system;
- location of actual & proposed buildings, sheds, driveways, paths & paddocks;
- location of actual & proposed infrastructure, especially drains;
- location& dimensions of the wastewater treatment plan; and
- location& dimensions of the land application area.

The site plan must be amended when any of the above details change (including on issue of as-constructed drawings), and the amended plan must be provided to Barwon/Wannon Water.

4 DETAILS OF THE WASTEWATER TREATMENT SYSTEM

The plan requires the following details of the wastewater treatment system:

- manufacturer's manuals & spare parts list;
- as-installed drawings;
- copy of EPA Certificate of Approval;
- copy of Council wastewater system permit;
- description of the maintenance regime, to meet manufacturer's recommendations & the maintenance, monitoring & reporting requirements of the Council permit & the EPA certificate of approval; and
- in the case of a secondary treatment system, a copy of a current service contract with an accredited or experienced trained service technician to implement the maintenance regime.

All details relevant to the above will be available and submitted after issue of the permit as they are post developmental.

Sewage Treatment Plants (example only)

Envirosep SP2000 technology delivers low maintenance & operating costs

Through a continual research and development program, Envirosep have designed and manufactured the SP2000. A unit that meets and exceeds consumer demands of an efficient, low maintenance wastewater treatment system.

SP2000 Features and Benefits

Economical
The efficiency of an aerated wastewater treatment system is measured by the transfer of air to the micro-organisms used in the biological process to remove waste.

Quiet Operation
Smooth agitation to ensure there are no dead pockets where bio-solids can build up and timed aeration for minimal maintenance.

Easily Hidden
Below ground multiple light weight tank construction makes for easier access to your site and provides more options for layout where space is restricted.

Maintenance

Access service pit allows easier maintenance of system and large bio -solids storage tank reduces the frequency of bio-solids pump-outs.

Great for your garden
The efficient fine bubble aeration combined with a unique Biotube design enhances the treatment. This will provide enough recycled water to irrigate a small to medium lawn area.

Performance Guaranteed
Warranty is provided on all components from date of installation and two years on electrical components against defects in manufacture.

Approved by the EPA – CA 125/14
Commercial models are also available with additional bio-media, back-up air pumps and water pumps for heavy duty domestic and/or trade use applications.

Specifications

Capacity – Primary pre-treatment tank:	3,200 litres
Aeration chamber:	2,200 litres
Humus tank:	1,000 litres
Contact tank:	300 litres
Total capacity:	6,700 litres
Tank construction:	Concrete
Tank dimensions:	1750mm dia x 2300mm
Weight of tanks:	3 tonnes each
Weight of Pump Well	1.2 Tonnes

Recommended for:

- Commercial installations
- EPA Approved, up to 5000 Litre daily
- System upgrades
- Existing homes
- Extensions
- New homes

Warranty

The Envirosep SP 2000 is fully guaranteed against any defects in manufacture. Electrical components of the system are warranted against defects in manufacture for two years from date of installation**.**

Service and Repairs

For more information about Envirosep service and repairs please contact:

SSA – Septic Systems Australia

Postal Address:
P.O. Box 432,
Montrose, VIC, 3765
Australia

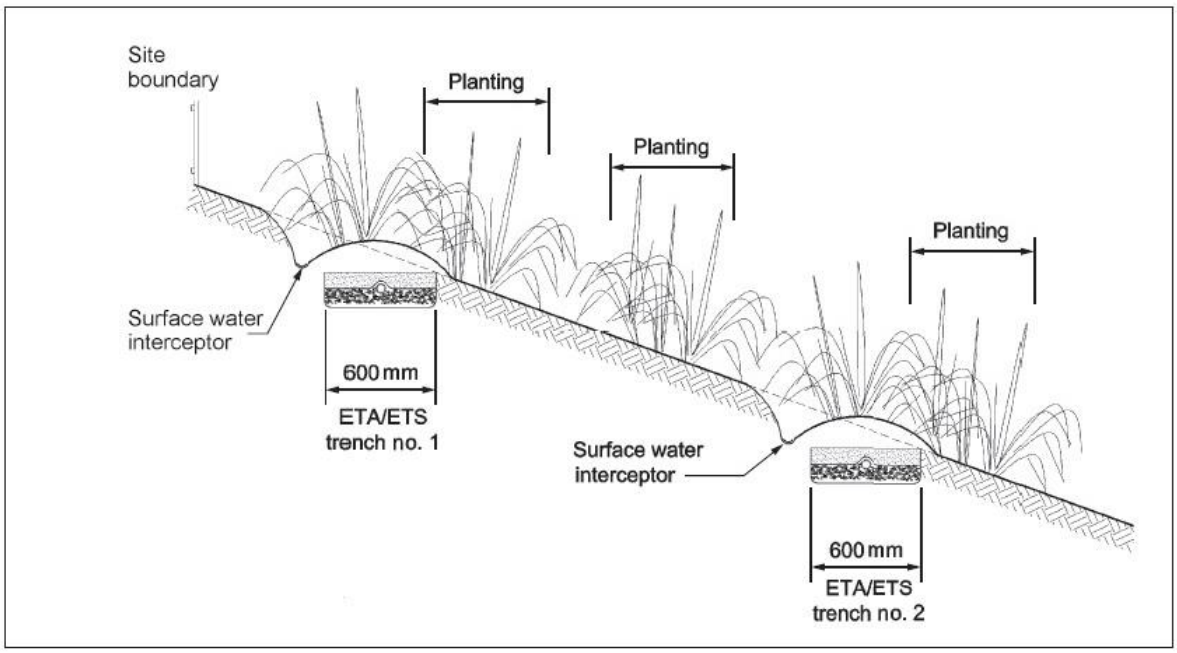
Phone: (03) 9509 6878
Fax: (03) 9509 6818
Mobile: 0438 118 445
Email:lmorley@septicsystemsaustralia.com.au

NOTE: Developer can supply treatment plant information post construction as most documentation relies upon approval to construct development and install a system. Included as example only. 2020Eng is independent and does not recommend particular systems.

5 DETAILS OF THE EFFLUENT DISPOSAL SYSTEM

NOTE: An LPED line can be used to dose load the ETA/ETS bed.

FIGURE L6 ETA/ETS BED DETAILS



NOTES:
1 An LPED line can be used to dose load the ETA/ETS trenches.
2 Each ETA/ETS trench is constructed to disperse effluent into downslope topsoil so that plantings can provide assistance by evapotranspiration.

The plan requires the following details of the effluent disposal system:

- manufacturer's manuals & spare parts list for components including pumps, valves, and filters;
- as-installed drawings; and
- description of the maintenance regime, to meet manufacturer's recommendations & the maintenance, monitoring & reporting requirements of Council & the EPA. At a minimum, visual inspection of the land application area is required whenever the treatment system is inspected.

All details relevant to the above will be available and submitted after issue of the permit as they are post developmental.

6 WASTEWATER TREATEMENT SYSTEM MAINTENANCE

The waste water treatment system, including its pipework shall:

- be inspected & maintained as per the maintenance regime;
- be protected from vehicle, farm machinery or livestock damage;
- have any grease trap inspected at least quarterly & cleaned out regularly;
- have any vents kept clear & access covers in working order;
- be visually checked for damage especially after being pumped out - damage is to be repaired; and
- be replaced if not operating adequately.

Inspections of treatment units are to be recorded on the operation and maintenance log as well as any defects and repairs undertaken.

7 LAND APPLICATION AREA (Effluent Disposal) OPERATION & MAINTENANCE

The following measures shall be implemented:

- the land application area & disposal system shall be inspected & maintained as per the maintenance regime;
- any evapotranspiration areas shall be designed to exclude vehicle, farm machinery, or stock access;
- surface water diversion drains shall be maintained upslope of & around the land application area & kept clean; and
- roof water drainage / hard stand drainage must be diverted away from the land application area.

Evapotranspiration and irrigation areas shall:

- have their grass mown & plants maintained to ensure these areas take up nutrients with maximum efficiency;
- be checked for wet spots, uneven grass colour 7 symptoms of emitter blockage (evidenced by under-irrigated dry areas or over-irrigated wet areas); and
- have blocked or damaged irrigation lines replaced.

Equipment shall be checked in the following manner:

- the manufacturer's instructions for maintaining & cleaning pumps, siphons & septic tank & outlet filters shall be followed;

- disc filters or filter screens on irrigation-dosing equipment shall be cleaned at least annually by rinsing back into the primary wastewater treatment unit; and

- irrigation lines shall be flushed at least annually to scour out any accumulated sediment.

Inspections are to be recorded on the Operations Log as well as any defects and repairs undertaken.

8 HOUSEHOLD MANAGEMENT OF WASTEWATER

The following measures should be implemented for optimum performance of system.

8.1 Sludge Build Up Reduction

- food waste including fats, grease & oils shall be disposed of in composting bin or worm farm
- no food waste disposal unit shall be installed
- sanitary napkins & hygiene products shall be disposed of in garbage

8.2 Encourage Bacteria

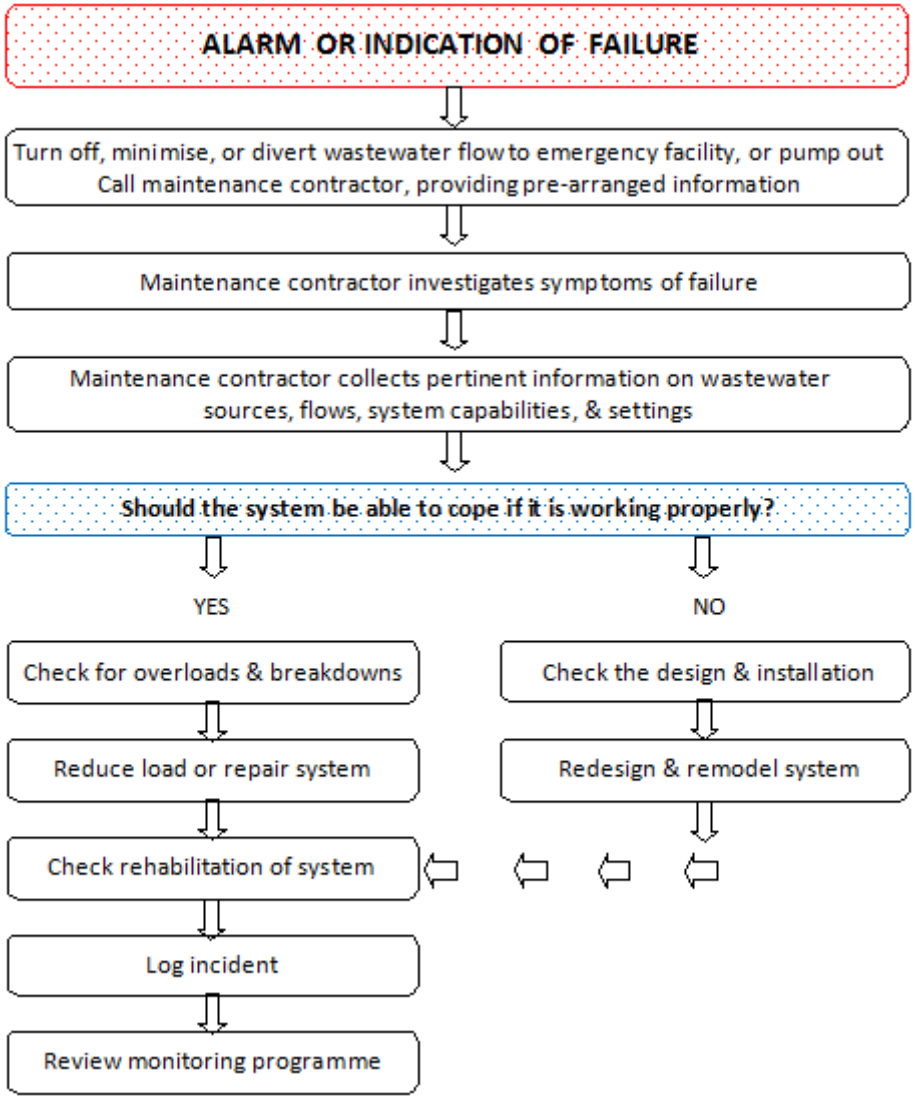
- use biodegradable soaps
- use low-phosphorus detergent
- use low-sodium detergent where soils are dispersive
- limit the use of cleaners such as bleaches, whiteners, nappy soakers & disinfectant, especially for toilet/shower cleaning
- do not put chemicals, thinners or paint down the drain or gulley trap

8.3 Reduce Effluent Volume Load

- install & use water conserving fittings ie. shower heads & appliances
- wash full loads only in dishwasher & washing machine
- avoid system overload ie. 1 washing machine load per day & run washing machine & dishwasher at different times
- do not install a spa bath

9 CONTINGENCY PLAN

The plan below shall be followed for a sudden failure of the wastewater system. A generalised flow chart of actions to be taken is:



(Figure 6.3 from AS1547:2012)

10 SITE OPERATIONS & MAINTENANCE LOG

A site operation and maintenance log shall be kept for any wastewater system. This will assist in the determination of recurring problems/trends. The maintenance log is to show when scheduled maintenance is due. Matters to be recorded in the log include:

- pump out records;
- service records;

- inspections; and
- records of all irregular operation & response actions.

Copies of programmed maintenance and pump out (desludging) works performed by maintenance contractors, as required by the Council (septic tank) permit, are to be forwarded to the Council Environmental Health Officer. A copy of the latest maintenance certificate is to be retained with this property management plan and recorded on the maintenance log.

11 IDENTIFICATION, RISK ASSESSMENT & CONTROLS FOR OTHER POTENTIAL THREATS TO DOWNSTREAM WATER QUALITY

The landholder is required to identify and assess the risk of other potential threats to downstream water quality, resulting from the development and use of the property ie.

- erosion risks; and
- risks from storage & application of chemicals.

Construction methods should be carried out in a manner which will minimise soil, sediment and nutrient movement from the property to water courses during development and use of the property. Potential sources of sediment movement to consider are:

- tracks& driveways;
- high traffic areas (vehicular, human, animal); and
- construction areas (occupancy, roads, fencing).

The design of stormwater run-off from the site should be described. Activities to encourage native vegetation retention and re-establishment within a 30 metre buffer zone along waterways, and to exclude stock from waterways, should be described. Activities to prevent the spread of noxious weeds should be described.

Chemicals such as herbicides and pesticides can be a risk to downstream water quality. The landowner should follow manufacturer's instructions and be familiar with the advice available from: http://www.depi.vic.gov.au/agriculture-and-food/farm-management/chemical-use. Procedures for chemical application and storage should be described in the Property Management Plan.

Businesses should contact Barwon/Wannon Water to determine if a water quality monitoring program immediately up and down stream of works that pose a significant threat to water quality is required. This may include:

- analytical monitoring of turbidity following large-scale activities that could potentially result in sediment movement (e.g. cultivation, harvesting); and

- monitoring of the active ingredients within herbicides and pesticides following intensive and broad scale herbicide/pesticide applications.

Appendix 1 Maintenance Log Template

Treatment System Inspections, Maintenance & Repairs			
Due Date (if scheduled)	Actual Date of Activity	Name of Inspector/ Contractor	Description of Work, Observations & Comments

Effluent Disposal Area Inspections, Maintenance & Repairs			
Due Date (if scheduled)	Actual Date of Activity	Name of Inspector/ Contractor	Description of Work, Observations & Comments

12 INSURANCE CERTIFICATE OF CURRENCY

Avaiable on request

13 DISCLAIMER

2020 Engineering Solutions Pty Ltd ("2020")
Geotechnical Report Limitations

The report to which this document has been attached assesses risks arising from land slope instability and proposes risk minimisation solutions. Absolute risk avoidance cannot be assured, principally due to assessment cost factors. It is therefore necessary to rely on instructions and make assumptions.

Changed Conditions

The report may be invalidated by changed conditions including:-

1. topography.
2. soil moisture content.
3. above or below ground structures.
4. soil and substrate profiles.
5. location of site boundaries.

Causes of Changed Conditions

Changed conditions may occur due to:-

1. extreme conditions such as flood, drought, cold, heat or fire.
2. human activities.
3. natural processes.
4. planning or design requirements.

Client to inform 2020 of any changes

2020 will endeavour to identify any reasonably foreseeable risk factors on the site which may cause changed conditions. Samples are taken at reasonable intervals bearing in mind the cost to the client. In the absence of specific instructions or patent conditions it will be assumed that conditions observed in samples are consistent across the site.

This document is provided to inform the client that their responsibility for risk is shared with 2020. The client will be responsible for inaccurate instructions or failure to instruct in relation to changed conditions, events that may cause changed conditions or when it becomes evident that assumptions may be invalid. Failure to do so could result in substantial and costly damage and disputes.

Interpretation

The report must be considered in its entirety. Each part of the report may be dependent on other parts for meaningful interpretation. The report should also only be used by the client. It may not be relied upon by any other person without first conferring with 2020. The report should only be acted upon and interpreted by persons qualified and competent in the activities contemplated in the report.

130433 - 13 05 31 Geotechnical Report Limitation

LAND CAPABILITY ASSESSMENT

Lot 4 190 Woodrowvale Road
Elliminyt, Victoria. 3250

2020Engineering Solutions Report ES19209
9/30/2019

Welcome to our new format LCA.

Section 1.

Contains relevant information is presented in a concise, logical, trail following from regional perspective to site specific characteristics. Sample water balance calculations are incorporated to inform the Land Application Area tables

Section 2.

Contains the balance of information required under the DWMP, MAV and EPA 891.4

Section 3.

Property Management Report.

REPORT CONTENTS

REPORT SUMMARY/EXECUTIVE SUMMARY

This Report is to Lot 4, being 4002m2 allotment, of a 4 Lot subdivision of the subject land. The first portion of the report will address issues associated with the total subject land while the balance of the Report will focus on issues specific to Lot 4.

As is a typical allowance for wastewater disposal areas a maximum of 20% or 800m2 will be the limiting factor.

Based upon the limiting factor a 1-3 bedroom dwelling, on town water, with water reduction fittings, should be the maximum permitted without detailed wastewater disposal analysis.

Colac Otway DWMP Tables indicate disposal basal trench area of 407m2 will be required this equates to 678m of trench, or 900m2 of drip irrigation or 294m2, base area of ETA trenches or 490 lineal meters, or 133m2 of base area of wick trench, 83 lineal metres, all scaled reduction due to modified wastewater production.

SECTION ONE

1.0 INTRODUCTION & BACKGROUND

PLANNING PROPERTY REPORT

VICTORIA State Government | Environment, Land, Water and Planning

From www.planning.vic.gov.au on 25 September 2019 11:33 AM

PROPERTY DETAILS

Address:	190 WOODROWVALE ROAD ELLIMINYT 3250
Lot and Plan Number:	Lot 29 PS322547
Standard Parcel Identifier (SPI):	29\PS322547
Local Government Area (Council):	COLAC OTWAY www.colacotway.vic.gov.au
Council Property Number:	10526
Planning Scheme:	Colac Otway planning-schemes.delwp.vic.gov.au/schemes/colacotway
Directory Reference:	VicRoads 92 B7

UTILITIES

Rural Water Corporation:	Southern Rural Water
Urban Water Corporation:	Barwon Water
Melbourne Water:	outside drainage boundary
Power Distributor:	POWERCOR

STATE ELECTORATES

Legislative Council:	WESTERN VICTORIA
Legislative Assembly:	POLWARTH

Planning Zones

LOW DENSITY RESIDENTIAL ZONE (LDRZ)

SCHEDULE TO THE LOW DENSITY RESIDENTIAL ZONE (LDRZ)

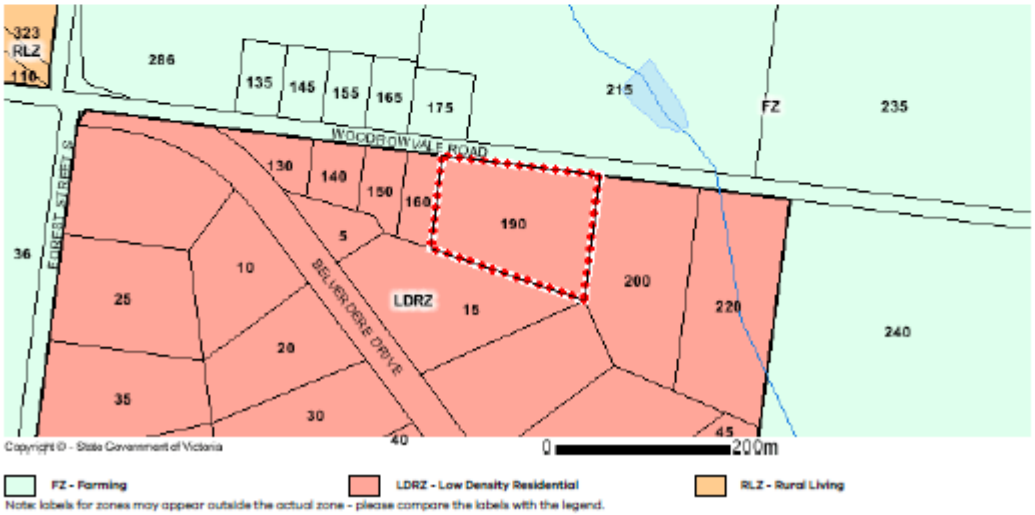


Fig 1.Subject Land Planning Details, (VicPlan)

Parent title comprises a total of 2.3151Ha.

Proposed Lot 4 comprises 4002m2, as detailed in the following sections.

1.1. Overlays

SLO VPO Designated Bushfire Prone Area.

No other overlays or Planning Controls are indicated on the proposed allotment or parent allotment.

1.1.1 Location

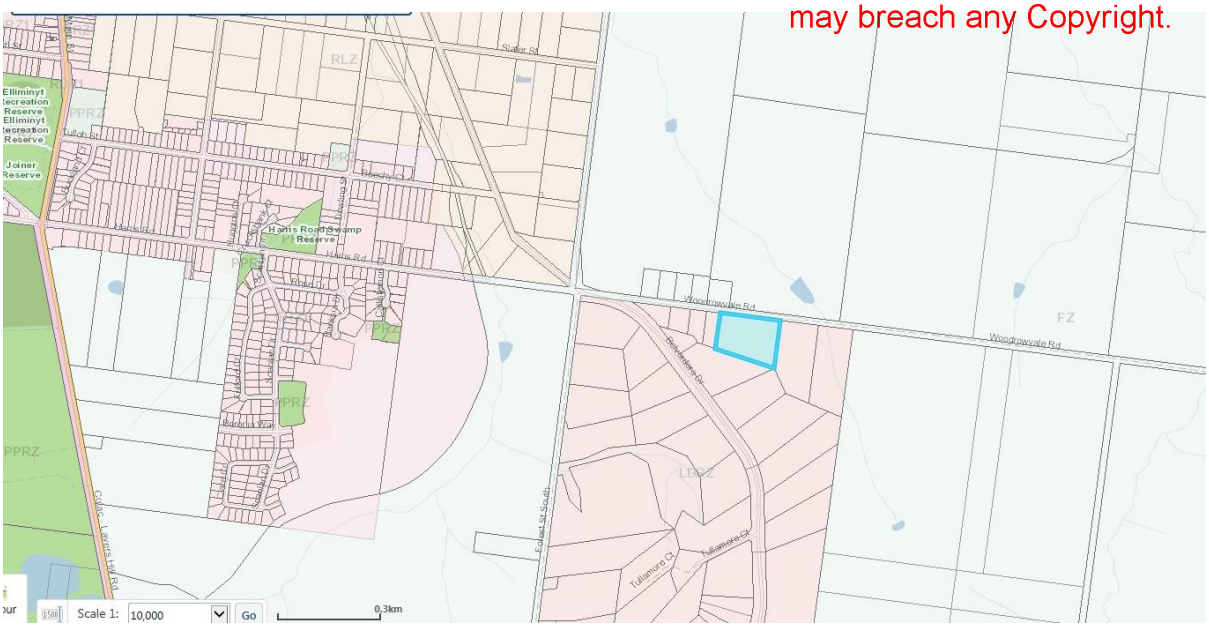


Fig 2.Parent title, Subject Land site location, (in blue outline). (VicPlan)

Subject land comprises a large, cleared, aprox 2.3Ha, semi rural allotment on the southern side of Woodrowvale Road.

