

**PP182/2019-1**

**2235 Birregurra Forrest Road FORREST**

**C/A: 1H SEC: A V/F: 1996/155, Lot: 1 TP: 120818 V/F:  
9898/960, Lot: 1 TP: 126624 V/F: 9391/039**

**Use and development of the land for a  
Dwelling**

**PG & SL Scott Pty Ltd**

**Officer - Helen Evans**

# **EXHIBITION FILE**

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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



**Colac Otway**  
SHIRE

Planning Enquiries  
Phone: (03) 5232 9400  
Web: [www.colacotway.vic.gov.au](http://www.colacotway.vic.gov.au)

Clear Form

Office Use Only

Application No.:

Date Lodged:

# Application for a Planning Permit

If you need help to complete this form, read MORE INFORMATION at the end of this form.

**Any material submitted with this application, including plans and personal information, will be made available for public viewing, including electronically, and copies may be made for interested parties for the purpose of enabling consideration and review as part of a planning process under the *Planning and Environment Act 1987*. If you have any questions, please contact Council's planning department.**

**Questions marked with an asterisk (\*) must be completed.**

**If the space provided on the form is insufficient, attach a separate sheet.**

**Click for further information.**

## The Land

Address of the land. Complete the Street Address and one of the Formal Land Descriptions.

### Street Address \*

Unit No.:	St. No.: 2235	St. Name: Birregurra Forrest Rd
Suburb/Locality: Forrest		Postcode: 3236

### Formal Land Description \*

Complete either A or B.

**This information can be found on the certificate of title.**

If this application relates to more than one address, attach a separate sheet setting out any additional property details.

A	Lot No.: 1 & 2	<input type="radio"/> Lodged Plan	<input checked="" type="radio"/> Title Plan	<input type="radio"/> Plan of Subdivision	No.: TP120818 & TP 126624
<b>OR</b>					
B	Crown Allotment No.: 1C part, IH		Section No.: A		
Parish/Township Name: Yaugher					

## The Proposal

**You must give full details of your proposal and attach the information required to assess the application. Insufficient or unclear information will delay your application.**

**For what use, development or other matter do you require a permit? \***

This application is for a dwelling to support the development of a summer fruit orchard and native plant production business. The farm plan is to change the property from pasture only to summer fruits orchard and native plant production for cut flowers.

**Provide additional information about the proposal, including: plans and elevations; any information required by the planning scheme, requested by Council or outlined in a Council planning permit checklist; and if required, a description of the likely effect of the proposal.**

**Estimated cost of any development for which the permit is required \***

Cost \$250,000

**You may be required to verify this estimate. Insert '0' if no development is proposed.**



## Existing Conditions

### Describe how the land is used and developed now \*

For example, vacant, three dwellings, medical centre with two practitioners, licensed restaurant with 80 seats, grazing.

Pasture - existing

A summer fruits orchard is being planned in 2018 the first batch 180 young trees were planted

☒ Provide a plan of the existing conditions. Photos are also helpful.

## Title Information

### Encumbrances on title \*

Does the proposal breach, in any way, an encumbrance on title such as a restrictive covenant, section 173 agreement or other obligation such as an easement or building envelope?

- ☐ Yes (If 'yes' contact Council for advice on how to proceed before continuing with this application.)
- ☒ No
- ☐ Not applicable (no such encumbrance applies).

☒ Provide a full, current copy of the title for each individual parcel of land forming the subject site. The title includes: the covering 'register search statement', the title diagram and the associated title documents, known as 'instruments', for example, restrictive covenants.

## Applicant and Owner Details

Provide details of the applicant and the owner of the land.

### Applicant \*

The person who wants the permit.

Please provide at least one contact phone number \*

Where the preferred contact person for the application is different from the applicant, provide the details of that person.

### Owner \*

The person or organisation who owns the land

Where the owner is different from the applicant, provide the details of that person or organisation.