Fig 3. Subject land, in red outline, and surrounding landuse, principally low density residential and open grazing land. (Google Maps)

1.2. Proposed Subdivision

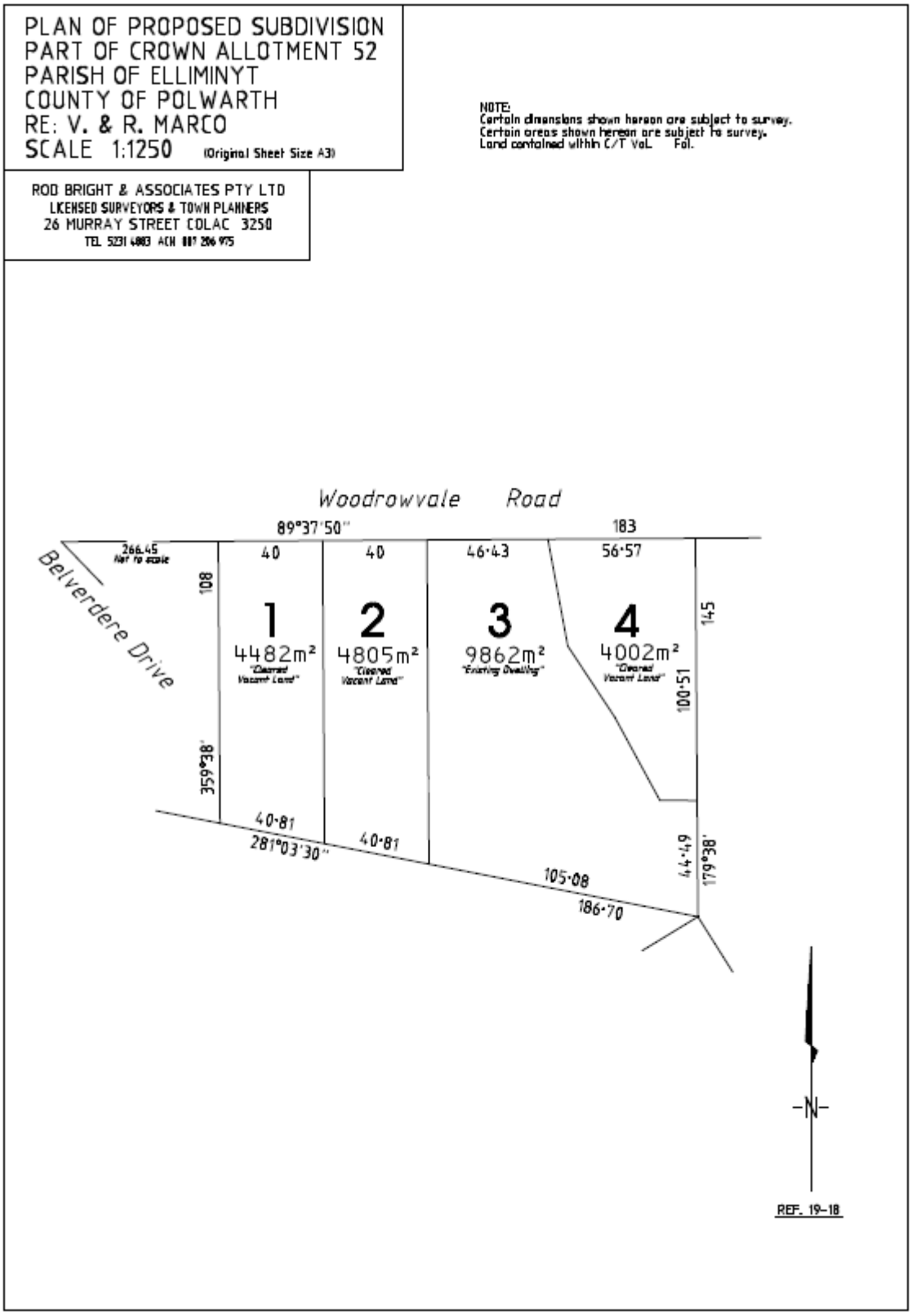


Fig. 4. Subject Land and proposed subdivision. (Rod Bright & Ass.)

2.0 DWMP Sensitivity Analysis Rating

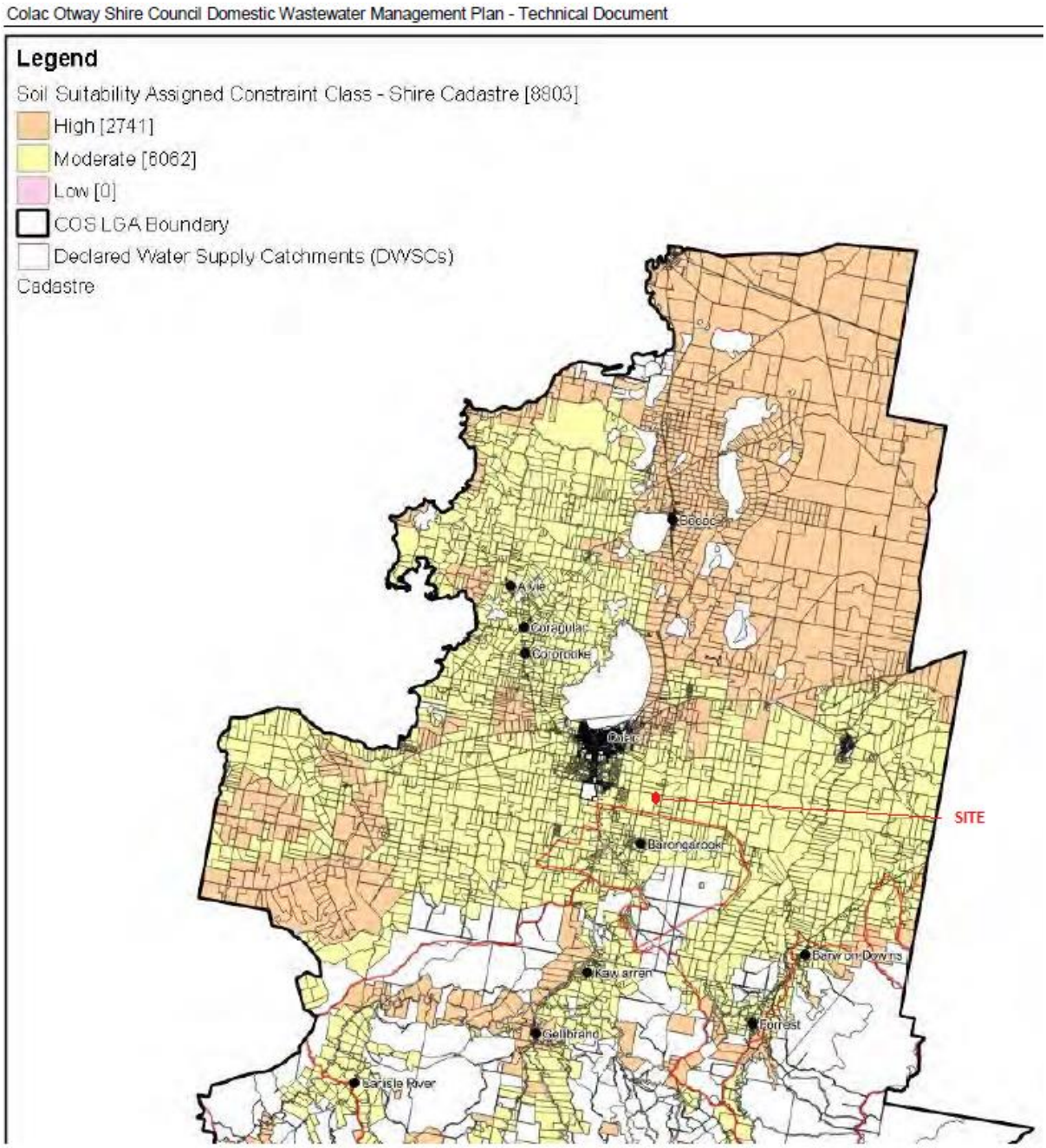


Fig 5. DWMP Sensitivity analysis rating

Sensitivity mapping indicates subject land rated moderate sensitivity.

3.0 DECLARED WATER CATCHMENT AREA

Site is not within DWCA (DWMP)

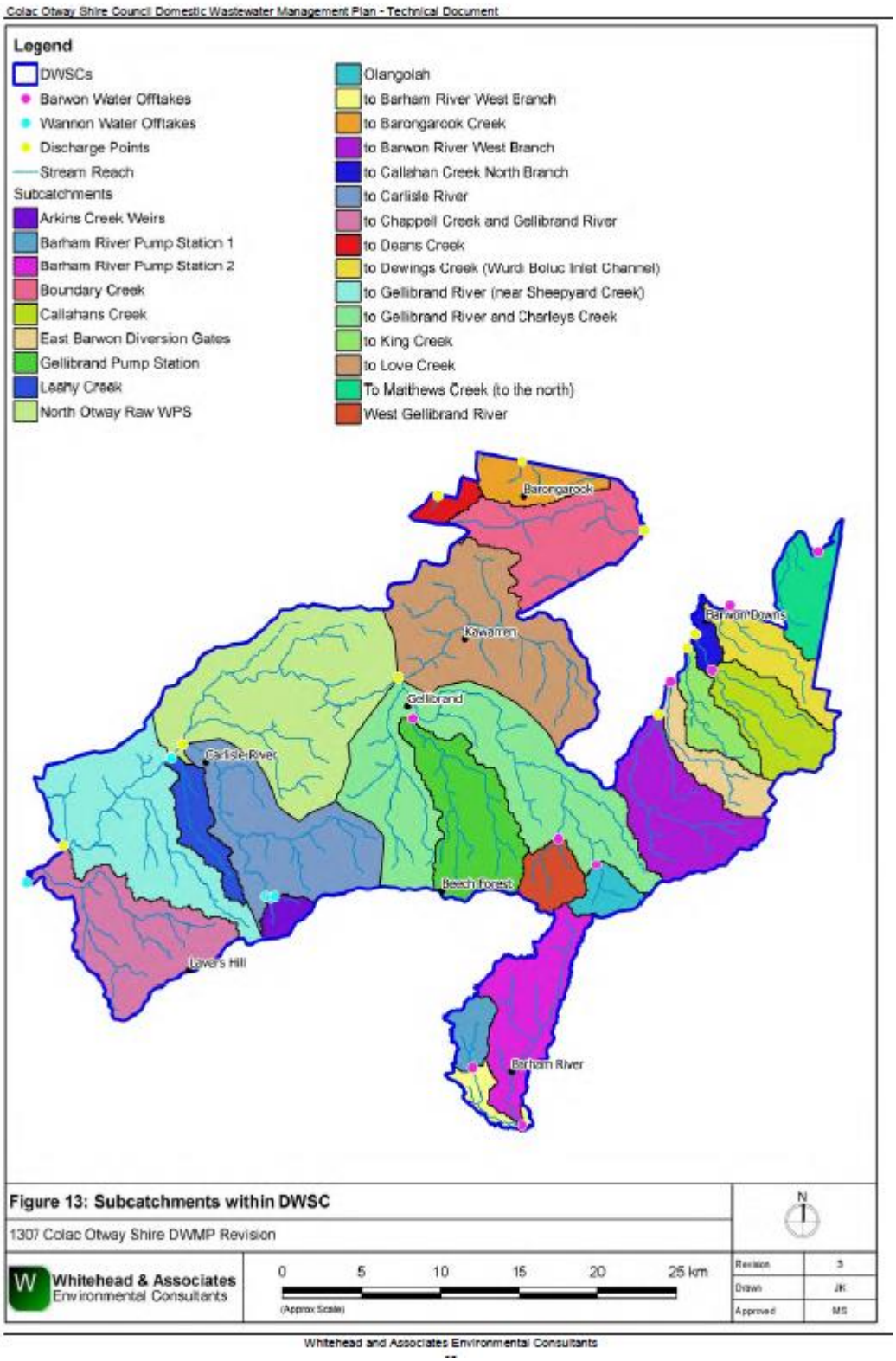


Fig 6. DWMP water supply mapping.

4.0 TOPOGRAPHY (VicPlan)

Fig 7.Topography and surface water/s. (VicPlan)

Comment

Generally the subject land comprises an elevated portion of a broad hillside and displays a north-eastern aspect with excellent solar and wind exposure.

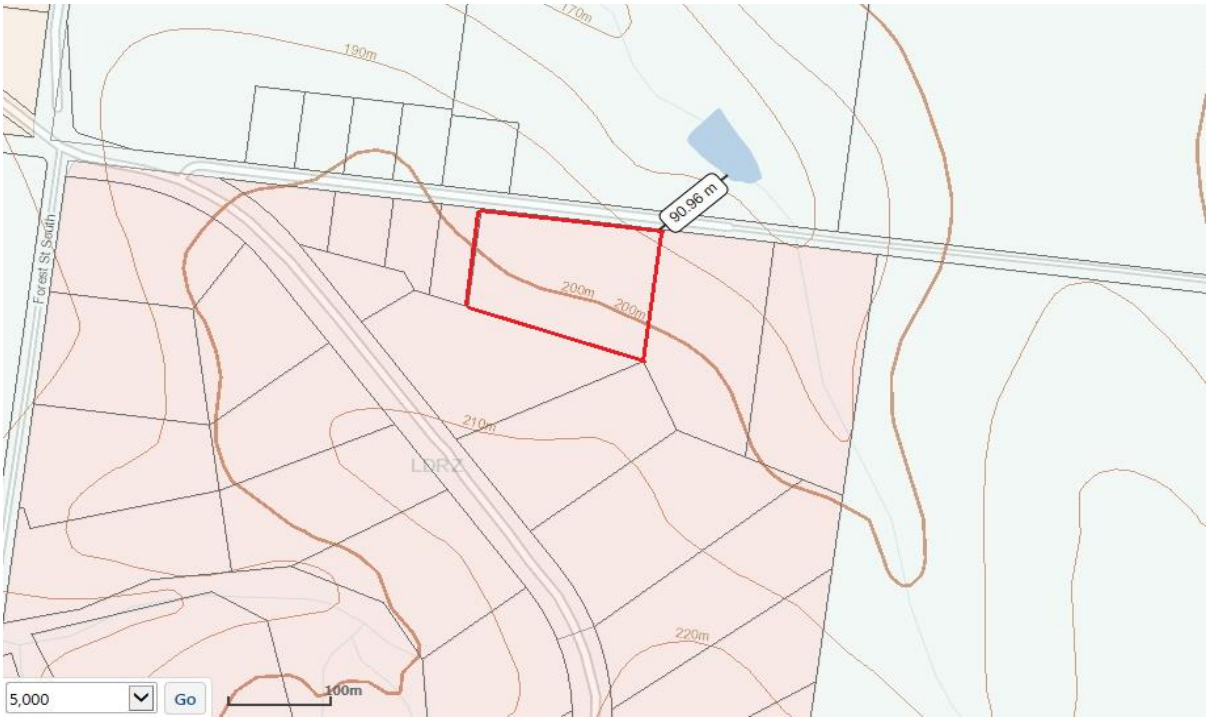


Fig 8. Nearest surface water to proposed Lot 1 is 90m.

5.0 GROUNDWATER BORES (VVG)

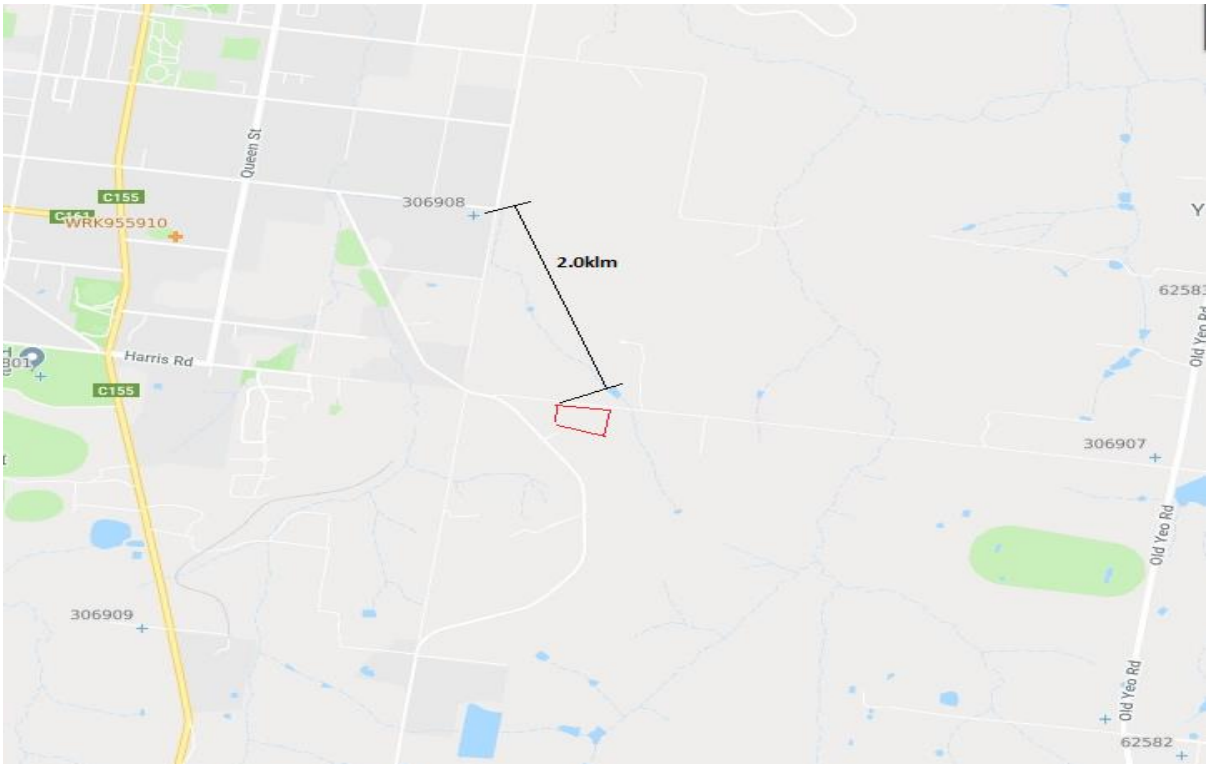


Fig 9.No bores near or within buffer zones of subject land, (in red), closest 2.0klm to NW.

5.1 Groundwater(VVG)

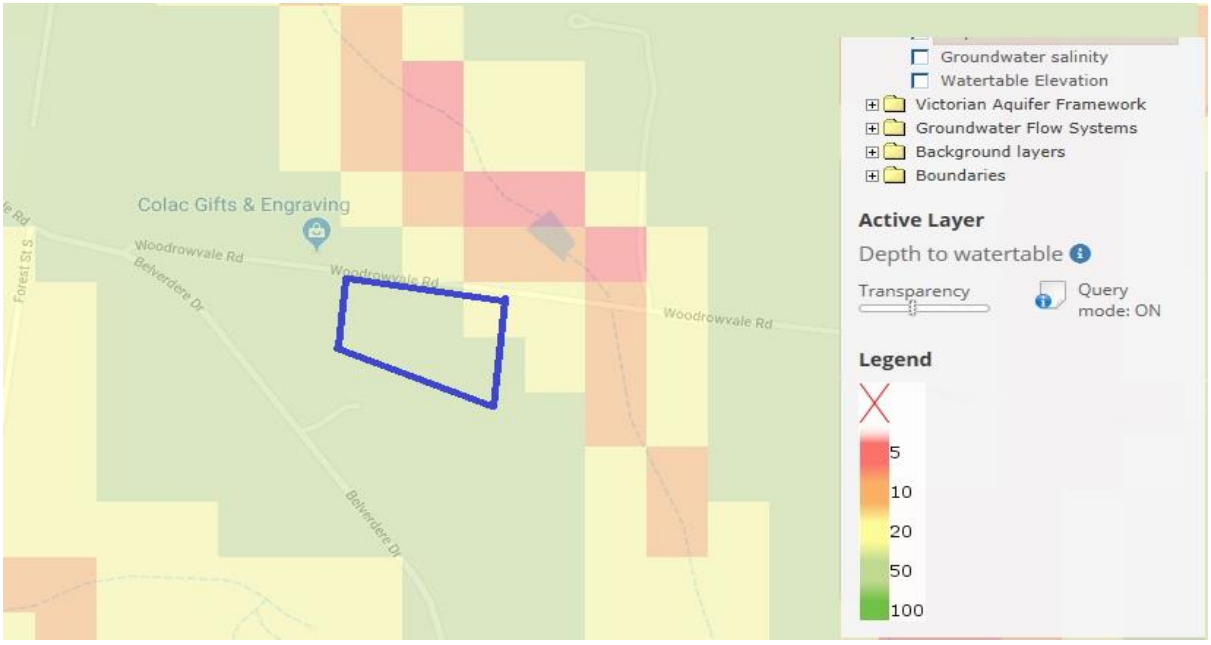


Fig. 10 Groundwater indicated at 20m-50m depth under subject land, about 20m under Lot 4.

7.0 SITE INSPECTION & FIELD INVESTIGATIONS

PROPOSAL

As per included Proposed Plan of Subdivision, Lot 4 comprises a 4002m2 allotment, of which 20% or 800m2 could be set aside for wastewater disposal. Back analysis from this number will inform the number of bedrooms that could be in a development on this site.

Fig 11. View to south across Lot 4 showing surface coverage of grasses.

Surface comprises an open, flat, cleared area of grassland part of an extensive grazing operation.

Site vegetation comprises grasses and weeds. No evidence of groundwater discharge or salinity was noted.

Proposed LAA site displays good to excellent solar and wind exposure.

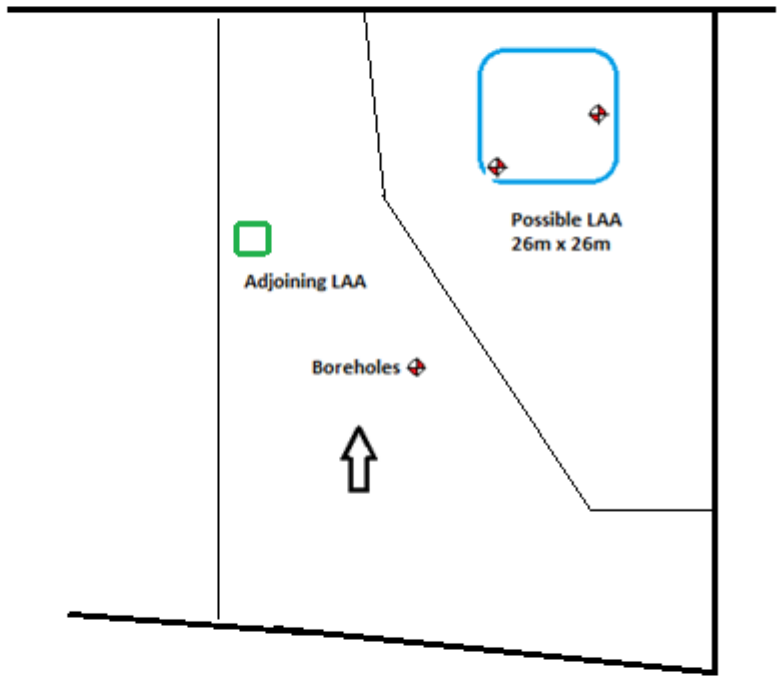
The existing dwelling, associated shedding and associated LAA will be entirely contained within proposed Lot 3.