Name:

Title: Mr

First Name: Peter

Surname: Scott

Organisation (if applicable): PG & SL Scott Pty Ltd

Postal Address:

If it is a P.O. Box, enter the details here:

Unit No.:

St. No.: 150

St. Name: Seven Bridges Road

Suburb/Locality: Gerangamete

State: Vic

Postcode: 32

### Contact information for applicant OR contact person below

Business phone: 5236 6287

Email: pg\_sl\_scott@hotmail.com

Mobile phone:

Fax:

### Contact person's details\*

Same as applicant ☐

Name:

Title:

First Name:

Surname:

Organisation (if applicable):

Postal Address:

If it is a P.O. Box, enter the details here:

Unit No.:

St. No.:

St. Name:

Suburb/Locality:

State:

Postcode:

Name:

Same as applicant ☐

Title: Mr & Mrs

First Name: Peter and Sandra

Surname: Scott

Organisation (if applicable):

Postal Address:

If it is a P.O. Box, enter the details here:

Unit No.:

St. No.: 150

St. Name: Seven Bridges Rd

Suburb/Locality: Gerangamete

State: Vic

Postcode:

Owner's Signature (Optional):


Date:

day / month / year



## Declaration

This form must be signed by the applicant \*

 Remember it is against the law to provide false or misleading information, which could result in a heavy fine and cancellation of the permit.

I declare that I am the applicant; and that all the information in this application is true and correct; and the owner (if not myself) has been notified of the permit application.

Signature:

*[Handwritten Signature]*

Date:

day / month / year

## Need help with the Application?

General information about the planning process is available at [planning.vic.gov.au](http://planning.vic.gov.au)

Contact Council's planning department to discuss the specific requirements for this application and obtain a planning permit checklist. Insufficient or unclear information may delay your application.

Has there been a pre-application meeting with a council planning officer?

☐

No

☒

Yes

If 'Yes', with whom?: Various Meetings

Date: June / July 2019

day / month / year

## Checklist

Have you:



Filled in the form completely?



Paid or included the application fee?



Most applications require a fee to be paid. Contact Council to determine the appropriate fee.



Provided all necessary supporting information and documents?

☐

A full, current copy of title information for each individual parcel of land forming the subject site.

☐

A plan of existing conditions.

☐

Plans showing the layout and details of the proposal.

☐

Any information required by the planning scheme, requested by council or outlined in a council planning permit checklist.

☐

If required, a description of the likely effect of the proposal (for example, traffic, noise, environmental impacts).



Completed the relevant council planning permit checklist?



Signed the declaration above?

## Lodgement

Lodge the completed and signed form, the fee and all documents with:

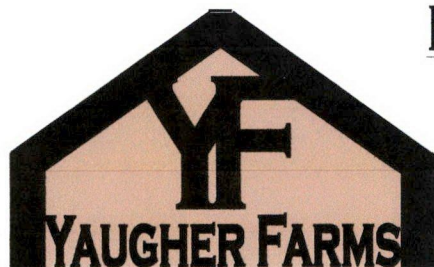
Colac Otway Shire  
PO Box 283  
Colac VIC 3250  
2-6 Rae Street  
Colac VIC 3250

### Contact information

Phone: (03) 5232 9400  
Email: [ing@colacotway.vic.gov.au](mailto:ing@colacotway.vic.gov.au)

Deliver application in person, by post or by electronic lodgement.





**P.G. & S.L. SCOTT P/L**  
 150 SEVEN BRIDGES RD GERANGAMETE VIC 3249  
 ACN-078-157-641 PH. (03) 52 366 287  
 ABN-24-757-518-429 FAX. (03) 52 366 019

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August 12, 2019

The Planning Department  
 Colac Otway Shire  
 2-6 Rae Street  
 COLAC VIC 3250

Dear Sir / Madam

Please find enclosed my application for a planning permit for a management residence at 2235 Birregurra Forest Road, Forrest.

**Applicant** – PG & SL Scott

**Purpose:** The purpose of this application is to seek a planning permit to construct a dwelling on the above property. This is to support the farm management plan which seeks to develop the farm land to become financially and environmentally sustainable.

#### **Site Summary**

Address - 2235 Birregurra Forest Rd, Forrest

Title Details- CA IHSec A (V/F 01996/155),  
 Lots 1 and 2 TP: 120818 (V/F: 9898/960) and Lot 1 TP:  
 126624 (V/ F: 09 391/ 03 9) Parish of Yaugher

#### **Restrictions / Covenants – None.**

The proponent is agreeable to a 173 agreement if required as part of this permit

#### **Land Area** Total: 9.6ha

CA IHSec A (V/ F 01996/155): 5.2ha

Lots 1 and 2 TP: 126624 (V/F: 9391/039): 3.633ha Lot 1 TP: 126624 (V/F:  
 09391/039): 7990m<sup>2</sup>

#### **Zoning -**

- FARMING ZONE (FZ) - SCHEDULE TO THE FARMING ZONE (FZ)
- PUBLIC CONSERVATION AND RESOURCE ZONE (PCRZ) - SCHEDULE TO THE PUBLIC CONSERVATION AND RESOURCE ZONE (PCRZ)

#### **Overlays**

BUSHFIRE MANAGEMENT OVERLAY (BMO)

EROSION MANAGEMENT OVERLAY (EMO)

EROSION MANAGEMENT OVERLAY - SCHEDULE 1 (EMO1)

HERITAGE OVERLAY (HO)

HERITAGE OVERLAY SCHEDULE (HO193)

LAND SUBJECT TO INUNDATION OVERLAY (LSIO)

LAND SUBJECT TO INUNDATION OVERLAY SCHEDULE (LSIO)



## Site and Context

The subject site, is comprised of three lots, has an area of 9.6ha, and is located approximately 1.5 km from the township of Forrest.

The site is located with frontage of 288 meters to the eastern side of Birregurra-Forrest Road. To the south of the site there is a Public Conservation and Resource Zone (PCRZ) that encompasses the Barwon River.

The eastern side of the property adjoins crown land which is native forest.

To the north is the Forrest Recreation Reserve, which is in the Public Park and Recreation Zone. The nearest dwelling is on an abutting lot to the north, at 2 Yaughar Road.

The property at 2235 Barwon Downs Forrest road is a small property within the farming zone which has become isolated over time from larger more productive properties and as such needs to be farmed differently to conventional agriculture to maximise its income potential.

The site is currently used for pasture and contains 3 sheds, a water tank and native vegetation.

In 2018 the beginnings of a summer fruits orchard and a range of complimentary flowering shrubs aimed at the cut flower market were planted.



## Current Use

The current use of the land at 2235 Birregurra Forrest Road is for pasture. Currently small numbers of cattle, sufficient only for vegetation control, graze on the land at periods throughout the year.

## Proposal

This application is for a planning permit to construct a dwelling to support a summer fruits orchard and cut flower native garden on the 9.6 hectare property at Forrest. A key element of the success of this business is diversity of produce which can be harvested



fresh and marketed locally.

### **Outline proposal**

The proposal is for a 4 bedroom dwelling. The dwelling would be located 57m from the eastern boundary and 57m from the northern boundary.

The dwelling has been sited to and designed

- to reduce visual prominence on the landscape flats.
- located on the less fertile land on the property
- so as not to require removal of any native vegetation
- passively discourage grazing by native animals
- away from the land subject to inundation

A dwelling is required to support the establishment of a summer fruits orchard and plant garden for cut flowers in order to support the long term agricultural activity on the land. A dwelling will also provide security for any machinery, plants and or animals that are stored on the farm

Due to the property's size, location and environmental surrounds we understand there are many forms of farming we cannot pursue. Due to its irregular shapes and soil types conventional cultivation for crops is not viable. Elevated sandy soils could be prone to erosion if cultivated.

Due to the close proximity of the land to the river intensive farming such as pigs or poultry would be environmentally challenging.

The planning overlays denote that approximately 50% of the land is subject to inundation. These factors together with the heritage overlay of the old Tiger Trail bridge limit the type of agricultural use for the land.

We have chosen the establishment of a summer fruits orchard and native flower development as we believe it to be the most appropriate use of the land which will deliver a sustainable and financial return.

### **Siting**

The 10ha site has few suitable opportunities for siting a proposed dwelling. The house site is located above the river flats on the least fertile soil on the property allowing the farmer to maximize use of the more fertile river flats.