System sizing tables for Barongarook will be used as specific tables for Elliminyt are not avaiable, Barongarook has a slightly higher rainfall than Elliminyt.

8.0 BORELOG

2020 ENGINEERING SOLUTIONS DATE 19Sep19
BORELOG REPORT ES SITE Woodrowvale Rd.

Depth in mm			
000	000		SAND SILTY Cat 2a
400	400		CLAY SANDY Cat 5b*
1800 END	1800 END		



*As advised by Health Dept.

9.0 SOIL ANALYSIS

Nutrient Advantage
Knowledge | Productivity | Responsibility

SOIL ANALYSIS REPORT

ASPAC

Report Number: 599246

2020 ENGINEERING SOLUTIONS L
DELAHUNTY
1745 COLAC FORREST RD
COLAC
VIC 3249

NATA
ACCREDITED FOR TECHNICAL COMPETENCE

Report Authorised
Paul Kennelly
Laboratory Manager
NATA Accredited Laboratory Number: 11958

Sample Number:	021908838	**Paddock Name:**	3 VALE	**Date Sampled:**	19-Sep-2019
Test Code:	2014-022	**Sample Name:**	AS1289 1 2 1 1998 6 5 2 6 5 3	**Date Received:**	24-Sep-2019
Purchase Order No:	AS1289	**Sample Depth:**	0 to 10 cm	**Date of Report:**	2-Oct-2019
Grower Name:	2020 ENGINEERING SOLUT				

Analyte	Result	Units	Method Code	Comments
Available Potassium ^	64	mg/kg	04-026-ICP8	Calculation
Emerson Class ^	7			Emerson, AS 1289.3.8.1
pH (1:5 CaCl2)	4.7		04-031-PH	1:5 soil/0.01M CaCl2
Potassium (Amm-acet.)	0.16	cmol(+)/kg	04-026-ICP8	
Calcium (Amm-acet.)	3.6	cmol(+)/kg	04-026-ICP8	
Magnesium (Amm-acet.)	1.7	cmol(+)/kg	04-026-ICP8	
Sodium (Amm-acet.)	0.22	cmol(+)/kg	04-026-ICP8	
Aluminium (KCl)	30	mg/kg	04-027-ICP9	
Aluminium (KCl)	0.33	cmol(+)/kg	04-027-ICP9	
Cation Exchange Capacity (Amm-acet.)	6.08	cmol(+)/kg	04-026-ICP8	Calculation
Sodium % of cations	3.7	%	04-026-ICP8	Calculation
Aluminium % of Cations	5.4	%	04-026-ICP8	Calculation
Calcium/Magnesium Ratio	2.1		04-026-ICP8	Calculation
pH (1:5 Water)	5.8		04-031-PH	1:5 soil/water
Electrical Conductivity (1:5 water)	0.05	dS/m	04-031-PH	1:5 soil/water

The results pertain only to the sample submitted.
This document shall not be reproduced except in full.
Analyses performed on soil dried at 40 °C and ground to 2mm or less.
^ NATA accreditation does not cover the performance of this service.
Accredited for compliance with ISO/IEC 17025 - Testing.
This results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national

Discussion

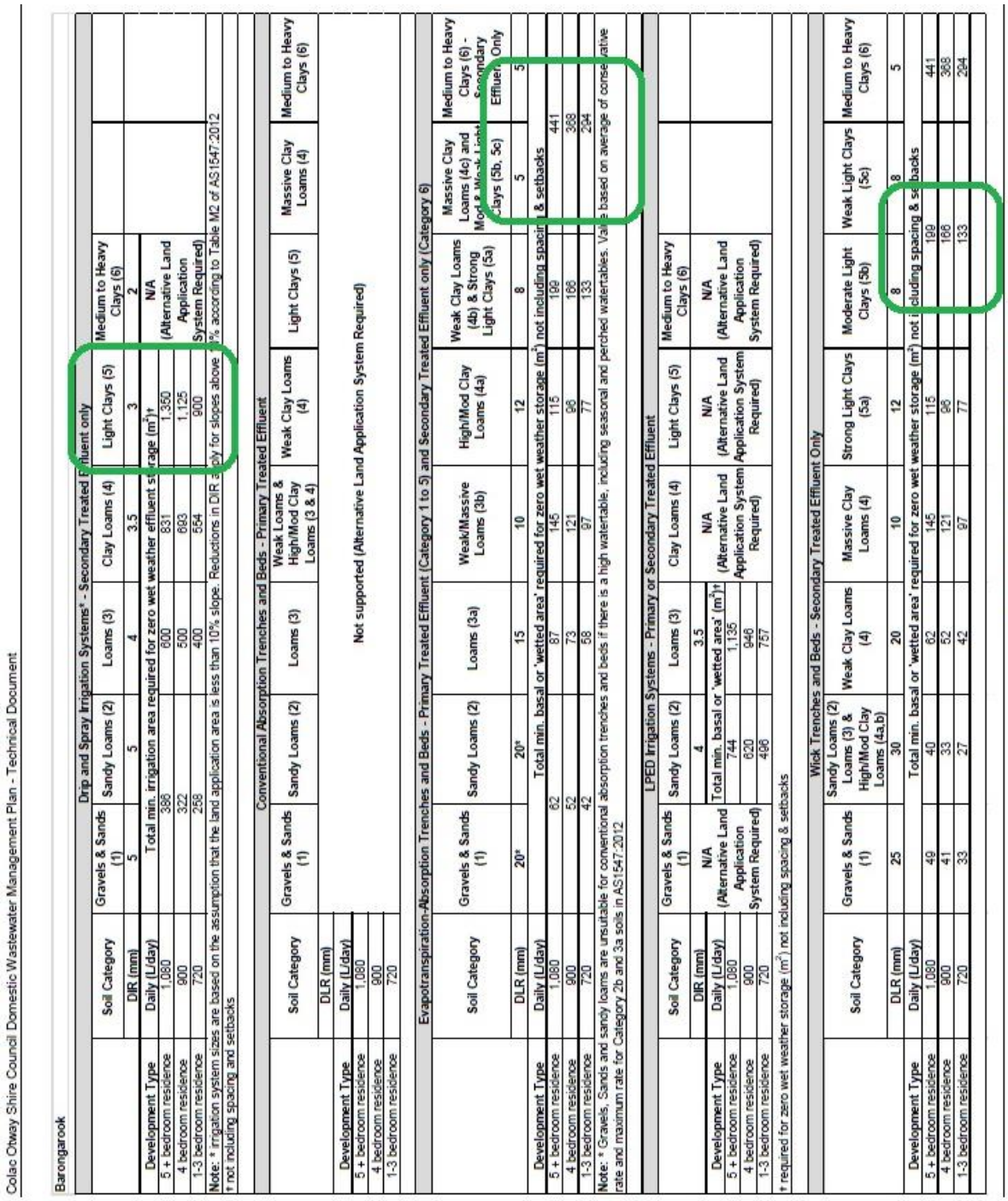
Results are typical for bush soils of this region and flag no major concerns or constraints. Emerson Class of 7 is a minor constraint.

10.0 SYSTEM SELECTION

10.1 DWMP Considerations

Given the proposed development is located in a developing residential area, this Report recommends installation of a secondary treatment system.

11.0 SIZING THE EFFLUENT DISPOSAL SYSTEM (DWMP)



Colac Otway Shire Council Domestic Wastewater Management Plan - Technical Document

Barongarook

Drip and Spray Irrigation Systems* - Secondary Treated Effluent only

	Soil Category	Gravels & Sands (1)	Sandy Loams (2)	Loams (3)	Clay Loams (4)	Light Clays (5)	Medium to Heavy Clays (6)		
	DIR (mm)	5	5	4	3.5	3	2		
Development Type	Daily (L/day)	Total min. irrigation area required for zero wet weather effluent storage (m^2)†					N/A (Alternative Land Application System Required)		
5 + bedroom residence	1,080	388	600	831	1,350				
4 bedroom residence	900	322	500	693	1,125				
1-3 bedroom residence	720	258	400	554	900				

Note: * Irrigation system sizes are based on the assumption that the land application area is less than 10% slope. Reductions in DIR apply for slopes above 10% according to Table M2 of AS1547:2012
† not including spacing and setbacks

Conventional Absorption Trenches and Beds - Primary Treated Effluent

	Soil Category	Gravels & Sands (1)	Sandy Loams (2)	Loams (3)	Weak Loams & High/Mod Clay Loams (3 & 4)	Weak Clay Loams (4)	Light Clays (5)	Massive Clay Loams (4)	Medium to Heavy Clays (6)
	DLR (mm)	Not supported (Alternative Land Application System Required)							
Development Type	Daily (L/day)								
5 + bedroom residence	1,080								
4 bedroom residence	900								
1-3 bedroom residence	720								

Evapotranspiration-Absorption Trenches and Beds - Primary Treated Effluent (Category 1 to 5) and Secondary Treated Effluent only (Category 6)

	Soil Category	Gravels & Sands (1)	Sandy Loams (2)	Loams (3a)	Weak/Massive Loams (3b)	High/Mod Clay Loams (4a)	Weak Clay Loams (4b) & Strong Light Clays (5a)	Massive Clay Loams (4c) and Mod & Weak Light Clays (5b, 5c)	Medium to Heavy Clays (6) - Secondary Effluent Only
	DLR (mm)	20*	20*	15	10	12	8	5	5
Development Type	Daily (L/day)	Total min. basal or 'wetted area' required for zero wet weather storage (m^2) not including spacing & setbacks							
5 + bedroom residence	1,080	62		87	145	115	199	441	
4 bedroom residence	900	52		73	121	96	166	368	
1-3 bedroom residence	720	42		58	97	77	133	294	

Note: * Gravels, Sands and sandy loams are unsuitable for conventional absorption trenches and beds if there is a high watertable, including seasonal and perched watertables. Value based on average of conservative rate and maximum rate for Category 2b and 3a soils in AS1547:2012

LPED Irrigation Systems - Primary or Secondary Treated Effluent

	Soil Category	Gravels & Sands (1)	Sandy Loams (2)	Loams (3)	Clay Loams (4)	Light Clays (5)	Medium to Heavy Clays (6)		
	DIR (mm)	N/A (Alternative Land Application System Required)	4	3.5	N/A (Alternative Land Application System Required)	N/A (Alternative Land Application System Required)	N/A (Alternative Land Application System Required)		
Development Type	Daily (L/day)		Total min. basal or 'wetted area' (m^2)†						
5 + bedroom residence	1,080		744	1,135					
4 bedroom residence	900		620	946					
1-3 bedroom residence	720		496	757					

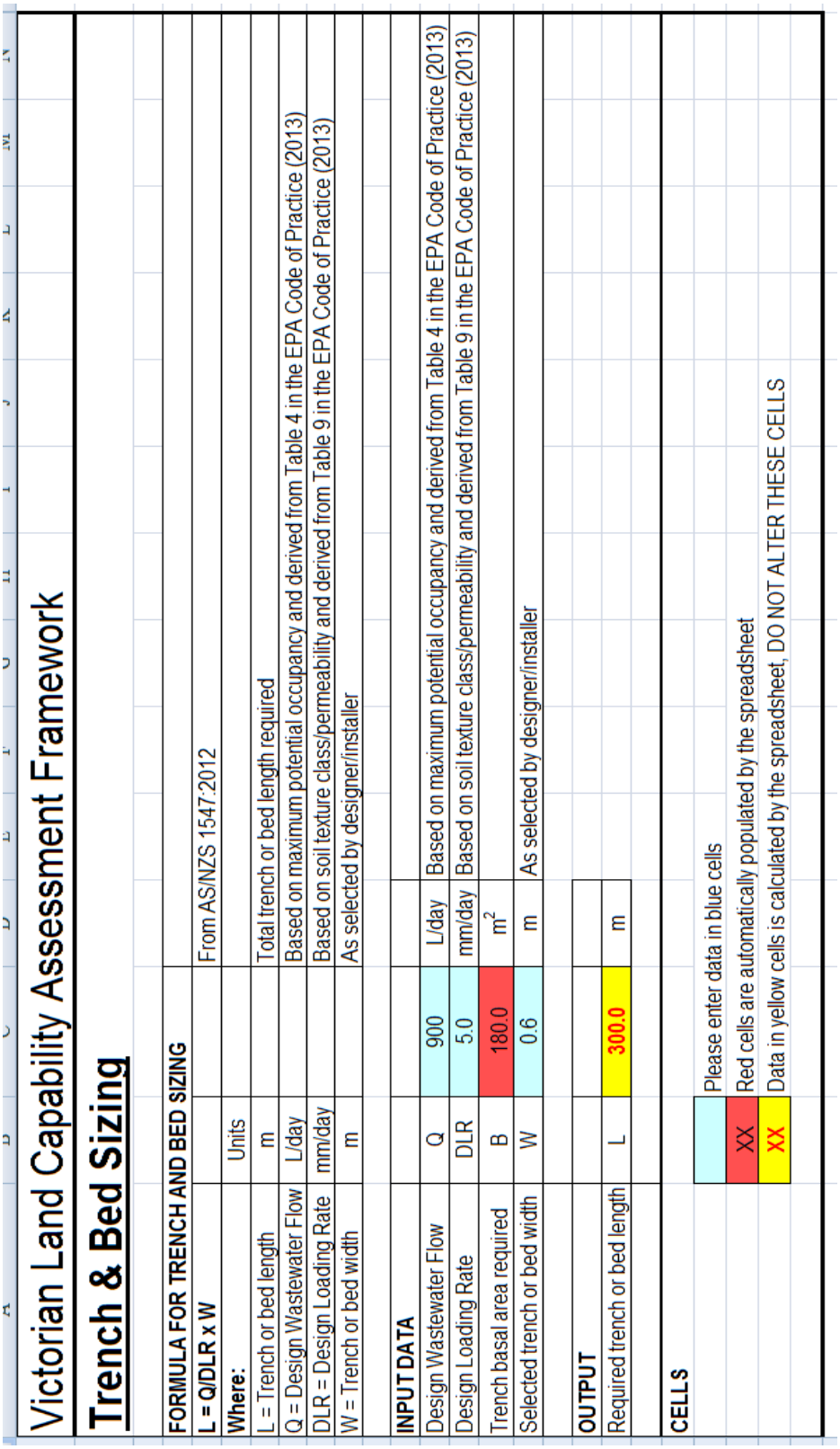
† required for zero wet weather storage (m^2) not including spacing & setbacks

Wick Trenches and Beds - Secondary Treated Effluent Only

	Soil Category	Gravels & Sands (1)	Sandy Loams (2) Loams (3) & High/Mod Clay Loams (4a,b)	Weak Clay Loams (4)	Massive Clay Loams (4)	Strong Light Clays (5a)	Moderate Light Clays (5b)	Weak Light Clays (5c)	Medium to Heavy Clays (6)
	DLR (mm)	25	30	20	10	12	8	8	5
Development Type	Daily (L/day)	Total min. basal or 'wetted area' required for zero wet weather storage (m^2) not including spacing & setbacks							
5 + bedroom residence	1,080	49	40	62	145	115	199	441	
4 bedroom residence	900	41	33	52	121	96	166	368	
1-3 bedroom residence	720	33	27	42	97	77	133	294	

Whitehead and Associates Environmental Consultants

11.1 SIZING THE EFFLUENT DISPOSAL SYSTEM (MAV)



Victorian Land Capability Assessment Framework

Trench & Bed Sizing

FORMULA FOR TRENCH AND BED SIZING				
L = Q/DLR x W			From AS/NZS 1547:2012	
Where:	Units			
L = Trench or bed length	m		Total trench or bed length required	
Q = Design Wastewater Flow	L/day		Based on maximum potential occupancy and derived from Table 4 in the EPA Code of Practice (2013)	
DLR = Design Loading Rate	mm/day		Based on soil texture class/permeability and derived from Table 9 in the EPA Code of Practice (2013)	
W = Trench or bed width	m		As selected by designer/installer	
INPUT DATA				
Design Wastewater Flow	Q	900	L/day	Based on maximum potential occupancy and derived from Table 4 in the EPA Code of Practice (2013)
Design Loading Rate	DLR	5.0	mm/day	Based on soil texture class/permeability and derived from Table 9 in the EPA Code of Practice (2013)
Trench basal area required	B	180.0	m^2	
Selected trench or bed width	W	0.6	m	As selected by designer/installer
OUTPUT				
Required trench or bed length	L	300.0	m	
CELLS				
		Please enter data in blue cells		
	XX	Red cells are automatically populated by the spreadsheet		
	XX	Data in yellow cells is calculated by the spreadsheet, DO NOT ALTER THESE CELLS		

Comment

Based solely upon shire soil mapping and a 1-3 bedroom dwelling, the proposed allotment will require 900m2 of drip irrigation or 294m2, base area of ETA trenches or 490 lineal meters, or 133m2 of base area of wick trench, 83 lineal metres.

This exceeds the set-aside area therefore any proposed development should incorporate water reduction fittings.

The LAA requirements grossly exceed the LAA on nearby #150 Woodrowvale Road, which comprises 80 lineal metres of conventional disposal trench, a system which appears to be operating safely.

MAV spread sheet indicates 300m of trench would be required for a 5 bedroom development.

Nitrogen balance is generally less than water balance in high rainfall areas and so is not a constraining factor.

12.0 Site Plan.

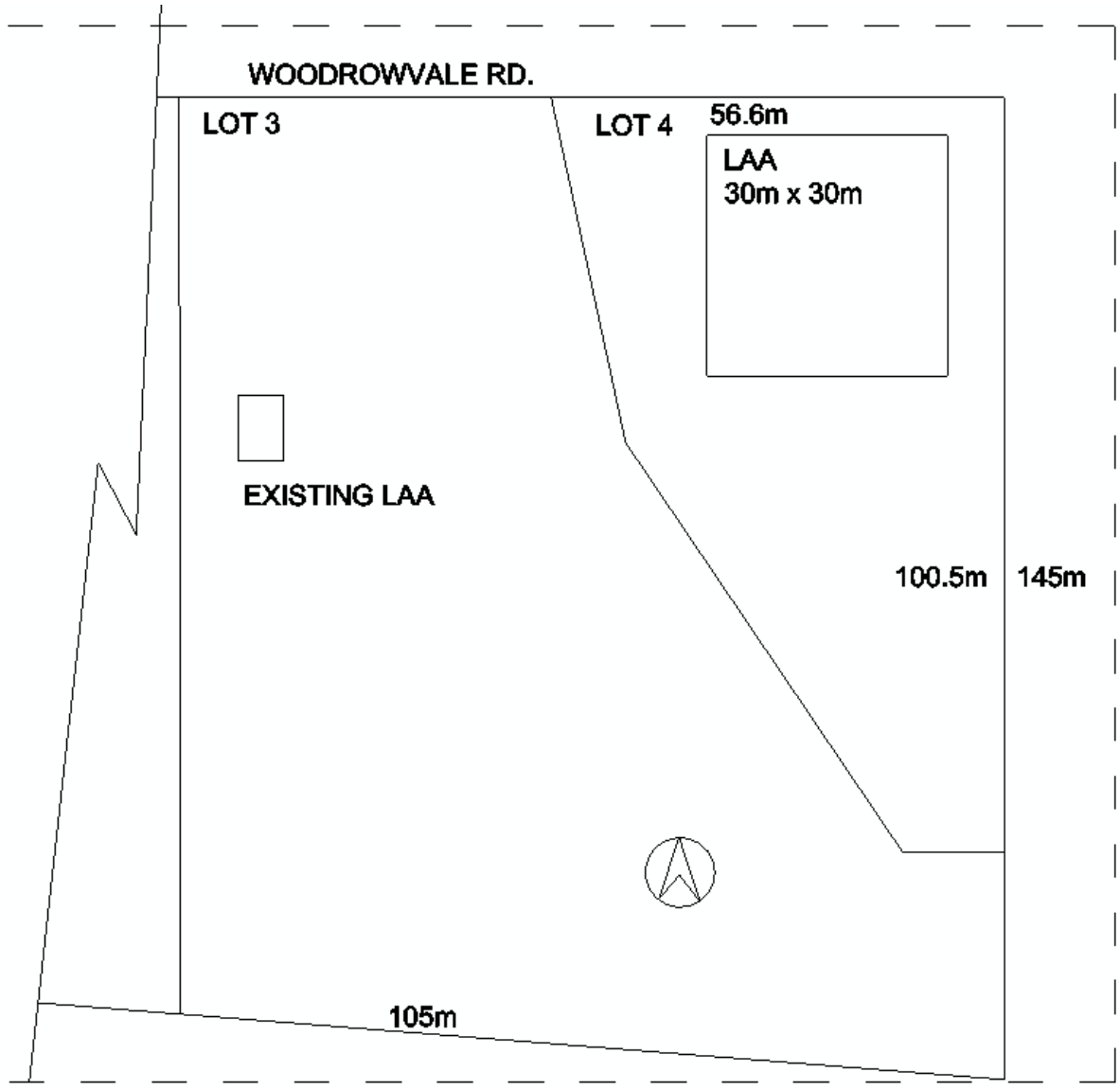


Fig 10. Site Plan, to scale (Author)

Final location and position of dwelling, treatment plant, shedding etc will be at direction of developer.