The relatively flat elevated area in the northeast section provides the optimum location. The proposed site is positioned near the southern rim of the bluff and well away from remnant forest beyond the eastern boundary. It is recommended in the BMO that the house be set at least 57m from remnant vegetation. – Refer BMO approval measure 2.1 and 2.2

The driveway accessing the dwelling would have a length of approximately 300m. This driveway services the sheds on the property, provides access to all areas of the property with a turning circle/passing point to be constructed near the sheds part way up the driveway to meet CFA recommendations.

### **House**

There is currently no existing dwelling on the property.

The proposal is for a 4 bedroom dwelling. The dwelling would be located 57metres from the eastern boundary and 57m from the northern boundary.

Four bedrooms provides the ability to allow for a study within the house  
The house will be in muted neutral tones with a colourbond roof

The final drawings for the house are to be lodged by email by Solor Solutions.



## Overview of Planning Provisions

### 5.1 FARMING ZONE (FZ)

The subject land is included in the **Farming Zone (FZ)** under the Colac Otway Planning Scheme.

The purpose of the Farming Zone s:

- *To implement the State Planning Policy Framework and the Local Planning Policy Framework, including the Municipal Strategic Statement and local planning policies.*
- *To provide for the use of land for agriculture.*
- *To encourage the retention of productive agricultural land.*
- *To ensure that non-agricultural uses, including dwellings, do not adversely affect the use of land for agriculture.*
- *To encourage the retention of employment and population to support rural communities.*
- *To encourage use and development of land based on comprehensive and sustainable land management practices and infrastructure provision.*

The land at 2235 Birregurra Forrest Road sits isolated from other surrounding farm land. The dwelling forms part of the farm plan and genuinely required to develop and manage the business. The farm plan for the property has been developed taking into account all the attributes of the property to make the land as productive as possible given its individual characteristics.

The 9.6 ha property adjoins the Barwon River West Branch on its Southern side and adjoins crown land to the west, it has no adjoining link to farm land.

This application for a dwelling is to support intensive agriculture on a small lot that is otherwise not economical to farm.

**In Clause 21.05-1** the Colac Otway Planning Scheme seeks to protect agricultural industries and recognizes that they are critical to the economic and social well being of the Shire.

**The purpose of the Colac Otway Planning Scheme is to provide clear and consistent framework for decision making.**

Its objectives include;

- To support sustainable development
- To encourage sustainable agricultural land use
- Support the development of innovative and sustainable approaches to agriculture and associated rural land use practices
- Encourage diversification and value-adding of agriculture through effective agricultural production and processing, rural industry and farm-related retailing
- Assist genuine farming enterprises to embrace opportunities and adjust flexibility to market changes
- Support agricultural investment through the protection and enhancement of appropriate infrastructure
- Facilitate ongoing productivity and investment in high value agriculture

The proponent's farm plan is an innovative and sustainable approach to agriculture, given the size of the lot, its irregular shape and its isolation from other rural allotments.



This farm plan has been developed based on the changing environmental conditions. It takes into account, soil types, water availability, risk of erosion and flooding requirements of the community.

It is the type of farming which requires a high frequency of labour in small amounts and is not feasible without a resident based manager on the property.

In order to maximise the benefit from the orchard and ensure that the orchard and plants reach maximum bearing capacity it will need a resident manager. There is a need to build be a residential dwelling so that

- the orchard can reach the best production level possible
- provide security for the property
- act as a passive deterrent to herds of kangaroos

The rural land strategy has acknowledged *"that to maintain viability, many farms will have to increase in size or **look to more intensive, alternative enterprises**"*

Currently this land is isolated from adjoining farming land and has minimal potential as traditional agricultural land due to its location, isolation and soil types.

In order to maintain the agricultural viability of the 9.6 hectares which over time has become separated from adjoining farming land, the proponents have taken into account a number of factors and aim to intensively farm the land.

In developing their farm plan the proponents have taken into consideration the following aspects of the site:

- Various soil types – sand on bank fertile on river bank
- Random shape of the land
- Inability to harvest additional water from the river or install dams
- Unsuitability to intensive animal farming
- High rainfall – suitable for fruits
- Easy access to markets for sale
- Access and egress to and from the property
- Steep hill unsuitable for cattle grazing or running tractors on

The proponents have commenced planting a summer fruits orchard which will be supplemented by growing native flowers for the cut flower market. This will enable the land to be used for agriculture and the dwelling would enhance agricultural production as it would enable the business owner or manager to live at the property and develop the business.

#### **Clause - 35.07**

##### **FARMING ZONE**

##### **The purpose of this clause is**

- To implement the Municipal Planning Strategy and the Planning Policy Framework.
- To provide for the use of land for agriculture.
- To encourage the retention of productive agricultural land.
- To ensure that non-agricultural uses, including dwellings, do not adversely affect the use of land for agriculture.
- To encourage the retention of employment and population to support rural communities.
- To encourage use and development of land based on comprehensive and sustainable land management practices and infrastructure provision.

- To provide for the use and development of land for the specific purposes identified in a schedule to this zone.

The land at 2235 Birregurra Forrest road would continue to be used for agricultural and the dwelling would enhance the use by allowing intensive agricultural activity on what is a small lot of land. Taking into account the capacity of the site to sustain agriculture.

The dwelling would enhance agricultural production as it would enable the business owner or manager to live at the property and develop the business.

The construction of a dwelling is instrumental to the development and success of the farm plan which is based on a diverse approach to use of this land for agriculture.

#### **Clause 14.01-1 – Protection of Agricultural land**

**Objective : - To protect the state's agricultural base by preserving productive farmland.**

Based on the traditional use of this land for grazing there is not the current or potential financial return to justify additional investment of capital or labour to improve pasture versus possible return. The best way to protect agricultural land is to allow it to be productive and financially viable. This farm plan relies on an on-site manager or owner to be feasible will help make the property productive and financially viable whilst keeping it environmentally sustainable despite changing environmental conditions.

#### **14.01-2S Sustainable agricultural land use**

**Objective: To encourage sustainable agricultural land use.**

The construction of a dwelling is essential to the viability of the attached farm plan as it gives on site management and security to the property. The attached farm plan is not reliant on additional water or clearing of native bush and can be adapted to a changing environment. It recognizes the changing environment throughout the state and the need to adapt the plan based on actual results. Despite variations to the traditional rainfall there should be enough water to sustain the plants especially given their closeness to the water table without taking additional water from the environment. The trees should be able to survive inundation of the land if threatened.

#### **14.01-2R Agricultural productivity**

**Strategy – Support new opportunities in farming and fisheries**

Council planning scheme states it seeks to support new opportunities in farming and fisheries – whilst the farm plan for 2235 Birregurra Forrest Road may not be regarded by some as new, a mixed orchard and native plants would provide a new opportunity for this property to increase productivity. It would take advantage of its natural river flats, high rainfall and closeness to an existing and developing fresh food market where people are looking for food fresh from the farm.



## 21.02-2 Land Use Vision

### Council Vision States:

#### Agriculture

- High quality agricultural land will be protected.
- Agricultural diversity and a sustainable forestry and timber industry will be encouraged in the region.
- Grazing and cropping farming practices are the preferred land uses in areas designated as "farmland of strategic significance".

The land at 2235 Birregurra Forrest Road is considered high quality agricultural land which needs to be protected. The land on the rise and sand banks is poor quality farm land and could be subject to erosion from cultivation. The combination of the property's isolation from adjoining farm land and irregular shape make it unviable for cropping or traditional farming. Due to its small size and isolation from other land grazing without someone on site has proved financially unviable. Grazing requires frequent visits to the land to check on stock and as the land can only carry minimal stock numbers per return for hours and travel this is unviable.

The proposal to develop an orchard and native cut flower business would make the land productive and therefore help protect it as agricultural land. This plan relies on a dwelling to make it viable.

## 21.03-9 - Rural Living

The application to construct a dwelling at 2235 Birregurra-Forrest Road is to support an agricultural business on the site to ensure the land will be productive agricultural land.