12.1 Applicable Setback Distances (from AS1547:2012)

Landscape Feature / Structure	* Setback Distances (m)					
	Primary Treated Effluent		Secondary Sewage &Grey water Effluent		Advanced Secondary Grey water Effluent	
BUILDING						
Wastewater field up-slope of building		6	x	3		3
Wastewater field down-slope of building		3	x	1.5		1.5
Wastewater field up-slope of cutting/escarpment		15	x	15		15
ALLOTMENT BOUNDARY						
Wastewater field up-slope of adjacent lot		6	x	3		1
Wastewater field down-slope of adjacent lot		3	x	1.5		0.5
SERVICES						
Water supply pipe		3	x	1.5		1.5
Wastewater field up-slope of potable supply channel		300	x	150		150
Wastewater field down-slope of potable supply channel		20	x	10		10
Gas supply pipe		3	x	1.5		1.5
In-ground water tank		15	x	4		3
Stormwater drain		6	x	3		2
RECREATION AREAS						
Children's grassed playground		6	x	3		2
In-ground swimming pool		6	x	3		2
SURFACE WATERS UP-SLOPE OF						
Dam, lake or reservoir (potable water supply)		300	x	150		150
Waterways (potable water supply)		100	x	100		50
Waterways, wetlands (continuous or ephemeral, non-potable); estuaries, ocean beach at high-tide mark; dams, lakes or reservoirs (stock & domestic, non-potable)		60	x	30		30
GROUNDWATER BORES						
Category 1 & 2a soils		NA		50		20
Category 2b – 6 soils		20	x	20		20
WATERTABLE						
Vertical depth from base of trench to highest seasonal water table		1.5	x x	1.5		1.5
Vertical depth from irrigation pipes to highest seasonal water table		NA	x x	1.5		1.5

*X indicates compliance can be achieved

SECTION TWO

MAV TABLES

Table 1: Key Site Features		
Feature	**Explanation**	**Assessment Process**
Aspect	The aspect or the direction that a slope is facing influences solar exposure.	North aspect Excellent solar and wind exposure
Climate	Seasonal rainfall, evaporation and temperature patterns influence potential evapotranspiration in land application areas.	Incorporated into water balance spread sheet/s and LAA sizing.
Erosion and Landslip	Unstable areas (steep, unvegetated, dispersive soils etc.) are usually unsuitable for LAAs without mitigation.	No.
Fill (imported)	Capacity to assimilate effluent depends on the physical and chemical characteristics of the imported fill material(s).	No fill.
Flooding	Requirements for siting onsite wastewater infrastructure (including LAAs) away from areas subject to flooding can vary between Councils.	No, LAA not in inundation zone.
Ground-water	Adequate depth of soil to protect groundwater resources largely depends on soil type and climate.	Not noted in boreholes VVG indicates at 20 - 50m
LandSuitability	An LCA is used to determine which land is suitable and unsuitable for LAAs.	All land, except within buffer zones, suitable.
Landform	Landform shape and the position of LAAs on slopes influence drainage and runoff characteristics both onto any potential LAAs as well as downslope of them (i.e. will runoff be evenly shed, or concentrated or dispersed flows?).	See contour map attached Landscape with north aspect for LAA. Broad run-off

Feature	Explanation	Assessment Process
Rock Outcrops	Rock outcrops displace soil horizons and therefore can limit the assimilative capacity of LAAs for effluent. Outcrops can indicate shallow bedrock. Some rocks are strongly fissured and permeable and others are not.	No Rock
Setback Distances	Determining the most appropriate position for LAAs should be prioritised over placement of building areas.	See table from AS1547;2012 All compliant
Site Drainage	LAAs should be located in areas of good surface and subsurface (soil) drainage.	Good drainage, slight slope on land allowing slow run-off but no pooling.
Stormwater Run-on and Runoff	LAAs should not be located in areas with high run-on, without mitigation such as upslope diversion structures. Downslope runoff diversion may be useful.	Due to broad hillside, soil type and extensive vegetation and building envelope upslope from LAA, no concentrated run-on.
Slope	Land application of effluent becomes increasingly constrained with increasing slope gradient, increasing the chances of effluent runoff or subsurface seepage.	Slope of LAA land generally around 5.0%
Surface Waters	Whether the setback distances specified in the Code can be achieved from LAAs.	Adequate setback from surface water/inundation zones.
Vegetation	Good vegetation cover is important to prevent erosion as well as for uptake of water and nutrients from effluent.	Grasses.

Table 2: Description of Key Chemical and Physical Soil Features		
Feature	**Explanation**	**Assessment Process**
Cation Exchange Capacity	Influences the ability of the soil to hold and exchange cations; a major controlling agent for soil structural stability, nutrient availability for plants and the soil's reaction to fertilisers and other ameliorants (refer to Hazelton & Murphy, 2007).	6.08cmol(+)/kg Low level, no constraint
Colour and Mottling	Gleyed soils indicate permanent saturation (permanent watertable), while orange, yellow and red mottles indicate seasonal saturation with intermittent periods of drying (perched or seasonal watertable).	No mottling noted
Electrical Conductivity **(EC)**	EC test result infers the salinity of the soil and its potential impact on plant growth on the LAA. Refer to Hazelton & Murphy (2007) for interpretation of EC test results. Application of effluent increases salt content of soils over time.	0.05dS/m <0.2 dS/m No constraint Very low level of soil salinity.

Feature	Explanation	Assessment Process
Emerson Aggregate Class	EAC results infer dispersibility (as ped slaking, soil dispersion or both). LAAs should not be installed in soils with moderate or high dispersibility, without adequate mitigation (e.g. addition of gypsum, use of irrigation).	7 Slightly dispersive probably due to moderate levels of Al. Minor constraint overall as the pH is close to optimum range.
Permeability and Design Loading Rate	The rate at which water moves through the soil reflects the soil's permeability and determines the rate at which effluent is applied to land in litres per square metre per day (mm per day). The application rate for each type of land dispersal and recycling system is listed in Table 9 in the Code. Whilst the loading rate for LAA design is based on the permeability, it is less than the true permeability.	Adopted DIR, 5. Based upon shire advised soil cat.
pH	Acid soils (pH <5) or alkaline soils (pH >8) may constrain plant growth and should be ameliorated by use of chemical additives (e.g. lime for acidity).	5.8 Optimum range of 5.5-7.5
Rock Fragments	Coarse rock fragments displace soil volume and therefore can limit assimilative capacity of soils.	No
Sodicity **[Exchangeable Sodium Percentage (ESP)]**	The percentage of sodium compounds on cation exchange sites on soil particles. ESP >6% may cause damage to the soil structure. Refer to Hazelton & Murphy (2007). Effluent and greywater contain sodium.	3.7% < 6% No constraint.
Sodium Absorption Ratio (SAR)	The ratio of sodium to calcium and magnesium (beneficial elements) in the soil solution, with higher ratios potentially damaging to plants and soils.	24:1 High ratio of beneficial elements.

Feature	Explanation	Assessment Process
Soil Depth	Deeper soils generally have a greater assimilative capacity for effluent (depending on soil type).	>1.8m No constraint
Soil Texture	Soil textures are categorised as 1. Gravels and Sands 2. Sandy Loams 3. Loams 4. Clay Loams 5. Light Clays, or 6. Medium to Heavy Clays (AS/NZS1547:2012).	6 Medium to heavy clay advised by council Major constraint, mitigated by extensive LAA
Watertable (depth to)	The required soil depth to protect groundwater depends on soil type; high permeability soils generally require a greater separation distance (soil depth).	+20m No constraint

Comment;

Minor constraint due to Emerson Class, mitigated by installation of disposal infrastructure on contour.

Table 5: Risk Assessment of Site Characteristics

Characteristic	Level of Constraint			Assessed Level of Constraint for Site
	Nil or Minor	Moderate	Major	
Aspect (affects solar radiation received)	North / North-East / North-West	East / West / South-East / South-West	South	NIL
Climate (difference between annual rainfall and pan evaporation)	Excess of evaporation over rainfall in the wettest months	Rainfall approximates to evaporation	Excess of rainfall over evaporation in the wettest months	**Major**
Erosion [1] (or potential for erosion)	Nil or minor	Moderate	Severe	NIL
Exposure to sun and wind	Full sun and/or high wind or minimal shading	Dappled light	Limited patches of light and little wind to heavily shaded all day	NIL
Fill [2] (imported)	No fill or minimal fill, or fill is good quality topsoil	Moderate coverage and fill is good quality	Extensive poor quality fill and variable quality fill	NIL
Flood frequency (ARI) [3]	Less than 1 in 100 years	Between 100 and 20 years	More than 1 in 20 years	NIL
Groundwater bores [4]	No bores onsite or on neighbouring properties	Setback distance from bore complies with requirements in EPA Code of Practice 891.3 (as amended)	Setback distance from bore does not comply with requirements in EPA Code of Practice 891.3 (as amended)	NIL

Characteristic	Level of Constraint			Assessed Level of Constraint for Site
	Nil or Minor		Major	
Land area available for LAA	Exceeds LAA and duplicate LAA and buffer distance requirements	Meets LAA and duplicate LAA and buffer distance requirements	Insufficient area for LAA	NIL
Landslip (or landslip potential) [5]	Nil	Minor to moderate	High or Severe	NIL
Rock outcrops (% of surface)	<10%	10-20%	>20%	NIL
Slope Form (affects water shedding ability)	Convex or divergent side-slopes	Straight side-slopes	Concave or convergent side-slopes	NIL
Slope gradient [6] **(%)**				
(a) for absorption trenches and beds	<6%	6-15%	>15%	**Moderate**
(b) for surface irrigation	<6%	6-10%	>10%	
(c) for subsurface irrigation	<10%	10-30%	>30%	NIL
Soil Drainage [7] **(qualitative)**	No visible signs or likelihood of dampness, even in wet season	Some signs or likelihood of dampness	Wet soil, moisture-loving plants, standing water in pit; water ponding on surface, soil pit fills with water	NIL

Characteristic	Level of Constraint			Assessed Level of Constraint for Site
	Nil or Minor	Moderate	Major	
Stormwater run-on	Low likelihood of stormwater run-on		High likelihood of inundation by stormwater run-on	MINOR
Surface waters - setback distance (m)[3]	Setback distance complies with requirements in EPA Code of Practice 891.3 (as amended)		Setback distance does not comply with requirements in EPA Code of Practice 891.3 (as amended)	MINOR
Vegetation coverage over the site	Plentiful vegetation with healthy growth and good potential for nutrient uptake	Limited variety of vegetation	Sparse vegetation or no vegetation	MINOR

Characteristic	Level of Constraint			Assessed Level of Constraint for Site
	Nil or Minor	Moderate	Major	
Soil Drainage [8] (Field Handbook definitions)	Rapidly drained. Water removed from soil rapidly in relation to supply, excess water flows downward rapidly. No horizon remains wet for more than a few hours after addition	Well drained. Water removed from the soil readily, excess flows downward. Some horizons may remain wet for several days after addition	Moderately well drained. Water removed somewhat slowly in relation to supply, some horizons may remain wet for a week or more after addition	Imperfectly drained. Water removed very slowly in relation to supply, seasonal ponding, all horizons wet for periods of several months, some mottling	Poorly/Very poorly drained. Water remains at or near the surface for most of the year, strong gleying. All horizons wet for several months	MINOR

Comment;

The above MAV tables indicates one Major and one Moderate constraint, climate and slope. Climate constraint mitigated by incorporating rainfall into LAA sizing. Slope is difficult to mitigate but suitable disposal infrastructure constructed along contours should be part of the installation process.

SECTION THREE

SITE MANAGEMENT PLAN

Attached

[X] Yes [ ] No

2020 ENGINEERING SOLUTIONS

2020 Engineering Solutions

1745 Colac–Forrest Road

COLAC VIC 3249

Ph: 0428 141 441 Fax: (03) 5233 4608

ABN 57 215 499 312 ACN 11 9460 865

www.2020es.com

PROPERTY MANAGEMENT PLAN

SITE: Lot 1, 190 Woodrowvale Rd.

DEVELOPER: V & R Monarco

REPORT NUMBER: ES19201

DATE: 25/09/2019

REPORTING TO: AS 1547:2012

On-site domestic wastewater management

EPA Publication 891.4 July 2016

Code of Practice Onsite Wastewater Management

Barwon Water / Wannon Water

CONTENTS

1 PREAMBLE

This Property Management Plan is intended for use by property ownersinBarwon/Wannon Water drinking water supply catchments. It is written for occupancies with onsite wastewater treatment systems, but also applies to other developments where management of risk to downstream water quality is required.

This document must not be considered a definitive plan or control for all properties and wastewater systems. The landowner property management plan is drafted with consideration to planning permit requirements, EPA Publication 891.4 “Code of Practice Onsite Wastewater Management”, the Land Capability Assessment, and AS1547:2012 “On-site domestic wastewater management”.

The plan must be maintained by the landowner and amended when required. Any increased loading on the property or system failure requires the review of the existing Land Capability Assessment and Waste Water Management System. Any amendment to the plan must be submitted to Barwon/Wannon Water for endorsement.

The plan must be kept on site and be available for inspection by Council or other government agencies.

1.1 Property Owner Responsibilities

Property owners and occupiers are responsible for reducing risks to downstream water quality that originate from their property. This includes:

- ensuring pipework & wastewater systems don’t leak;
- keeping wastewater systems well maintained & in good repair;
- appropriately managing herbicides, pesticides & other chemicals;
- minimising erosion & sediment movement;
- maintaining buffers of native vegetation around watercourses;
- compliance with Council and EPA requirements; and
- implementing this Property Management Plan.

2 EMERGENCY CONTACT NUMBERS

PROPERTY MANGEMENT PLAN	
EMERGENCY OR ONSITE WASTEWATER MAINTENANCE CONTACT NUMBERS	
POLICE, AMBULANCE, FIRE	000
PLUMBER	To be advised
ELECTRICIAN	To be advised
COUNCIL ENVIRONMENTAL HEALTH OFFICER	Colac Otway Shire.
EPA	1300 372 842
SYSTEM SUPPLIER	COLAC CEMENT PRODUCTS 03 5231 5231
SYSTEM SERVICE AGENT	COLAC CEMENT PRODUCTS 03 5231 5231
SEPTIC PUMPOUT TANKER	RICHARDSON'S LIQUID WASTE 03 5234 6585
BARWON WATER	1300 656 007

If any of the following incidents, which could impact on downstream water quality, occur on site they should be reported to Barwon Water immediately:

Chemical spill Fuel spill Bushfire Landslip

3 SITE PLAN

Site plans drawn to scale (attached) show dimensions and include the following details:

- the site address, including lot number & street number;
- title boundaries;
- direction of north;
- location of groundwater bores on the site & adjacent properties;
- contour lines (at 1 - 10 m intervals), or direction of slope & slope in percent;
- location of dams & waterways onsite & within 100m of the property;
- drainage lines & springs;
- stormwater cut-off drains adjacent to land application area & treatment system;
- location of actual & proposed buildings, sheds, driveways, paths & paddocks;
- location of actual & proposed infrastructure, especially drains;
- location& dimensions of the wastewater treatment plan; and
- location& dimensions of the land application area.

The site plan must be amended when any of the above details change (including on issue of as-constructed drawings), and the amended plan must be provided to Barwon/Wannon Water.

4 DETAILS OF THE WASTEWATER TREATMENT SYSTEM

The plan requires the following details of the wastewater treatment system:

- manufacturer's manuals & spare parts list;
- as-installed drawings;
- copy of EPA Certificate of Approval;
- copy of Council wastewater system permit;
- description of the maintenance regime, to meet manufacturer's recommendations & the maintenance, monitoring & reporting requirements of the Council permit & the EPA certificate of approval; and
- in the case of a secondary treatment system, a copy of a current service contract with an accredited or experienced trained service technician to implement the maintenance regime.

All details relevant to the above will be available and submitted after issue of the permit as they are post developmental.

Sewage Treatment Plants (example only)

Envirosep SP2000 technology delivers low maintenance & operating costs

Through a continual research and development program, Envirosep have designed and manufactured the SP2000. A unit that meets and exceeds consumer demands of an efficient, low maintenance wastewater treatment system.

SP2000 Features and Benefits

Economical
The efficiency of an aerated wastewater treatment system is measured by the transfer of air to the micro-organisms used in the biological process to remove waste.

Quiet Operation
Smooth agitation to ensure there are no dead pockets where bio-solids can build up and timed aeration for minimal maintenance.

Easily Hidden
Below ground multiple light weight tank construction makes for easier access to your site and provides more options for layout where space is restricted.

Maintenance

Access service pit allows easier maintenance of system and large bio -solids storage tank reduces the frequency of bio-solids pump-outs.

Great for your garden
The efficient fine bubble aeration combined with a unique Biotube design enhances the treatment. This will provide enough recycled water to irrigate a small to medium lawn area.

Performance Guaranteed
Warranty is provided on all components from date of installation and two years on electrical components against defects in manufacture.

Approved by the EPA – CA 125/14
Commercial models are also available with additional bio-media, back-up air pumps and water pumps for heavy duty domestic and/or trade use applications.

Specifications

Capacity – Primary pre-treatment tank:	3,200 litres
Aeration chamber:	2,200 litres
Humus tank:	1,000 litres
Contact tank:	300 litres
Total capacity:	6,700 litres
Tank construction:	Concrete
Tank dimensions:	1750mm dia x 2300mm
Weight of tanks:	3 tonnes each
Weight of Pump Well	1.2 Tonnes

Recommended for:

- Commercial installations
- EPA Approved, up to 5000 Litre daily
- System upgrades
- Existing homes
- Extensions
- New homes

Warranty

The Envirosep SP 2000 is fully guaranteed against any defects in manufacture. Electrical components of the system are warranted against defects in manufacture for two years from date of installation**.**

Service and Repairs

For more information about Envirosep service and repairs please contact:

SSA – Septic Systems Australia

Postal Address:
P.O. Box 432,
Montrose, VIC, 3765
Australia

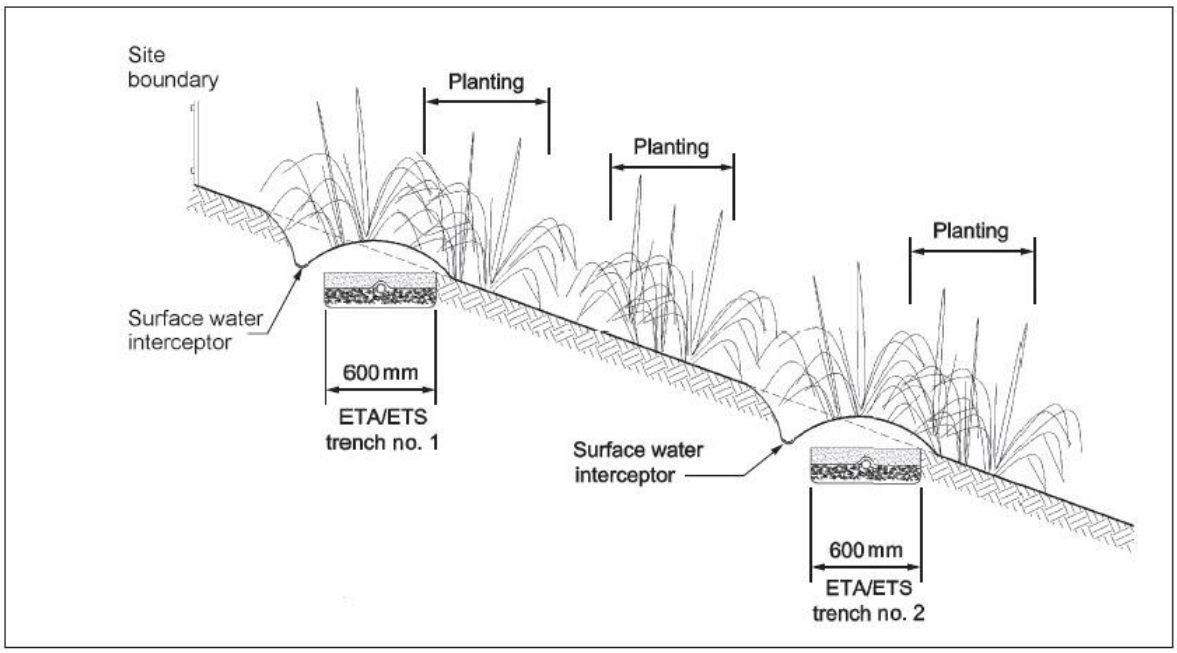
Phone: (03) 9509 6878
Fax: (03) 9509 6818
Mobile: 0438 118 445
Email:lmorley@septicsystemsaustralia.com.au

NOTE: Developer can supply treatment plant information post construction as most documentation relies upon approval to construct development and install a system. Included as example only. 2020Eng is independent and does not recommend particular systems.

5 DETAILS OF THE EFFLUENT DISPOSAL SYSTEM

NOTE: An LPED line can be used to dose load the ETA/ETS bed.

FIGURE L6 ETA/ETS BED DETAILS



NOTES:
1 An LPED line can be used to dose load the ETA/ETS trenches.
2 Each ETA/ETS trench is constructed to disperse effluent into downslope topsoil so that plantings can provide assistance by evapotranspiration.

The plan requires the following details of the effluent disposal system:

- manufacturer's manuals & spare parts list for components including pumps, valves, and filters;
- as-installed drawings; and
- description of the maintenance regime, to meet manufacturer's recommendations & the maintenance, monitoring & reporting requirements of Council & the EPA. At a minimum, visual inspection of the land application area is required whenever the treatment system is inspected.

All details relevant to the above will be available and submitted after issue of the permit as they are post developmental.

6 WASTEWATER TREATEMENT SYSTEM MAINTENANCE

The waste water treatment system, including its pipework shall:

- be inspected & maintained as per the maintenance regime;
- be protected from vehicle, farm machinery or livestock damage;
- have any grease trap inspected at least quarterly & cleaned out regularly;
- have any vents kept clear & access covers in working order;
- be visually checked for damage especially after being pumped out - damage is to be repaired; and
- be replaced if not operating adequately.

Inspections of treatment units are to be recorded on the operation and maintenance log as well as any defects and repairs undertaken.

7 LAND APPLICATION AREA (Effluent Disposal) OPERATION & MAINTENANCE

The following measures shall be implemented:

- the land application area & disposal system shall be inspected & maintained as per the maintenance regime;
- any evapotranspiration areas shall be designed to exclude vehicle, farm machinery, or stock access;
- surface water diversion drains shall be maintained upslope of & around the land application area & kept clean; and
- roof water drainage / hard stand drainage must be diverted away from the land application area.

Evapotranspiration and irrigation areas shall:

- have their grass mown & plants maintained to ensure these areas take up nutrients with maximum efficiency;
- be checked for wet spots, uneven grass colour 7 symptoms of emitter blockage (evidenced by under-irrigated dry areas or over-irrigated wet areas); and
- have blocked or damaged irrigation lines replaced.

Equipment shall be checked in the following manner:

- the manufacturer's instructions for maintaining & cleaning pumps, siphons & septic tank & outlet filters shall be followed;

- disc filters or filter screens on irrigation-dosing equipment shall be cleaned at least annually by rinsing back into the primary wastewater treatment unit; and

- irrigation lines shall be flushed at least annually to scour out any accumulated sediment.

Inspections are to be recorded on the Operations Log as well as any defects and repairs undertaken.

8 HOUSEHOLD MANAGEMENT OF WASTEWATER

The following measures should be implemented for optimum performance of system.

8.1 Sludge Build Up Reduction

- food waste including fats, grease & oils shall be disposed of in composting bin or worm farm
- no food waste disposal unit shall be installed
- sanitary napkins & hygiene products shall be disposed of in garbage

8.2 Encourage Bacteria

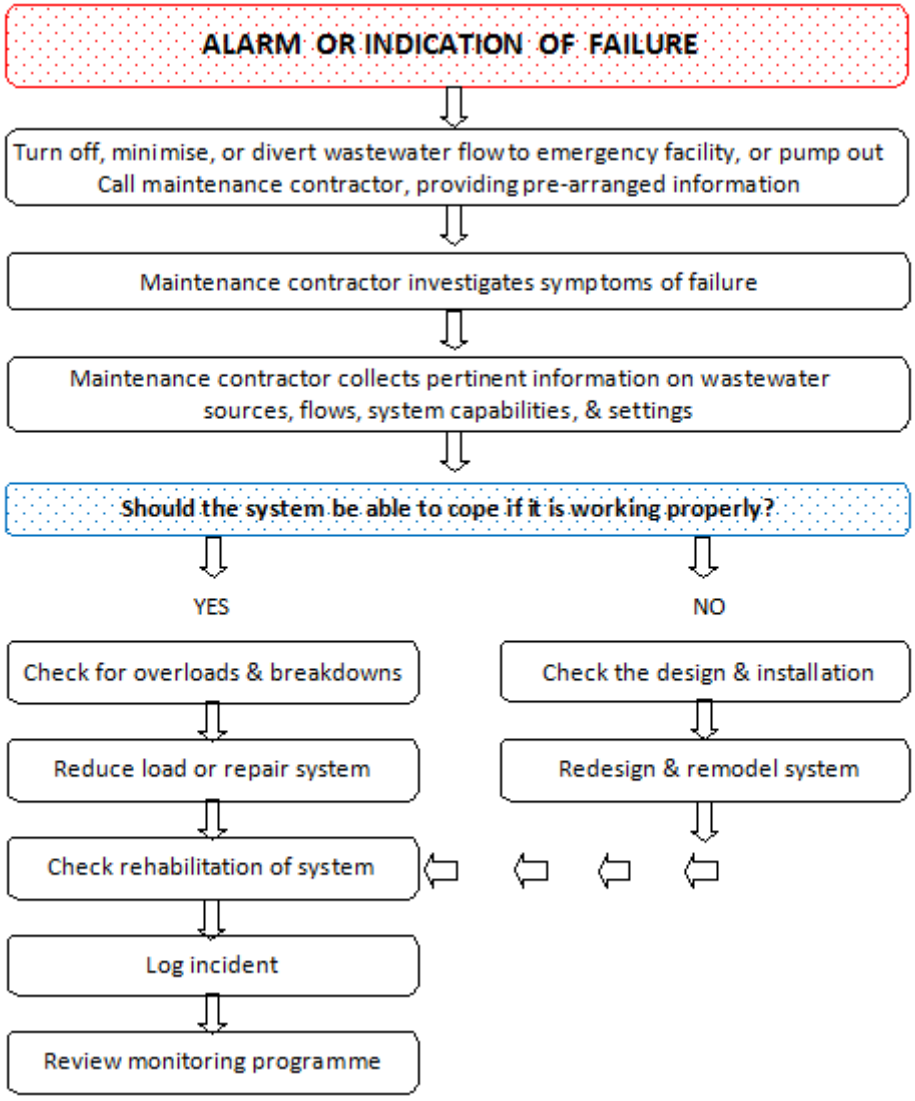
- use biodegradable soaps
- use low-phosphorus detergent
- use low-sodium detergent where soils are dispersive
- limit the use of cleaners such as bleaches, whiteners, nappy soakers & disinfectant, especially for toilet/shower cleaning
- do not put chemicals, thinners or paint down the drain or gulley trap

8.3 Reduce Effluent Volume Load

- install & use water conserving fittings ie. shower heads & appliances
- wash full loads only in dishwasher & washing machine
- avoid system overload ie. 1 washing machine load per day & run washing machine & dishwasher at different times
- do not install a spa bath

9 CONTINGENCY PLAN

The plan below shall be followed for a sudden failure of the wastewater system. A generalised flow chart of actions to be taken is:



(Figure 6.3 from AS1547:2012)

10 SITE OPERATIONS & MAINTENANCE LOG

A site operation and maintenance log shall be kept for any wastewater system. This will assist in the determination of recurring problems/trends. The maintenance log is to show when scheduled maintenance is due. Matters to be recorded in the log include:

- pump out records;
- service records;

- inspections; and
- records of all irregular operation & response actions.

Copies of programmed maintenance and pump out (desludging) works performed by maintenance contractors, as required by the Council (septic tank) permit, are to be forwarded to the Council Environmental Health Officer. A copy of the latest maintenance certificate is to be retained with this property management plan and recorded on the maintenance log.

11 IDENTIFICATION, RISK ASSESSMENT & CONTROLS FOR OTHER POTENTIAL THREATS TO DOWNSTREAM WATER QUALITY

The landholder is required to identify and assess the risk of other potential threats to downstream water quality, resulting from the development and use of the property ie.

- erosion risks; and
- risks from storage & application of chemicals.

Construction methods should be carried out in a manner which will minimise soil, sediment and nutrient movement from the property to water courses during development and use of the property. Potential sources of sediment movement to consider are:

- tracks& driveways;
- high traffic areas (vehicular, human, animal); and
- construction areas (occupancy, roads, fencing).

The design of stormwater run-off from the site should be described. Activities to encourage native vegetation retention and re-establishment within a 30 metre buffer zone along waterways, and to exclude stock from waterways, should be described. Activities to prevent the spread of noxious weeds should be described.

Chemicals such as herbicides and pesticides can be a risk to downstream water quality. The landowner should follow manufacturer's instructions and be familiar with the advice available from: http://www.depi.vic.gov.au/agriculture-and-food/farm-management/chemical-use. Procedures for chemical application and storage should be described in the Property Management Plan.

Businesses should contact Barwon/Wannon Water to determine if a water quality monitoring program immediately up and down stream of works that pose a significant threat to water quality is required. This may include:

- analytical monitoring of turbidity following large-scale activities that could potentially result in sediment movement (e.g. cultivation, harvesting); and

- monitoring of the active ingredients within herbicides and pesticides following intensive and broad scale herbicide/pesticide applications.

Appendix 1 Maintenance Log Template

Treatment System Inspections, Maintenance & Repairs			
Due Date (if scheduled)	Actual Date of Activity	Name of Inspector/ Contractor	Description of Work, Observations & Comments

Effluent Disposal Area Inspections, Maintenance & Repairs			
Due Date (if scheduled)	Actual Date of Activity	Name of Inspector/ Contractor	Description of Work, Observations & Comments

12 INSURANCE CERTIFICATE OF CURRENCY

Avaiable on request

13 DISCLAIMER

2020 Engineering Solutions Pty Ltd ("2020")
Geotechnical Report Limitations

The report to which this document has been attached assesses risks arising from land slope instability and proposes risk minimisation solutions. Absolute risk avoidance cannot be assured, principally due to assessment cost factors. It is therefore necessary to rely on instructions and make assumptions.

Changed Conditions

The report may be invalidated by changed conditions including:-

1. topography.
2. soil moisture content.
3. above or below ground structures.
4. soil and substrate profiles.
5. location of site boundaries.

Causes of Changed Conditions

Changed conditions may occur due to:-

1. extreme conditions such as flood, drought, cold, heat or fire.
2. human activities.
3. natural processes.
4. planning or design requirements.

Client to inform 2020 of any changes

2020 will endeavour to identify any reasonably foreseeable risk factors on the site which may cause changed conditions. Samples are taken at reasonable intervals bearing in mind the cost to the client. In the absence of specific instructions or patent conditions it will be assumed that conditions observed in samples are consistent across the site.

This document is provided to inform the client that their responsibility for risk is shared with 2020. The client will be responsible for inaccurate instructions or failure to instruct in relation to changed conditions, events that may cause changed conditions or when it becomes evident that assumptions may be invalid. Failure to do so could result in substantial and costly damage and disputes.

Interpretation

The report must be considered in its entirety. Each part of the report may be dependent on other parts for meaningful interpretation. The report should also only be used by the client. It may not be relied upon by any other person without first conferring with 2020. The report should only be acted upon and interpreted by persons qualified and competent in the activities contemplated in the report.

130433 - 13 05 31 Geotechnical Report Limitation

VOLUME 10124 FOLIO 941

Security no : 124081000358L
Produced 07/01/2020 10:11 AM

LAND DESCRIPTION

Lot 29 on Plan of Subdivision 322547F.
PARENT TITLE Volume 05897 Folio 357
Created by instrument PS322547F 27/02/1995

REGISTERED PROPRIETOR

Estate Fee Simple
Joint Proprietors
VINCENT MONACO
ROSINA MONACO both of 10 WILLIAM STREET COLAC 3250
S915009Q 03/02/1994

ENCUMBRANCES, CAVEATS AND NOTICES

MORTGAGE AG590876L 27/06/2009
COMMONWEALTH BANK OF AUSTRALIA

Any encumbrances created by Section 98 Transfer of Land Act 1958 or Section 24 Subdivision Act 1988 and any other encumbrances shown or entered on the plan set out under DIAGRAM LOCATION below.

DIAGRAM LOCATION

SEE PS322547F FOR FURTHER DETAILS AND BOUNDARIES

ACTIVITY IN THE LAST 125 DAYS

NIL

----------END OF REGISTER SEARCH STATEMENT----------

Additional information: (not part of the Register Search Statement)

Street Address: 190 WOODROWVALE ROAD ELLIMINYT VIC 3250

ADMINISTRATIVE NOTICES

NIL

eCT Control 15940N CBA - COMMONWEALTH BANK OF AUSTRALIA
Effective from 23/10/2016

DOCUMENT END

Imaged Document Cover Sheet

The document following this cover sheet is an imaged document supplied by LANDATA®, Victorian Land Registry Services.

Document Type	**Plan**
Document Identification	**PS322547F**
Number of Pages (excluding this cover sheet)	**9**
Document Assembled	**07/01/2020 10:12**

PLAN OF SUBDIVISION

STAGE NO. | LTO use only | Plan Number

EDITION 8 | PS 322547F

Location of Land

Parish: ELLIMINYT

Township: ———

Section: ———

Crown Allotment: 51, 52, 71 and 72

Crown Portion: ———

LTO Base Record: PARISH 1 (2586)

Title Reference: C\T. Vol. 5897 Fol. 357

Last Plan Reference: ———

Postal Address: Woodrow Vale Road
(at time of subdivision) ELLIMINYT 3249

AMG Co-ordinates (of approx. centre of land in plan) E 727 350 N 5748 900 Zone: 54

Council Certificate and Endorsement

Council Name: SHIRE OF COLAC Ref: 639/L1/92

1. This plan is certified under section 6 of the Subdivision Act 1988.
2. ~~This plan is certified under section 11(7) of the Subdivision Act 1988. Date of original certification under section 6 / /~~
3. ~~This is a statement of compliance issued under section 21 of the Subdivision Act 1988.~~

OPEN SPACE

(i) A requirement for public open space under section 18 of the Subdivision Act 1988 has/has not been made.

~~(ii) The requirement has been satisfied.~~

(iii) The requirement is to be satisfied in Stage 2

Council delegate

~~Council seal~~

Date 14 / 12 / 92

~~Re-certified under section 11(7) of the Subdivision Act 1988~~

~~Council Delegate~~
~~Council Seal~~

~~Date / /~~

APPLIES TO MASTER PLAN ONLY

Vesting of Roads and/or Reserves

Identifier	Council/Body/Person
ROAD R1	SHIRE OF COLAC
ROAD R2	COLAC OTWAY SHIRE
ROAD R3	" " "

Notations

Staging This is/[redacted] a staged subdivision
Planning Permit No. 0789

Depth Limitation
Does not apply

(both inclusive) have not been shown on this plan.

Land being subdivided is enclosed within thick continuous lines.

Lots 7 to 16, & 37 to 40 have been omitted from this plan.

Easement Variation: Variation of location of the easement created in dealing A844510 and shown on C/T. Vol. 5897 Fol. 357 to position shown by easement E-1 on this plan.

Grounds for Variation: Planning permit No. 0789

Tangent points shown thus ——

Survey This plan is/[redacted] based on survey

This survey has been connected to permanent marks no(s)
In Proclaimed Survey Area No.

Easement Information

Legend: A - Appurtenant Easement E - Encumbering Easement R - Encumbering Easement (Road)

Easement Reference	Purpose	Width (Metres)	Origin	Land Benefited/In Favour Of
E-1, E-7, E-8 & E-9	Transmission of Electricity	36·58	C/E A844510	S. E. C. V.
E-10	Drainage	5	This plan	Colac Otway Shire
E-2, E-8	Drainage	5	This plan	Shire of Colac
E-3 & E-9	Way and Water Supply	40	This plan	Land in this plan
E-4	Water Supply	See diag.	This plan	Colac Region Water Authority
E-11	**Powerline**	**See diag**	This plan-section 88 of the Electricity Industry Act 2000	**Powercor Australia Limited**
R-1 & R-2 & R-3	Water Supply, Way, Drainage, Electricity, Telephone & Data transmission	See diag	This plan	Land in this plan

LTO use only

Statement of Compliance/ Exemption Statement

Received ☑

Date 12 / 7 / 93

THIS IS AN L.T.O. COMPILED PLAN

CHECKED 24/1/00

Assistant Registrar of Titles

SHEET 1 OF 8 SHEETS

ROD BRIGHT & ASSOCIATES PTY. LTD.
LICENSED SURVEYORS
26 MURRAY STREET COLAC 3250
TEL. 052-31 4883 A.C.N. 007 206 975

LICENSED SURVEYOR (PRINT) RODNEY ARTHUR BRIGHT

SIGNATURE..... DATE 20 / 10 / '92

REF 84080 VERSION 2

DATE / /

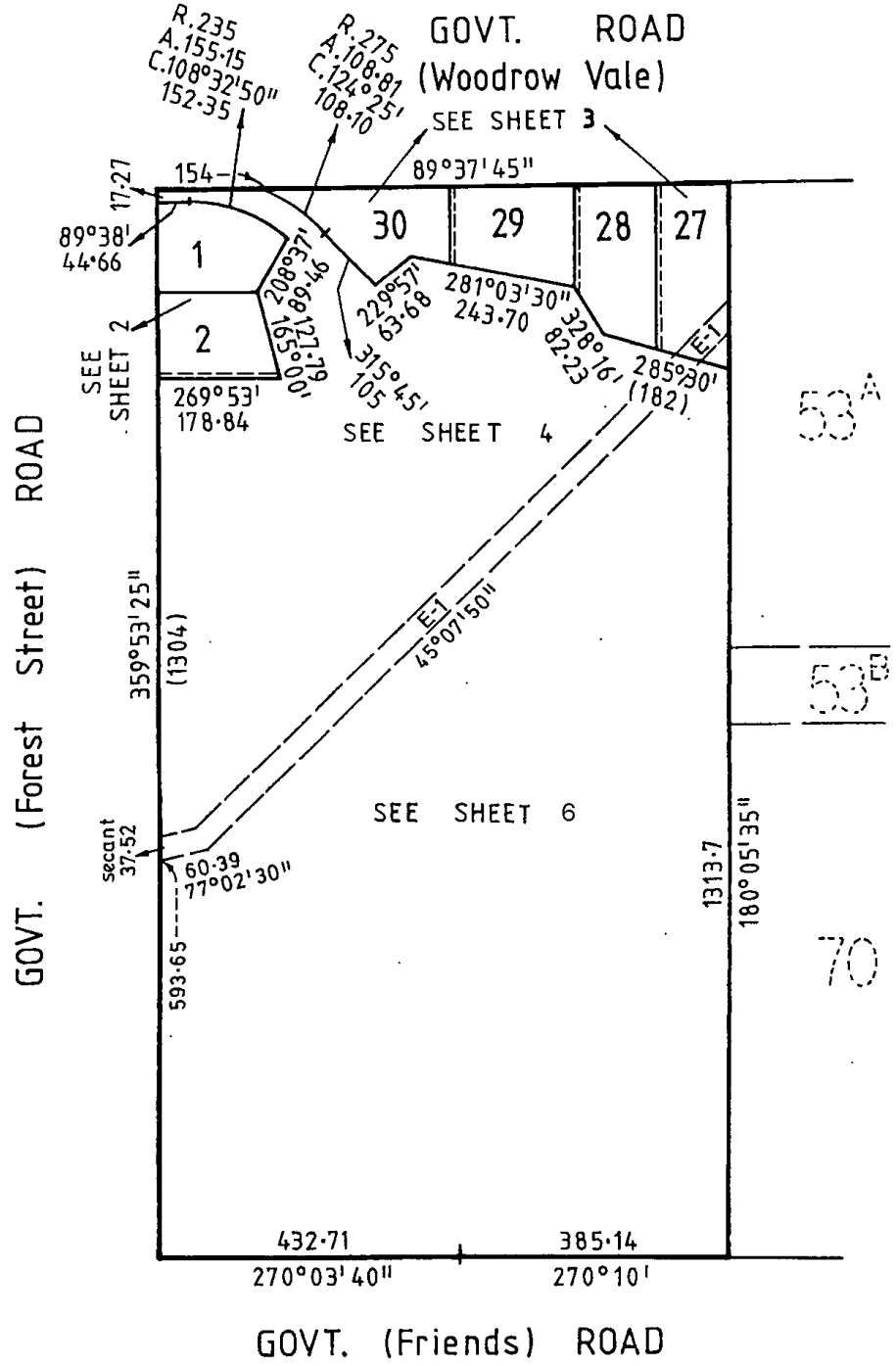
COUNCIL DELEGATE SIGNATURE

Original sheet size A3

PLAN OF SUBDIVISION

Stage No.

Plan Number **PS322547F**



ROD BRIGHT & ASSOCIATES PTY. LTD.
LICENSED SURVEYORS
26 MURRAY STREET COLAC 3250
TEL.052-314883 A.C.N. 007 205 975

SHEET 2 OF 8 SHEETS

ORIGINAL SCALE 1:7500 | SHEET SIZE A3

SCALE 75 0 150 300
LENGTHS ARE IN METRES

LICENSED SURVEYOR (PRINT) RODNEY ARTHUR BRIGHT
SIGNATURE..... DATE 20 / 10 / 92
REF 84080 VERSION 2

DATE / /
COUNCIL DELEGATE SIGNATURE
Original sheet size A3

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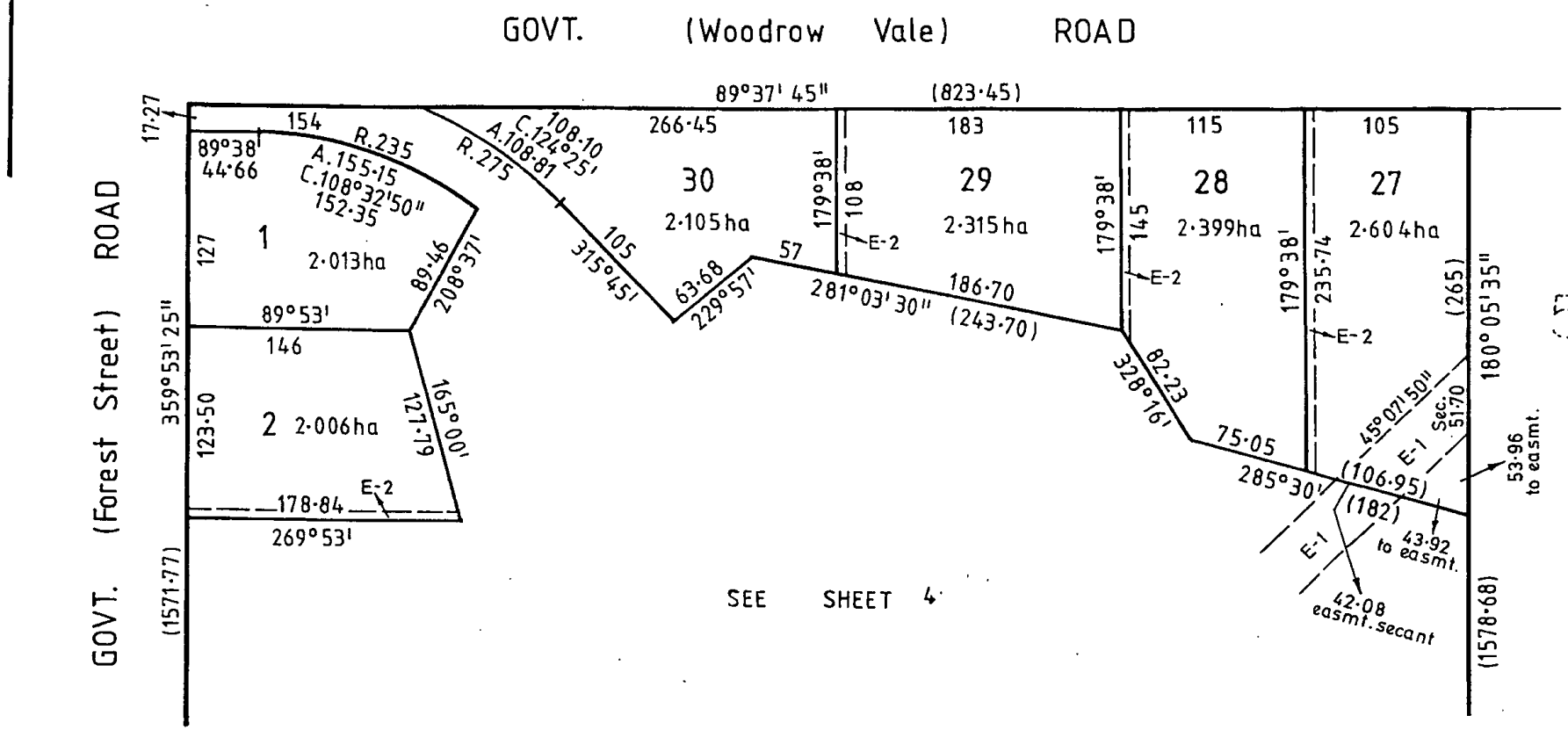
T.O.2

PLAN OF SUBDIVISION

Stage No.	Plan Number
	PS 322547F



ROD BRIGHT & ASSOCIATES PTY. LTD. LICENSED SURVEYORS 26 MURRAY STREET COLAC 3250 TEL. 052-31 4883 A.C.N. 007 206 975	ORIGINAL SCALE 1:3000 | SHEET SIZE A3	SCALE 30 0 60 120 LENGTHS ARE IN METRES	LICENSED SURVEYOR (PRINT) RODNEY ARTHUR BRIGHT SIGNATURE ..... DATE 20 / 10 /92 REF 84080 VERSION 2	SHEET 3 OF 3 SHEETS ..... DATE / COUNCIL DELEGATE SIGNATURE