Council strategy states in this section that its strategies should ***"Recognise the function of already-developed old and inappropriate rural subdivision as 'de facto' rural living developments."***

It should be noted that this land is not a subdivision but an already existing site which has been isolated from other farm land over time. On this basis alone it would seem appropriate for the planning permit to be granted.

## 21.05-1 – Agriculture

### Objectives

- To facilitate the growth of key primary industries and a range of developments to add to the economic base of the Shire.
- To maintain the viability of large-scale agriculture and the retention of areas of farmland of strategic significance and other high quality agricultural land for agricultural use.
- To protect rural land for agricultural production and timber harvesting activities.
- To limit the further fragmentation of rural land by subdivision.
- To encourage the consolidation of rural land.
- To protect the rural and agricultural areas of the Shire from the proliferation of dwellings not associated with agriculture.
- To ensure that lots resulting from subdivision are of a sufficient size to be of benefit to agricultural production or environmental protection.
- To ensure that the development of dwellings on rural land does not prejudice existing agricultural production or forestry activities on surrounding land.
- To discourage the development of dwellings that has a detrimental impact in areas of high landscape value and significant environmental quality.
- To ensure that incompatible land uses (including dwellings) do not negatively impact on the ability to farm.

In taking into consideration this section of the Colac Otway Planning Scheme it should be noted the land at 2235 Birregurra Road, Forrest is:

- 9.6 ha in size
- development of a business based around an orchard and native plant nursery will add to the economic development of the land
- geographically isolated from other land by crown land and river frontage
- Development of a business on this land which is not a subdivision will be productive and therefore of economic benefit to the community
- The development is on a small lot and there would be no detrimental impact on surrounding farm land
- The construction of a dwelling on the land is for on site management of the business and would therefore improve the ability to farm the land NOT have a negative impact. A dwelling is genuinely required to carry out a long-term agricultural activity on the land

### SCHEDULE TO THE PUBLIC CONSERVATION AND RESOURCE ZONE (PCRZ)

A small portion of the property which adjoins the Barwon River West Branch is subject to PCRZ. There is no plan to change or develop the land detailed in the map under this schedule

**Cultural Heritage Management Plan (CHMP)**– advised that the construction of a dwelling is exempt from this criterion.



## **EROSION MANAGEMENT OVERLAY - SCHEDULE 1 (EMO1)**

The land is impacted by the Erosion Management Overlay Schedule 1  
The objectives of the EMO1 are as follows:

- To manage the risk of landslide.
- To ensure that development can be carried out in a manner which will not adversely increase the landslide risk to life or property affecting the subject land or adjoining or nearby land.
- To ensure that development is not carried out unless the risk associated with the development is a Tolerable Risk or lower.
- To ensure that applications for development are supported by adequate investigation and documentation of geotechnical and related structural matters.
- To ensure that development is only carried out if identified geotechnical and related structural engineering risks to life and property are effectively addressed.

A geotechnical assessment in relation to the site has been carried out and identifies that the land can adequately support a house. The report is attached for your information. Septic tank installation will be installed in accordance with the geotechnical report – See attachment Geotechnical report – sec 2, 7 and 10

## **BUSHFIRE MANAGEMENT OVERLAY (BMO)**

The land is impacted by Bushfire Management Overlay (BMO).  
The purpose of the BMO is

- *To implement the State Planning Policy Framework and the Local Planning Policy Framework, including the Municipal Strategic Statement and local planning policies.*
- *To ensure that the development of land prioritises the protection of human life and strengthens community resilience to bushfire.*
- *To identify areas where the bushfire hazard warrants bushfire protection measures to be implemented.*
- *To ensure development is only permitted where the risk to life and property from bushfire can be reduced to an acceptable level.*

Please find attached a bushfire management statement prepared by Bruce St Clair and including the Site assessment, landscape assessment and Bushfire Management Statement as required.

## **HERITAGE OVERLAY SCHEDULE (H0193)**

The land is subject to the above heritage overlay (H0193) referring to Railway Bridge Remnants adjoining 2315 Birregurra Forrest Road, Forrest.  
The building of a dwelling will have no impact on Site H0 193. This site sits on land adjoining the south west corner of the property where the bridge has crossed the West Tributary of the Barwon River.