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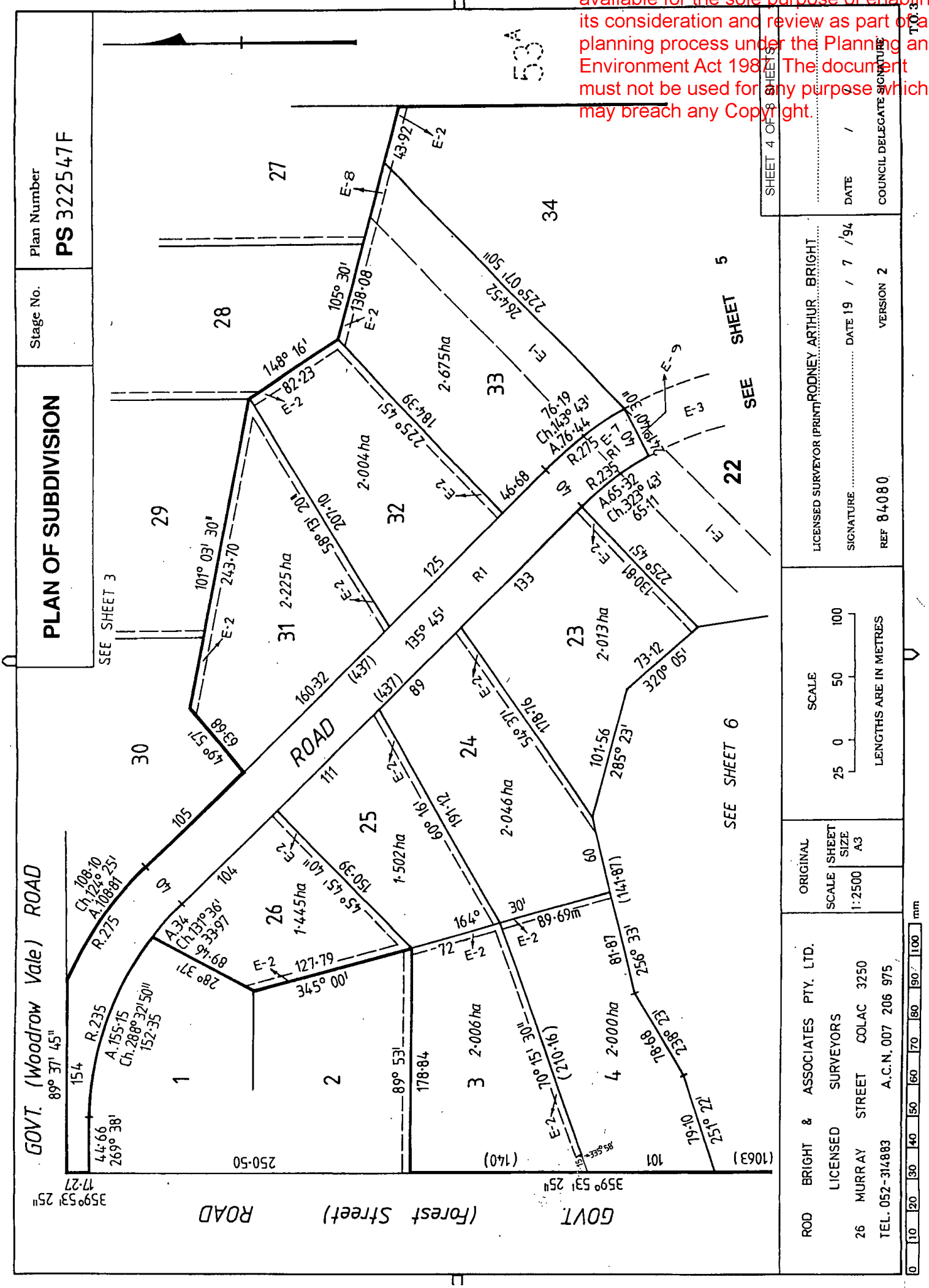
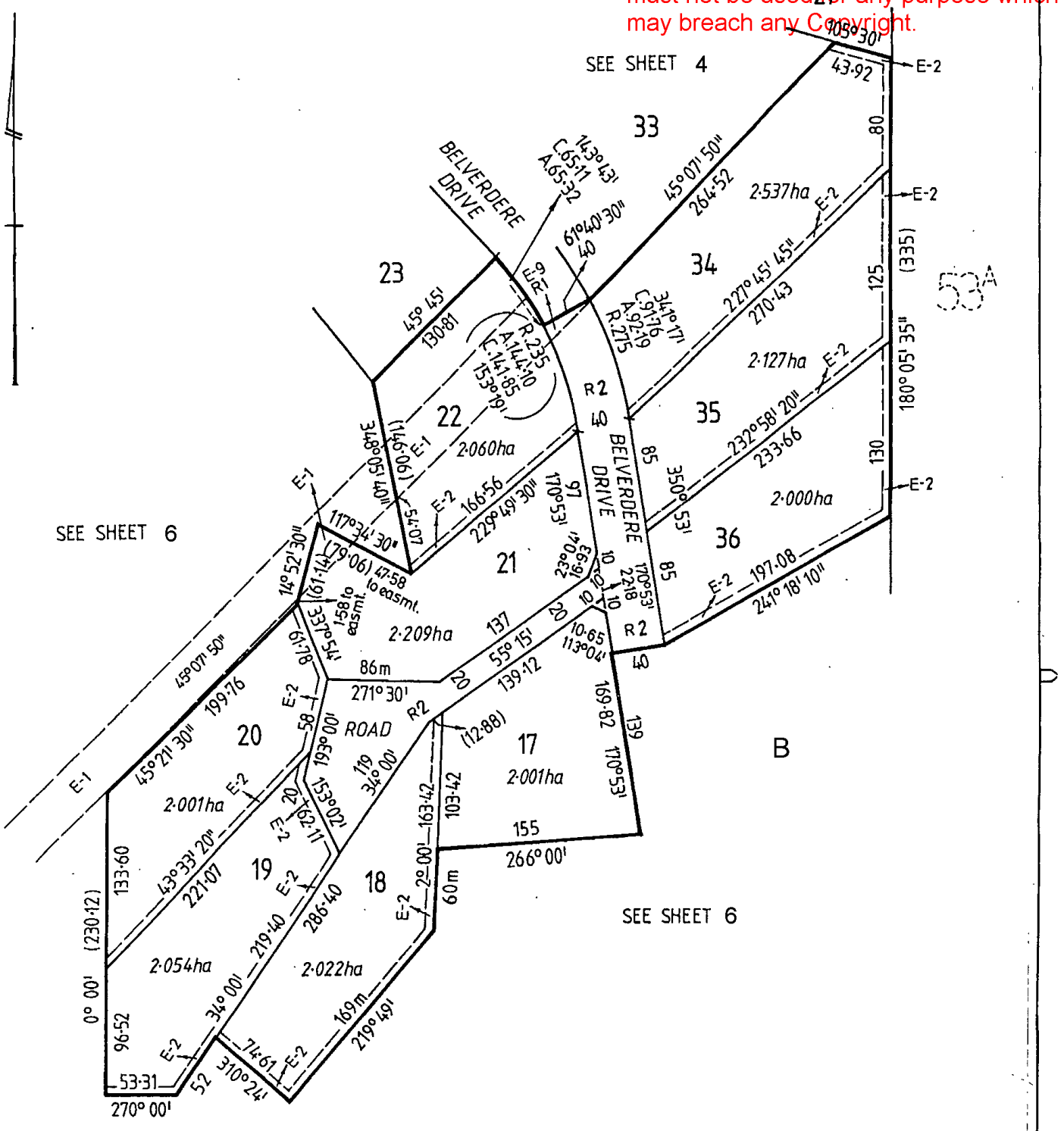
P.O.2



PLAN OF SUBDIVISION

Stage No.

Plan Number **PS 322547F**



ROD BRIGHT & ASSOCIATES PTY. LTD.	
LICENSED SURVEYORS	
26 MURRAY STREET COLAC 3250	
TEL. 052-314883 A.C.N. 007 206 975	

SHEET 5 OF 8 SHEETS

ORIGINAL		SCALE	
SCALE	SHEET SIZE	30 0 60 120	
1:3000	A3	LENGTHS ARE IN METRES	

LICENSED SURVEYOR (PRINT) RODNEY ARTHUR BRIGHT

SIGNATURE ..... DATE 8 / 11 / '95

REF 84080 VERSION

DATE / /

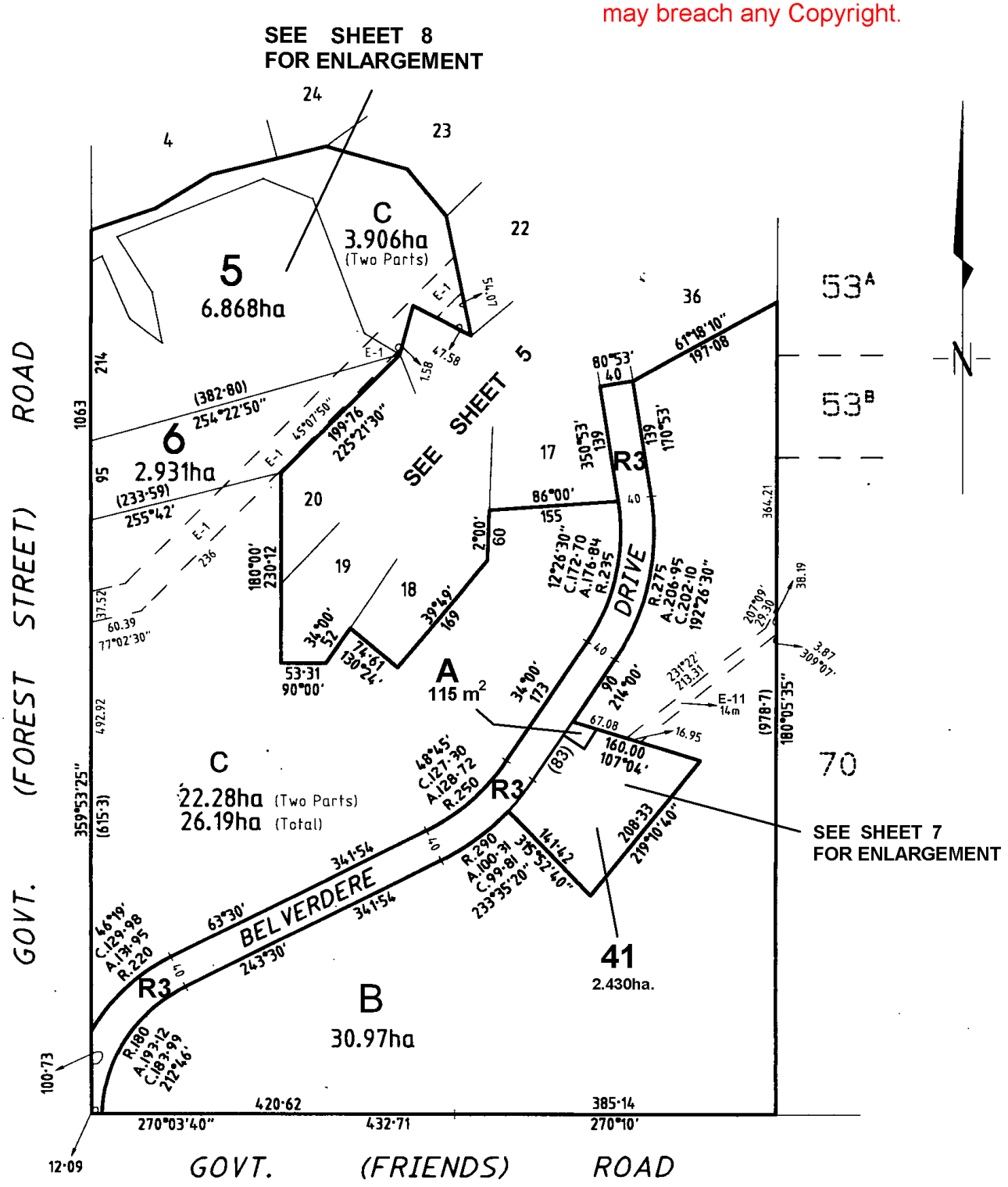
COUNCIL DELEGATE SIGNATURE

Original sheet size A3

PLAN OF SUBDIVISION

Stage No.

Plan Number PS322547F



ROD BRIGHT & ASSOCIATES PTY LTD
LICENSED SURVEYORS
26 MURRAY STREET COLAC 3250
TEL 5231 4883 ACN 007 206 975

SHEET 6 OF 8 SHEETS

ORIGINAL

SCALE 1:5000

SHEET SIZE A3

SCALE 50 0 50 100 150 200

LENGTHS ARE IN METRES

LICENSED SURVEYOR (PRINT) RODNEY ARTHUR BRIGHT

SIGNATURE . . . . . DATE 2 / 01 / 2003

REF 84080 VERSION

DATE / /

COUNCIL DELEGATE SIGNATURE

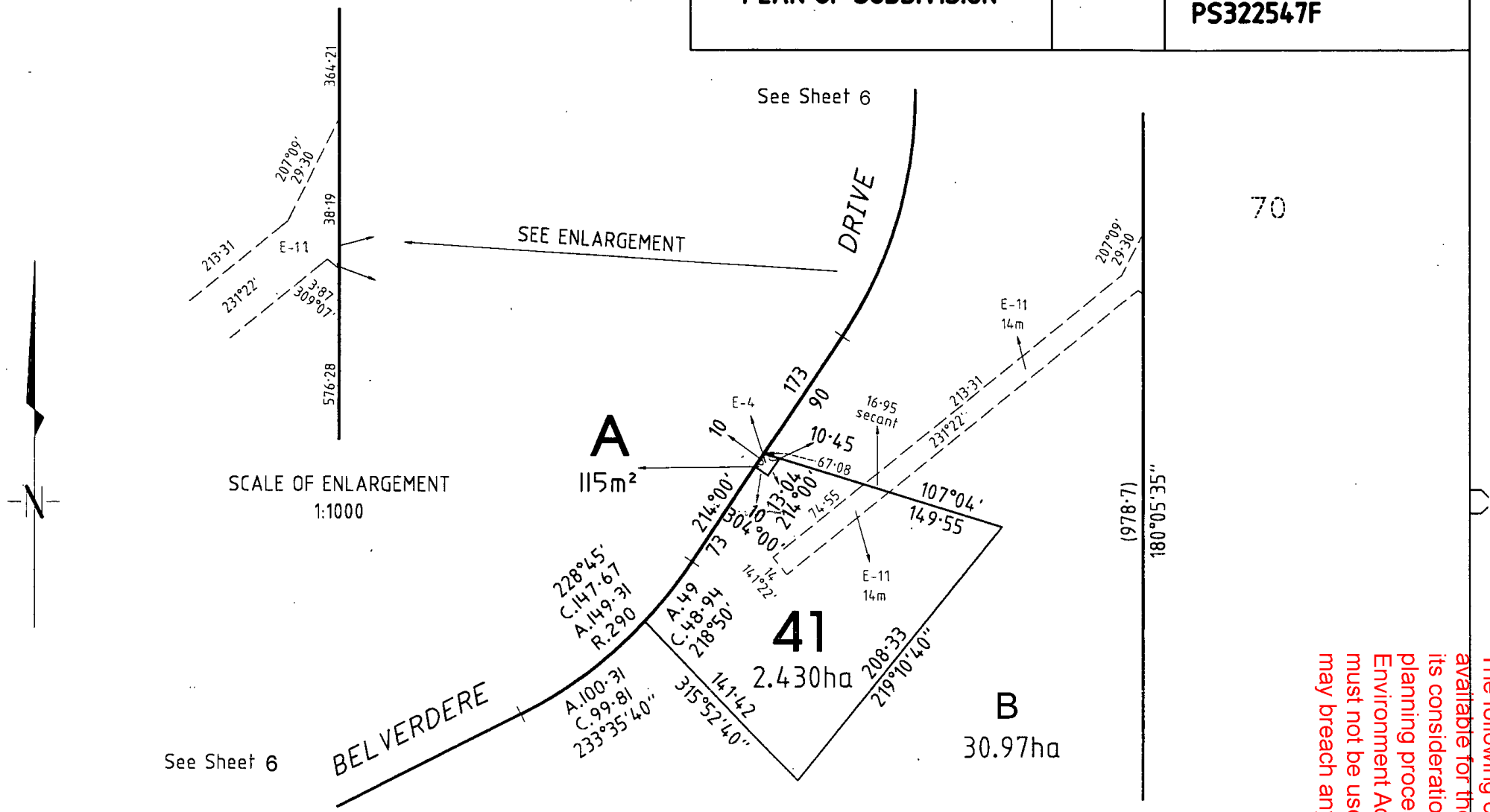
Original sheet size A3

PLAN OF SUBDIVISION

Stage No.

Plan Number

PS322547F



SHEET 7 OF 8 SHEETS

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0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm

PLAN OF SUBDIVISION

Stage No.

Plan Number PS322547F

CREATION OF RESTRICTION

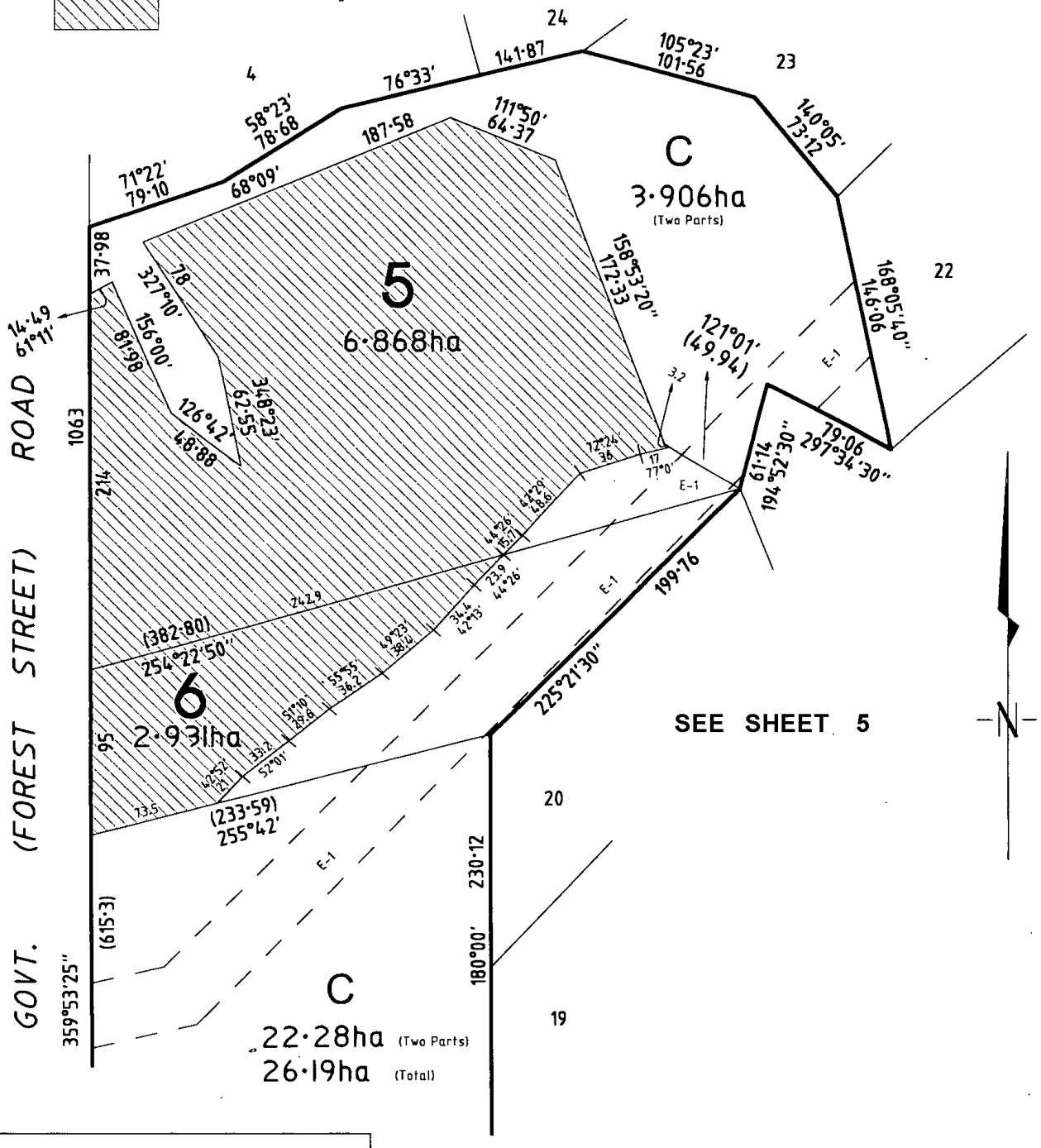
ON REGISTRATION OF THIS PLAN THE FOLLOWING RESTRICTION IS CREATED

LAND TO BE BURDENED - Lots 5 and 6 on this Plan.

LAND TO BE BENEFITTED - Lots 5 and 6 on this Plan.

DESCRIPTION OF RESTRICTION

No building shall be constructed on Lots 5 or 6 outside of the land shown thus ▨ as directed in Planning Permit No. 0789.



ROD BRIGHT & ASSOCIATES PTY LTD
LICENSED SURVEYORS
26 MURRAY STREET COLAC 3250
TEL 5231 4883 ACN 007 206 975

SHEET 8 OF 8 SHEETS

ORIGINAL

SCALE 1:2500

SHEET SIZE A3

SCALE 25 0 25 50 75 100

LENGTHS ARE IN METRES

LICENSED SURVEYOR (PRINT) ANTHONY EDWARD BRIGHT

SIGNATURE . . . . . DATE 2 / 01 / 2003

REF 84080 VERSION

DATE / /

COUNCIL DELEGATE SIGNATURE

Original sheet size A3

MODIFICATION TABLE

RECORD OF ALL ADDITIONS OR CHANGES TO THE PLAN

PLAN NUMBER

PS 322547F

MASTER PLAN REGISTERED DATE 22/7/93 TIME 8.15 am

LAND	MODIFICATION	DEALING REFERENCE	DATE AND TIME		NEW EDITION NUMBER	SIGNATURE OF ASSISTANT REGISTRAR OF TITLES
			DATE	TIME		
LOT S2	STAGE 2	T512524Q	27/2/95	2.45pm	2	AD
LOT S3	STAGE 3	U 373817Y	5/2/97	10.55am	3	
LOT S4	STAGE 4	U373818V	23/1/01	8 20am	4	
LOT 3	REMOVAL OF EASEMENT	PS441080P			5	pu.
LOT S5	STAGE 5	PS322547F / S5	13/5/02	6.32pm	6	GJN
	WARNING: THE IMAGE OF THIS PLAN/DOCUMENT HAS BEEN DIGITALLY AMENDED. NO FURTHER AMENDMENTS ARE TO BE MADE TO THE ORIGINAL PLAN/DOCUMENT.					
LOT S6	**STAGE 6**	**PS322547F/S6**	**30/10/03**		**7**	**GMR**
LOTS S7 AND S8	REMOVING LOTS FROM STAGING PROCESS VIDE 37(8) AND CREATING LOTS B AND C IN THEIR PLACE	PS626629J	20/5/2015		8	LC

PLAN OF PROPOSED SUBDIVISION
PART OF CROWN ALLOTMENT 52
PARISH OF ELLIMINYT
COUNTY OF POLWARTH
RE: V. & R. MONACO
SCALE 1:1250 (Original Sheet Size A3)

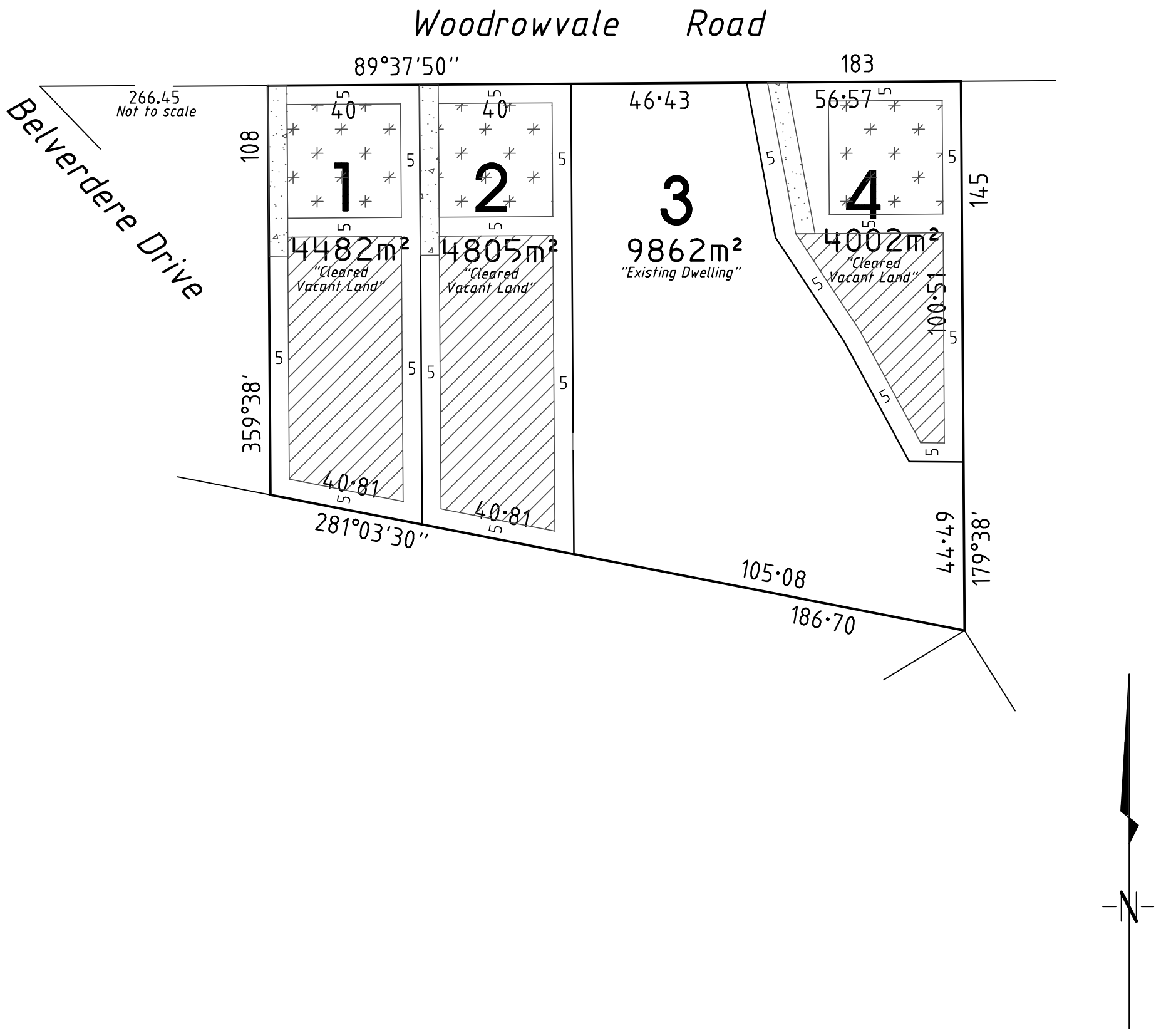
ROD BRIGHT & ASSOCIATES PTY LTD
LICENSED SURVEYORS & TOWN PLANNERS
26 MURRAY STREET COLAC 3250
TEL 5231 4883 ACN 007 206 975

NOTE:
Certain dimensions shown hereon are subject to survey.
Certain areas shown hereon are subject to survey.
Land contained within C/T Vol. 10124 Fol. 941

denotes possible building envelope.

denotes possible effluent disposal envelope.

denotes possible driveway envelope.



Amended 19th November 2019 to show Building, Effluent & Driveway Envelopes

Site Description & Design Response

Proposed 4 Lot Subdivision

190 Woodrowvale Road, Elliminyt

V & R Monaco

January 2020

Rod Bright & Associates Pty Ltd

Licensed Land Surveyors and Certified Town Planners

26 Murray St Colac 3250

Ph (03) 5231 4883

www.rodbrightlds.com.au

Table of Contents

1.0 Subdivision site and context description

The following information is provided in accordance with clause 56.01-1 Colac Otway Planning Scheme – Neighbourhood site and context description.

1.1 Title particulars and location

Address: 190 Woodrowvale Road, Elliminyt.

Comprising allotment: Lot 29 on PS322547F - Vol. 10124 Fol. 941.

The land comprises an area of 2.315ha.

There are no encumbrances known to title.

The land fronts Woodrowvale Road in Elliminyt approximately 265 metres from the Belverdere Drive intersection.

Figure 1: Site context plan. Image source: LASSI.

1.2 Land use

The land currently contains an existing dwelling, shedding and cleared grazing land.

1.3 Physical landform

Lot 1 comprises of the existing dwelling and shedding with existing shelter belts and fruit trees around the dwelling. The Proposed Lots 1, 2 & 4 comprise of open pasture. The site is located in an elevated area of Elliminyt and slopes towards the north west and north east.

There are views over Colac and of the surrounding farmland available from the site.

Refer to the attached plans for dimensions and relevant site information.

1.4 Surrounding land use

Surrounding land is used for low density residential and farming, with lots sizes varying from approximately 0.4ha to 2.6ha.

The land is located approximately 3.2km from the nearest primary school (Elliminyt Primary School), 3.0km to the nearest secondary school (Colac Secondary College, Library & Bluewater Fitness Centre) and 3.3km from the nearest shop (Hearn Street Milk Bar).

1.5 Services

Power, telecommunications and reticulated water are available to the site.

Reticulated sewer and gas are not available.

Refer to attached servicing information in Section 3.

1.6 Significant vegetation

The site currently contains a pasture ground cover. There are existing plantations along the eastern and southern most boundaries. Based on the proposed subdivision design, the plantations would not require removal as part of the subdivision.

1.7 Colac Otway Planning Scheme

1.7.1 Zone

The land is zoned Low Density Residential (LDRZ).

The zone's purposes are:

- To implement the Municipal Planning Strategy and the Planning Policy Framework.
  To provide for low-density residential development on lots which, in the absence of reticulated sewerage, can treat and retain all wastewater.

A permit is required to subdivide land.

Each lot must be at least the area specified for the land in a schedule to this zone. Any area specified must be at least:

- 0.4 hectare for each lot where reticulated sewerage is not connected. If no area is specified each lot must be at least 0.4 hectare.

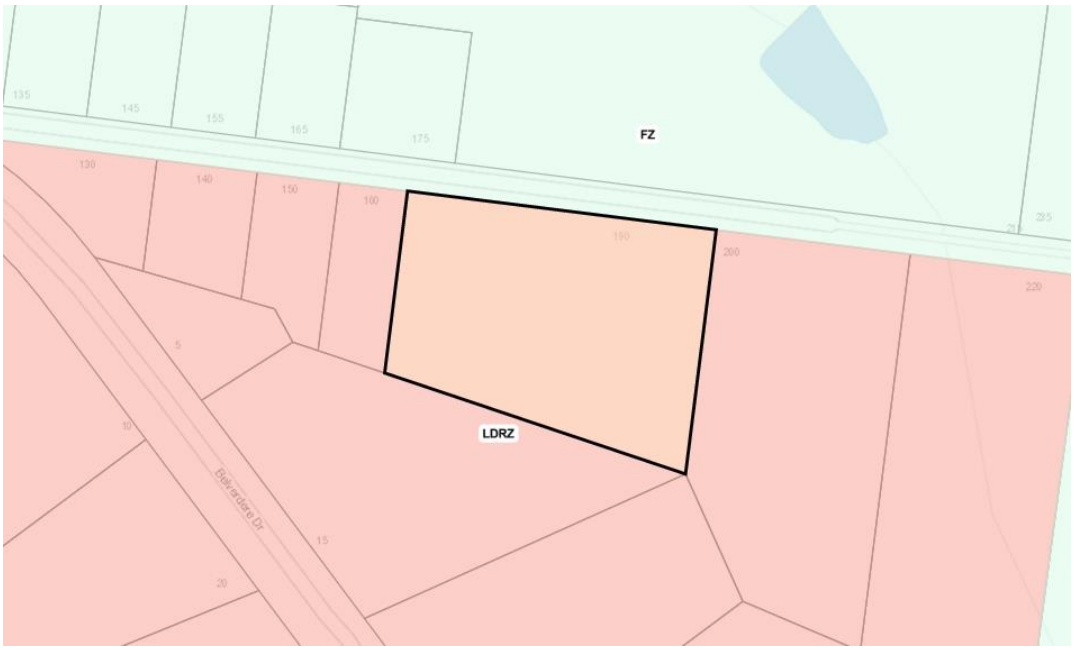


Figure 2: Planning Zone. (https://maps.land.vic.gov.au/lassi/SpearUI.jsp)

1.7.2 Overlays

Significant Landscape Overlay (SLO1)

The purpose of this overlay is to implement the State Planning Policy Framework and the Local Planning Policy Framework, including the Municipal Strategic Statement and local planning policies.

- To identify significant landscapes.
- To conserve and enhance the character of significant landscapes.

A landscaping plan should be submitted with an application for buildings and works, or to remove, destroy or lop vegetation, utilizing appropriate species and demonstrating how the affected area will be remediated after development.

As there is no development or works planned as part of this subdivision, this proposal in no way affects this overlay.

Vegetation Protection Overlay (VPO1)

The site is affected by the Vegetation Protection Overlay (VPO1).

The purpose of this overlay is to implement the State Planning Policy Framework and the Local Planning Policy Framework, including the Municipal Strategic Statement and local planning policies.

- To protect areas of significant vegetation.
- To ensure that development minimises loss of vegetation.

- To preserve existing trees and other vegetation.
- To recognise vegetation protection areas as locations of special significance, natural beauty, interest and importance.
- To maintain and enhance habitat and habitat corridors for indigenous fauna.
- To encourage the regeneration of native vegetation.

A permit is required to remove, destroy or lop any vegetation specified in the schedule. As this application does not seek consent to remove, destroy or lop vegetation, a permit is not required under the provisions.

1.7.3 Planning Policy Framework

Relevant planning scheme policies are listed below and are referred to later within this document:

Clauses	
11	SETTLEMENT
11.01-1R	Settlement – Geelong G21
11.02	Managing Growth
11.02-1S	Supply of urban land
11.02-2S	Structure Planning
15	BUILT ENVIRONMENT AND HERITAGE
15.01	Built Environment
15.01-1S	Urban Design
15.01-3S	Subdivision Design
15.01-4S	Healthy neighbourhoods
15.01-5S	Neighbourhood character
15.03-2S	Aboriginal Cultural Heritage
19	INFRASTRUCTURE
19.03	Development Infrastructure
19.03-03S	Integrated Water Management
19.03-2S	Infrastructure design and provision
19.03-4S	Telecommunications
19.03-5S	Waste and Resource Recovery
20	LOCAL PLANNING POLICY FRAMEWORK
21	MUNICIPAL STRATEGIC STATEMENT
21.01	Municipal Profile
21.02	Vision
21.03	Settlement
21.03-2	Colac

2.0 Residential Subdivision - Design Response (56.01-2)

2.1 Subdivision Design

The subdivision proposes the creation of 4 new allotments, Lot 3 having existing access from Belverdere Drive, Lots 1, 2 & 4 do not currently have existing access from Belverdere Drive.

Lot 3 will contain the existing dwelling and associated shedding and comprise of approximately 9862m^2, Lot 1 will comprise of approximately 4482m^2 and is cleared grazing land. Lot 2 will comprise of approximately 4805m^2 and is also cleared grazing land. Lot 4 will comprise of approximately 4002m^2 and is also cleared grazing land.

2.2 Design Response

The design response responds to the site and context description by way of the following:

- The proposed 4 lot subdivision with allotment sizes of approximately 9862m^2 (Lot 3) 4482m^2 (Lot 1) 4805m^2 (Lot 2) and 4002m^2 (Lot 4) is an appropriate response to the surrounding pattern of development which comprises of a mix of medium and low-density development.
- The lot sizes will enable suitable area for compliance with the Residential Subdivision (clause 56) objectives of the planning scheme.
- There is no significant vegetation or site features within the allotments which require protection and consideration as part of the subdivision.
- There is an existing cross-over for the proposed Lot 3.
- There are no specific site and context features for the area identified in a local planning policy or a Neighbourhood Character Overlay.

All lots are designed to cater for traditional residential development with single dwellings on each allotment and adequate private open space and solar access.

Compliance with the relevant objectives of Clause 56 is demonstrated below.

An application to subdivide land, other than an application to subdivide land into lots each containing an existing dwelling or car parking space, must meet the requirements of Clause 56 and:

- Must meet all of the objectives included in the clauses specified in the following table.
- Should meet all of the standards included in the clauses specified in the following table.

Class of subdivision	Objectives and standards to be met
60 or more lots	All except Clause 56.03-5.
16 – 59 lots	All except Clauses 56.03-1 to 56.03-3, 56.03-5, 56.06-1 and 56.06-3.
3 – 15 lots	All except Clauses 56.02-1, 56.03-1 to 56.03-4, 56.05-2, 56.06-1, 56.06-3 and 56.06-6.
2 lots	Clauses 56.03-5, 56.04-2, 56.04-3, 56.04-5, 56.06-8 to 56.09-2.

56.03 LIVABLE AND SUSTAINABLE COMMUNITIES

56.03-4 Built Environment Objective

To create urban places with identity and character

Standard C5

The built environment should:

Implement any relevant urban design strategy, plan or policy for the area set out in this scheme.

Provide living and working environments that are functional, safe and attractive.

Provide an integrated layout, built form and urban landscape,

Contribute to a sense of place and cultural identity.

An application should describe the identity and character to be achieved and the elements that contribute to that identity and character.

Response:

The proposed subdivision is consistent with the above objective by:

There is no urban design strategy, plan or policy for this area.

The identity and character of the area will evolve through the construction of new dwellings and with the wide frontages, will enable space for the planting of canopy trees and gardens.

56.03-5 Neighbourhood Character:

56.03-5 Neighbourhood Character Objective

To design subdivisions that respond to neighbourhood character

Standard C6

Subdivision should:

Respect the existing neighbourhood character or achieve a preferred neighbourhood character consistent with any relevant neighbourhood character objective, policy or statement set out in this scheme.

Respond to and integrate with the surrounding urban environment.

Protect significant vegetation and site features.

Response:

The proposed subdivision is consistent with the above objective by:

A preferred neighbourhood character is not identified for this area of Elliminyt. An absence of formal kerb & channel or footpath on Belverdere Drive, along with the use of the adjoining land for grazing or pasture creates a rural aesthetic. Houses along Belverdere Drive are single modern dwellings, recently constructed.

Neighbourhood character in the area is developing and will evolve in response to this new development.

56.04 LOT DESIGN

56.04-1 Lot diversity and Distribution objectives:

To achieve housing densities that support compact and walkable neighbourhoods and the efficient provision of public transport services.

To provide higher housing densities within walking distance of activity centres.

To achieve increased housing densities in designated growth areas.

To provide a range of lot sizes to suit a variety of dwelling and household types.

Standard C7:

A subdivision should implement any relevant housing strategy, plan or policy for the area set out in this scheme.

Lot sizes and mix should achieve the average net residential density specified in any zone or overlay that applies to the land or in any relevant policy for the area set out in this scheme.

A range and mix of lot sizes should be provided including lots suitable for the development of: single dwellings, two dwellings or more, higher density housing, residential buildings and retirement villages.

Unless the site is constrained by topography or other site conditions, lot distribution should provide for 95% of dwellings to be located no more than 400m street walking distance from the nearest existing or proposed bus stop, 600m street walking distance from the nearest existing or proposed tram stop and 800 metres street walking distance from the nearest existing or proposed railway station.

Lots of 300 square metres or less in area, lots suitable for the development of 2 dwellings or more, lots suitable for higher density housing and lots suitable for residential buildings and retirement villages should be located in and within 400 metres street walking distance of an activity centre.

Response:

The proposed subdivision is consistent with the above objective by:

The site is approximately 5.5km from Colac's CBD.

The lots are designed for traditional single dwellings, catering for current demand for sizable dwellings on larger allotments.

56.04-2 Lot area and building envelopes objective

To provide lots with dimensions and areas that enable the appropriate siting and construction of a dwelling, solar access, private open space, vehicle access and parking, water management, easement and the retention of significant vegetation and site features.

Standard C8

Lots greater than 500m^2 should be able to contain a rectangle measuring 10m by 15m and may contain a building envelope.

A building envelope may specify or incorporate any relevant siting and design requirement. Any requirement should meet the relevant standards of Clause 54, unless:

- The objectives of the relevant standard are met, and
- The building envelope is shown as a restriction on a PS registered under the Subdivision Act 1988 or is specified as a covenant in an agreement under Section 173 of the Act.

Where a lot with a building envelope adjoins a lot that is not on the same plan of subdivision or is not subject to the same agreement relating to the relevant building envelope:

- The building envelope must meet Standards A10 and A11 of Clause 54 in relation to the adjoining lot, and
- The building envelope must not regulate siting matters covered by Standards A12 to A15 (inclusive) of Clause 54 in relation to the adjoining lot. This should be specified in the relevant PS or agreement.

Lot dimensions and building envelopes should protect:

- Solar access for future dwellings and supports the siting and design of dwellings that achieve the energy rating requirement of the building regulations.
- Existing and proposed easement on lots.
- Significant vegetation and site features.

Response:

The proposed subdivision is consistent with the above objective by:

- The proposed Lot 3 has an existing dwelling and appropriate setbacks. The proposed Lots 1, 2 & 4 are capable of containing a building envelope exceeding 10m by 15m.
- Building envelopes have not been designated on lots 1, 2 & 4 to enable flexibility in dwelling design and placement. They have been shown on the Proposal purely as confirmation that the lot size, dimensions and shape are appropriate in this development for a multitude of dwelling designs and locations.

56.04-3 Solar orientation of lots objective

To provide good solar orientation of lots and solar access for future dwellings.

Standard C9

Unless the site is constrained by topography or other site conditions, at least 70 percent of lots should have appropriate solar orientation.

Lots have appropriate solar orientation when:

- The long axis of lots are within the range north 20 degrees west to north 30 degrees east, or east 20 degrees north to east 30 degrees south.
- Dimensions of lots are adequate to protect solar access to the lot, taking into account likely dwelling size and the relationship of each lot to the street.

Response:

The proposed subdivision is consistent with the above objective by:

- Lots will retain solar access due to their size and absence of large-scale development.

56.04-4 Street orientation objective

To provide a lot layout that contributes to community social interaction, personal safety and property security.

Standard C10

Subdivision should increase viability and surveillance by:

- Ensuring lots front all roads and streets and avoid the side or rear of lots being oriented to connector streets and arterial roads.
- Providing lots of 300m2 or less in area and lots for 2 or more dwellings around activity centres and public open space.
- Ensuring streets and houses look onto public open space and avoiding sides and rears of lots along public open space boundaries.
- Providing roads and streets along public open space boundaries.

Response:

All Lots facilitate observation of Belverdere Drive.

There are no adjoining areas of open space.

56.04-5 Common area objectives

To identify common areas and the purpose for which the area is commonly held.

To ensure the provision for common area is appropriate and that necessary management arrangements are in place.

To maintain direct public access throughout the neighbourhood street network.

Standard C11

An application to subdivide land that creates common land must be accompanied by a plan and a report identifying:

- The common area to be owned by the body corporate, including any streets and open space.
- The reasons why the area should be commonly held.
- Lots participating in the body corporate.
- The proposed management arrangements including maintenance standards for streets and open spaces to be commonly held.

Response:

Common areas are not proposed as part of this subdivision.

56.05 URBAN LANDSCAPE

56.05-1 Integrated urban landscape objective

To provide attractive and continuous landscaping in streets and public open spaces that contribute to the character and identity of new neighbourhoods and urban places or to existing or preferred neighbourhood character in existing urban areas.

To incorporate natural and cultural features in the design of streets and public open space where appropriate.

To protect and enhance native habitat and discourage the planting and spread of noxious weeds.

To provide for integrated water management systems and contribute to drinking water conservation.

Standards C12

An application for subdivision that creates streets or public open space should be accompanied by a landscape design……

Response:

As we are not creating any new streets or areas of public open space, a Landscape Plan is not required.

56.06 ACCESS & MOBILITY MANAGEMENT

56.06-2 Walking and cycling network objectives

To contribute to community health and wellbeing by encouraging walking and cycling as part of the daily lives of residents, employees and visitors.

To provide safe and direct movement through and between neighbourhoods by pedestrians and cyclists.

To reduce car use, greenhouse emissions and air pollution.

Standard C15

The walking and cycling network should be designed to:

- Implement any relevant regional and local walking and cycling strategy, plan or policy for the area set out in this scheme.
- Link to any existing pedestrian and cycling networks.
- Provide safe walkable distances to activity centres, community facilities, public transport stops and open spaces.
- Provide an interconnected and continuous network of safe, efficient and convenient footpaths, shared paths, cycle paths and cycle lanes based primarily on the network of arterial roads, neighbourhood streets and regional public open spaces,
- Provide direct cycling routes of regional journeys to major activity centre, community facilities, public transport and other regional activities and for regional recreational cycling.
- Ensure safe street and road crossings including the provision of traffic controls where required.
- Provide an appropriate level of priority or pedestrians and cyclists.
- Have natural surveillance along streets and from abutting dwellings and be designed for personal safety and security particularly at night.
- Be accessible to people with disabilities.

Response:

A walking and cycling network has not been established in this part of Elliminyt, which has no footpaths. It is outside the scope of this subdivision to alter the current arrangements.

56.06-4 Neighbourhood street network objectives

56.06-5 Walking and cycling network detail objectives

56.06-6 Public transport network detail objectives

56.06-7 Neighbourhood street network objective.

Standards C17-C20

Response:

The cross overs and driveways will be designed and constructed in accordance with Council requirements and Australian Standards.

There is no public transport for this area of Elliminyt.

56.06-8 Lot access objective

To provide for safe vehicle access between roads and lots

Standard C21

Vehicle access to lots abutting arterial roads should be provided from service roads, side or rear access lanes, access places or access streets where appropriate and in accordance with the access management requirements of the relevant road's authority.

Vehicle access to lots of 300 square metres or less in area and lots with a frontage of 7.5 metres or less should be provided via rear or side access lanes, places or streets.

The design and construction of a crossover should meet the requirements of the relevant road authority.

Response:

The design and construction of new cross overs for the lots created will be in accordance with the requirements of Colac Otway Shire as specified by planning permit as conditions.

56.07 INTEGRATED WATER MANAGEMENT

56.07-1 Drinking Water Supply Objective

To reduce the use of drinking water.

To provide an adequate, cost-effective supply of drinking water.

Standard C22

The supply of drinking water must be:

Designed and constructed in accordance with the requirements and to the satisfaction of the relevant water authority.

Provided to the boundary of all lots in the subdivision to the satisfaction for the relevant water authority.

Response:

The supply of drinking water will be provided to the boundary of all the lots in the development in accordance with the requirements of Barwon Water as specified by planning permit conditions.

56.07-2 Reused and recycled water objective

To provide for the substitution of drinking water for non-drinking purposes with reused and recycled water.

Standard C23

Reused and recycled water systems must be:

Designed, constructed and managed in accordance with the requirements and to the satisfaction of the relevant water authority, EPA and DHS.

Provided to the boundary of all lots in the subdivision where required by the relevant water authority.

Response:

Reused and recycled water systems will be provided and designed if required by Barwon Water as permit conditions.

56.07-3 Waste water management objective

To provide a waste water system that is adequate for the maintenance of public health and the management of effluent in an environmentally friendly manner.

Standard C24

Waste water systems must be:

Designed, constructed and managed in accordance with the requirements and to the satisfaction of the relevant water authority and the EPA.

Consistent with any relevant approved domestic waste water management plan.

Reticulated waste water systems must be provided to the boundary of all lots in the subdivision where required by the relevant water authority.

Response:

There is no reticulated waste water supply in this area of Elliminyt. The proposed allotments are large enough for all waste water to be retained and treated on site as shown in the LCA.

56.07-4 Stormwater management objectives

To minimise damage to properties and inconvenience to residents from stormwater.

To ensure that the street operates adequately during major storm events and provides for public safety

To minimise increases in stormwater and protect the environmental values and physical characteristics of receiving waters from degradation by stormwater.

To encourage stormwater management that maximises the retention and reuse of stormwater.

To encourage stormwater management that contributes to cooling, local habitat improvements and provision of attractive and enjoyable spaces.

Standard C25

The stormwater management system must be designed and managed in accordance with the requirements and to the satisfaction of the relevant drainage authority……and in accordance with standards and specifications detailed under this clause.

Response:

Connection to the existing stormwater system will be provided to the new lots and in accordance with the requirements of the Colac Otway Shire Council.

Excess runoff will be directed into the appropriate legal point of discharge, as required by Colac Otway Shire Council, through planning permit conditions. Given the land slopes towards Woodrowvale Road this will be easily achieved within each of the lots.

56.08 SITE MANAGEMENT

56.08 Site Management objectives

To protect drainage infrastructure and receiving waters from sedimentation and contamination.

To protect the site and surrounding area from environmental degradation ort nuisance prior to and during construction of subdivision works.

To encourage the re-use of materials from the site and recycled materials in the construction of subdivision where practicable….

Standard C26

A subdivision site must describe how the site will be managed prior to and during the construction period and may set out requirements from managing erosion and sediment, dust, run-off, litter concrete and other construction wastes, chemical contamination, vegetation and natural features planned for retention.

Response:

A site management plan will be submitted to Colac Otway Shire prior to commencement of works should it be necessary through permit conditions.

56.09 UTILITIES

56.09-1 Shared Trenching Objective

To maximise the opportunities for shared trenching

To minimise constrains on landscaping within street reserves……

Standard C27

Reticulated services for water, gas, electricity and telecommunications should be provided in shared trenching to minimise construction costs and land allocation for underground services

Response:

Shared trenching will be utilised where possible during any construction.

56.09-2 Electricity, communications and gas objectives

To provide public utilities to each lot in a timely, efficient and cost-effective manner.

To reduce greenhouse gas emissions by supporting generation and use of electricity from renewable sources.

Standard C28

The electricity supply system must be designed in accordance with the requirements of the relevant electricity supply agency and be provided to the boundary of all lots in the subdivision to the satisfaction of the relevant electricity authority.

The telecommunications system must be designed in accordance with the requirements of the relevant telecommunications servicing agency…….and be provided to the boundary of all lots in the subdivision to the satisfaction of the relevant telecommunications servicing authority.

Where available, the reticulated gas supply system must be designed in accordance with the requirements of the relevant gas supply agency and be provided to the boundary of all lots in the subdivision to the satisfaction of the relevant gas supply agency.

Response:

Electricity and telecommunications will be supplied to the lots in accordance with relevant permit requirements of the relevant infrastructure providers.

56.09-3 Fire hydrants objective

To provide fire hydrants and fire plugs in positions that enable fire fighters to access water safely, effectively and efficiently.

Standard C29

Fire hydrants should be provided:

- A maximum distance of 120 metres from the rear of each lot.
- No more than 200 metres apart.

Hydrants and fire plugs must be compatible with the relevant fire service equipment. Where the provision of fire hydrants and fire plugs does not comply with the requirements of standard C29, fire hydrants must be provided to the satisfaction of the relevant fire authority.

Response:

Hydrants and fire plugs, if required, will be planned for and included as required to comply with this standard and the requirements of the CFA.

56.09-4 Public lighting objective

To provide public lighting to ensure the safety of pedestrians, cyclists and vehicles.

To provide pedestrians with a sense of personal safety at night.

To contribute to reducing greenhouse gas emissions and to saving energy.

Standard C30

Public lighting should be provided to streets, footpaths, public telephones, public transport stops and to major pedestrian and cycle paths including public open spaces that are likely to be well used at night to assist in providing safe passage for pedestrians, cyclists and vehicles.

Public lighting should be designed in accordance with the relevant Australian Standards.

Public lighting should be consistent with any strategy, policy or plan for the use of renewable energy and energy efficient fittings.

Response:

Not applicable as no new roads or common property is proposed as part of this subdivision.

2.3 General Policy and Decision Guidelines Assessment

The proposal is consistent with relevant planning scheme policies and strategies, the purpose and decision guidelines of the relevant zone and applicable overlays, as described below.

State Planning Policy Framework

11) Settlement (11.01-1R, 11.02, 11.02-1S, 11.02-2S)

The subdivision of the site provides the following outcomes responding to the above planning policies and strategies:

- Enables sustainable growth at a location where utility, transport, commercial and social infrastructure and services are available.
- The subdivision builds on existing infrastructure, availability of services and the existing road network.

15) Built Environment & Heritage (15.01, 15.01-1S, 15.01-3S, 15.01-4S, 15.01-5S, 15.03-2S)

The subdivision of the site provides the following outcomes responding to the above planning policies and strategies:

- The subdivision responds to its surrounding landscape and character,
- The development considers the natural, cultural and strategic context of its location.

- The design of the subdivision provides lot sizes to suit a variety of dwelling and household types to meet the needs and aspirations of different groups of people.
- Provides an opportunity for increased residential density to help consolidate urban areas.

19) Infrastructure (19.03, 19.03-03S, 19.03-2S, 19.03-4S, 19.03-5S)

- The subdivision enables infill development in an existing low-density residential area, thus contributing to efficiencies in infrastructure and service provision.
- Public open space contributions will be provided in accordance with the contributions scheme if required.

20) Local Planning Policy Framework including MSS, municipal profile and vision (21.03-2 Colac Framework Plan

The subdivision of the site provides the following outcomes responding to the above planning policies and strategies:

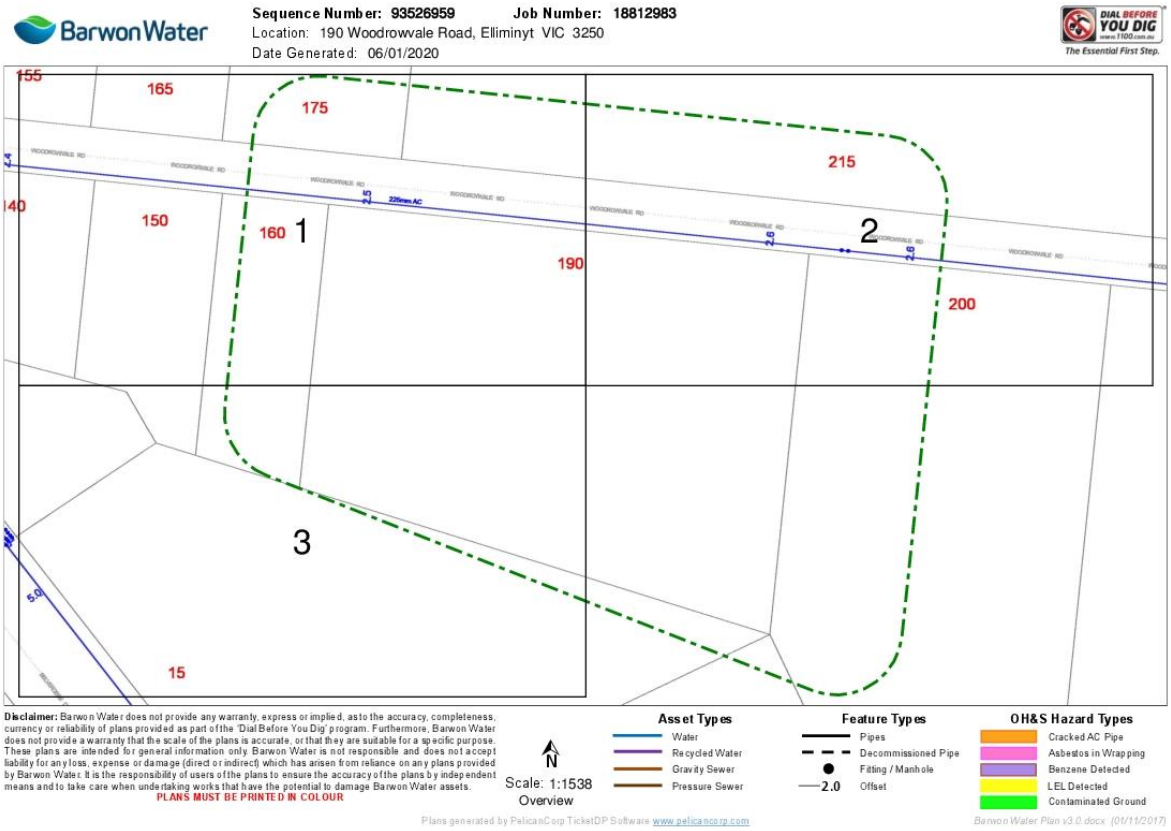
- The current MSS in relation to Elliminyt does not provide any relevant direction regarding residential infill development opportunities.

Clause 65.02 Colac Otway Planning Scheme
Subdivision Decision Guidelines

The design, development, subdivision and use of the site, as proposed, provide the following outcomes responding to the above decision guidelines, (if not referred to elsewhere in this document):

- The land is suitable for subdivision, with the development enabling infill development in an established area of Elliminyt.
- Engineering design will ensure that the stormwater drainage from the development will not detrimentally impact surrounding land or the existing stormwater system.
- The proposed subdivision pattern is consistent with traditional low-density residential development.
- The subdivision will not be staged. No common property areas are proposed.
- Most services are available to the site: power, telecommunications and reticulated water. The appropriate connections will be made as part of the subdivision in accordance with the requirements of the relevant servicing authorities

3.0 Service asset locations



4.0 Summary

The proposal for a low-density residential subdivision is a positive outcome for this area of Elliminyt, which is currently evolving to meet increased growth demand for differing lot sizes.

Overall, the proposal is consistent with relevant planning policies.

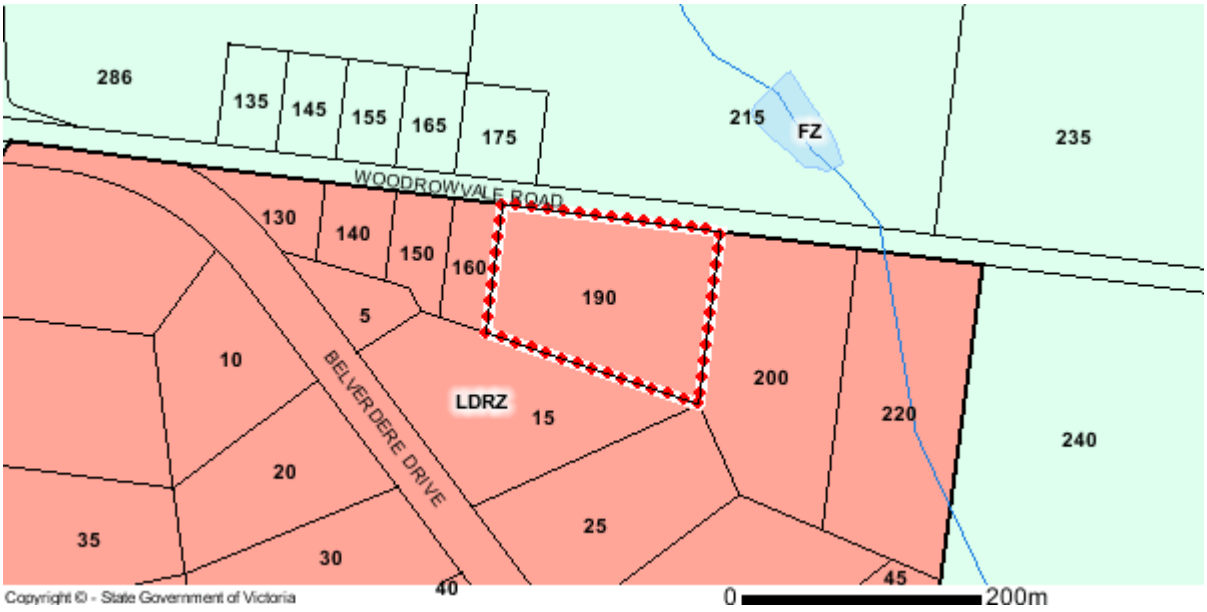
Planning Property Report

from www.planning.vic.gov.au on 07 January 2020 03:31 PM

Lot and Plan Number: Lot 29 PS322547
Address: 190 WOODROWVALE ROAD ELLIMINYT 3250
Local Government (Council): COLAC OTWAY **Council Property Number:** 10526
Directory Reference: VicRoads 92 B7

Planning Zone

LOW DENSITY RESIDENTIAL ZONE (LDRZ)
SCHEDULE TO THE LOW DENSITY RESIDENTIAL ZONE (LDRZ)



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

Zones Legend

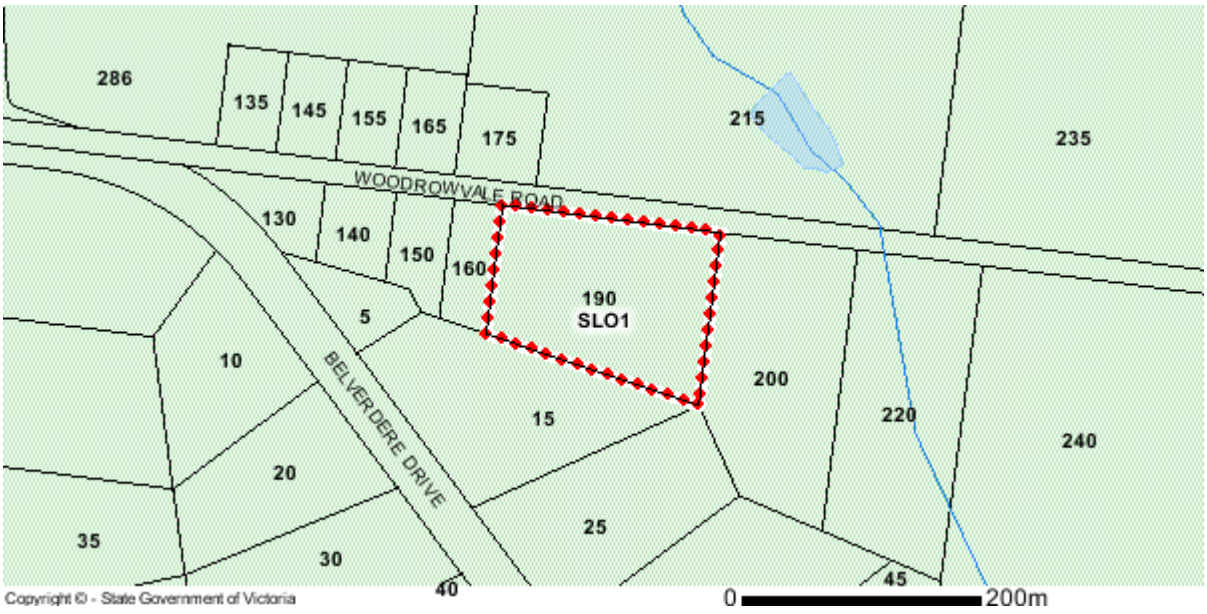
- ACZ - Activity Centre
- B1Z - Commercial 1
- B2Z - Commercial 1
- B3Z - Commercial 2
- B4Z - Commercial 2
- B5Z - Commercial 1
- C1Z - Commercial 1
- C2Z - Commercial 2
- CA - Commonwealth Land
- CCZ - Capital City
- CDZ - Comprehensive Development
- DZ - Dockland
- ERZ - Environmental Rural
- FZ - Farming
- GRZ - General Residential
- GWAZ - Green Wedge A
- GWZ - Green Wedge
- IN1Z - Industrial 1
- IN2Z - Industrial 2
- IN3Z - Industrial 3
- LDRZ - Low Density Residential
- MUZ - Mixed Use
- NRZ - Neighbourhood Residential
- PCRZ - Public Conservation & Resource
- PDZ - Priority Development
- PPRZ - Public Park & Recreation
- PUZ1 - Public Use - Service & Utility
- PUZ2 - Public Use - Education
- PUZ3 - Public Use - Health Community
- PUZ4 - Public Use - Transport
- PUZ5 - Public Use - Cemetery/Crematorium
- PUZ6 - Public Use - Local Government
- PUZ7 - Public Use - Other Public Use
- PZ - Port
- R1Z - General Residential
- R2Z - General Residential
- R3Z - General Residential
- RAZ - Rural Activity
- RCZ - Rural Conservation
- RDZ1 - Road - Category 1
- RDZ2 - Road - Category 2
- RGZ - Residential Growth
- RLZ - Rural Living
- RUZ - Rural
- SUZ - Special Use
- TZ - Township
- UFZ - Urban Floodway
- UGZ - Urban Growth
- Urban Growth Boundary

Railway | Tram | River, stream | Lake, waterbody

Planning Overlays

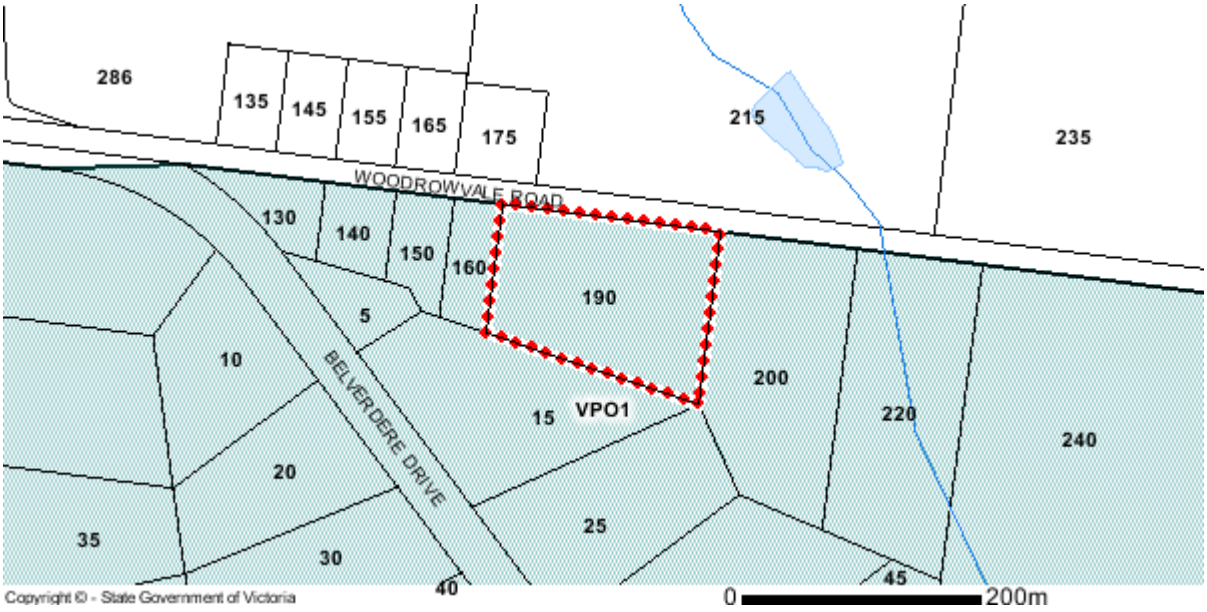
SIGNIFICANT LANDSCAPE OVERLAY (SLO)

SIGNIFICANT LANDSCAPE OVERLAY - SCHEDULE 1 (SLO1)



VEGETATION PROTECTION OVERLAY (VPO)

VEGETATION PROTECTION OVERLAY - SCHEDULE 1 (VPO1)

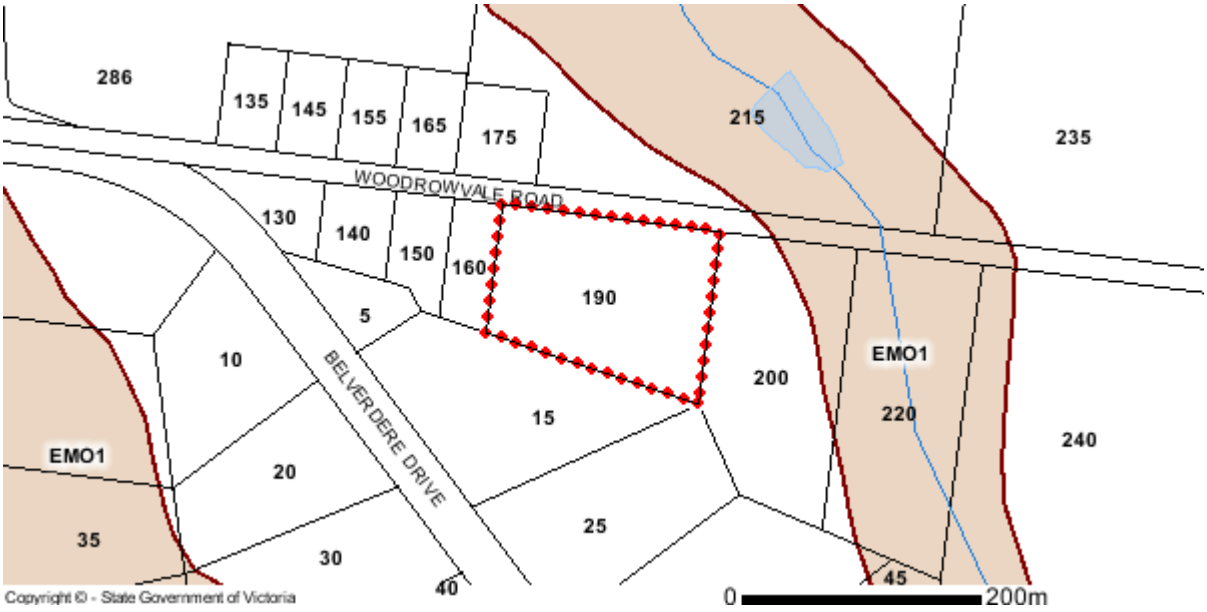


Planning Overlays

OTHER OVERLAYS

Other overlays in the vicinity not directly affecting this land

EROSION MANAGEMENT OVERLAY (EMO)



Overlays Legend

- AEO - Airport Environs
- BMO - Bushfire Management
- CLPO - City Link Project
- DCPO - Development Contributions Plan
- DDO - Design & Development
- DDOPT - Design & Development Part
- DPO - Development Plan
- EAO - Environmental Audit
- EMO - Erosion Management
- ESO - Environmental Significance
- FO - Floodway
- HO - Heritage
- ICPO - Infrastructure Contributions Plan
- IPO - Incorporated Plan
- LSIO - Land Subject to Inundation
- MAEO1 - Melbourne Airport Environs 1
- MAEO2 - Melbourne Airport Environs 2
- NCO - Neighbourhood Character
- PO - Parking
- PAO - Public Acquisition
- RO - Restructure
- RCO - Road Closure
- SBO - Special Building
- SLO - Significant Landscape
- SMO - Salinity Management
- SRO - State Resource
- VPO - Vegetation Protection

Railway | Tram | River, stream | Lake, waterbody

Note: due to overlaps some colours on the maps may not match those in the legend.

Further Planning Information

Planning scheme data last updated on 23 December 2019.

A **planning scheme** sets out policies and requirements for the use, development and protection of land.
This report provides information about the zone and overlay provisions that apply to the selected land.
Information about the State and local policy, particular, general and operational provisions of the local planning scheme that may affect the use of this land can be obtained by contacting the local council or by visiting Planning Schemes Online

This report is NOT a **Planning Certificate** issued pursuant to Section 199 of the *Planning and Environment Act 1987.*
It does not include information about exhibited planning scheme amendments, or zonings that may abut the land.
To obtain a Planning Certificate go to Titles and Property Certificates

For details of surrounding properties, use this service to get the Reports for properties of interest

To view planning zones, overlay and heritage information in an interactive format visit Planning Maps Online

For other information about planning in Victoria visit www.planning.vic.gov.au