## **LAND SUBJECT TO INUNDATION OVERLAY (LSIO)**

### **LAND SUBJECT TO INUNDATION OVERLAY SCHEDULE (LSIO)**

Approximately 50% of the land at 2235 Birregurra Forrest Road has a LSIO overlay over it. The siting of the dwelling is planned for the North East section of the property which sits outside the inundation overlay and will be accessible by a track also constructed outside the overlay area.

**Waste Water Disposal - SEPTIC System** - A geotechnical assessment in relation to the site has been carried out and identifies that the land can adequately support a house. The report is attached for your information. Septic tank installation will be installed in accordance with the geotechnical report – See attachment Geotechnical report

Based upon the land capacity report the planned septic system is a primary treatment system discharging to ETA trenches. Refer 2020 Engineering report, Section one Item for details.

#### **All weather access Track**

The driveway accessing the dwelling would have a length of approximately 300m coming from the current entry off Birregurra Forest Rd. This driveway services the sheds on the property, provides access to all areas of the property

The track will be constructed to a minimum standard load of at least 15 tonnes with an average grade of no more than 1 in 7 and a maximum grade of no more than 1 in 5 for no more than 50 metres. A passing bay will constructed approximately half way along the track for passing vehicles.

#### **Water supply:**

It is proposed to install 50,000 litres of rainwater storage at the house to meet fire fighting and domestic water requirements. Given that the minimum mean rainfall in any month is over 40mm this should be adequate to meet all house requirements. The property also has a 1 megalitre stock and domestic water licence.

**Farm Security** – The property at 2235 Birregurra Forest Road is isolated from other properties and whilst it sits on the main busy road any illegal activity is not visible due to vegetation along the roadside. Machinery, produce and animals could be subject to theft or damage given the numerous number of people passing by car, bike and walking. A dwelling on the property would help to ensure the security of the plant and plants kept on the property.

In December 2018 the Weekly times reported on farm theft in Victoria reaching an all time reported high with over \$5.74 million worth of animals, tools, machinery and other goods being stolen. The Weekly Times cited that it is believed that the true cost of farm theft could be closer to \$10 million with many thefts going unreported.

#### **Power Supply –**

Power can be supplied to the house from an existing pole and is single phase detailed on the enclosed site map

#### **Owners land –**

The land is currently owned by PG & SL Scott who run a potato growing and beef grazing business at 150 Seven Bridges Road, Gerangamete. This property is approximately 7 kilometers in distance from 2235 Birregurra Forest Road.



**Acknowledgement – Section 173**

The proponent acknowledges that there could be a potential need to enter into an agreement under Section 173 of the Planning and Environment Act 1987 to prevent excision of the dwelling from the farming land.

**Native Vegetation and Fauna–**

The site has a number of local species gum trees on it, There is no plan to remove any native vegetation for the construction of the dwelling or access track. It should be also be noted that from an agricultural view point the property sees large mobs of kangaroos from adjacent crown land grazing on the property. A dwelling would assist by passively deterring native animals.

**Summary**

This application for a dwelling is to support intensive agriculture on a small lot that is otherwise not economical to farm. The construction of a dwelling is instrumental to the development and success of the farm plan which is based on a diverse approach to use of this land for agriculture.

The dwelling:

- Would allow the business owner or manager to live at the property and develop the business.
- Would allow agricultural land now with low productivity to increase its food production capacity
- is genuinely required to carry out a long-term agricultural activity on the land
- is reasonably required on the land having regard to the size of the lot, intensity and ongoing nature of the proposed agricultural activity
- would not compromise Commercial agricultural activities of the existing farm by the reduction in the size of the existing farm due to the construction of a dwelling
- would have no adverse impact on nearby agriculture
- is geographically isolated from other agricultural land by main road, crown land and river frontage
- would provide security for the farm property
- Passively deter kangaroos from grazing on plants and pasture
- Due to its isolation from other properties would not lead to a concentration or proliferation of dwellings in the area as it is to support intensive agriculture on a small lot

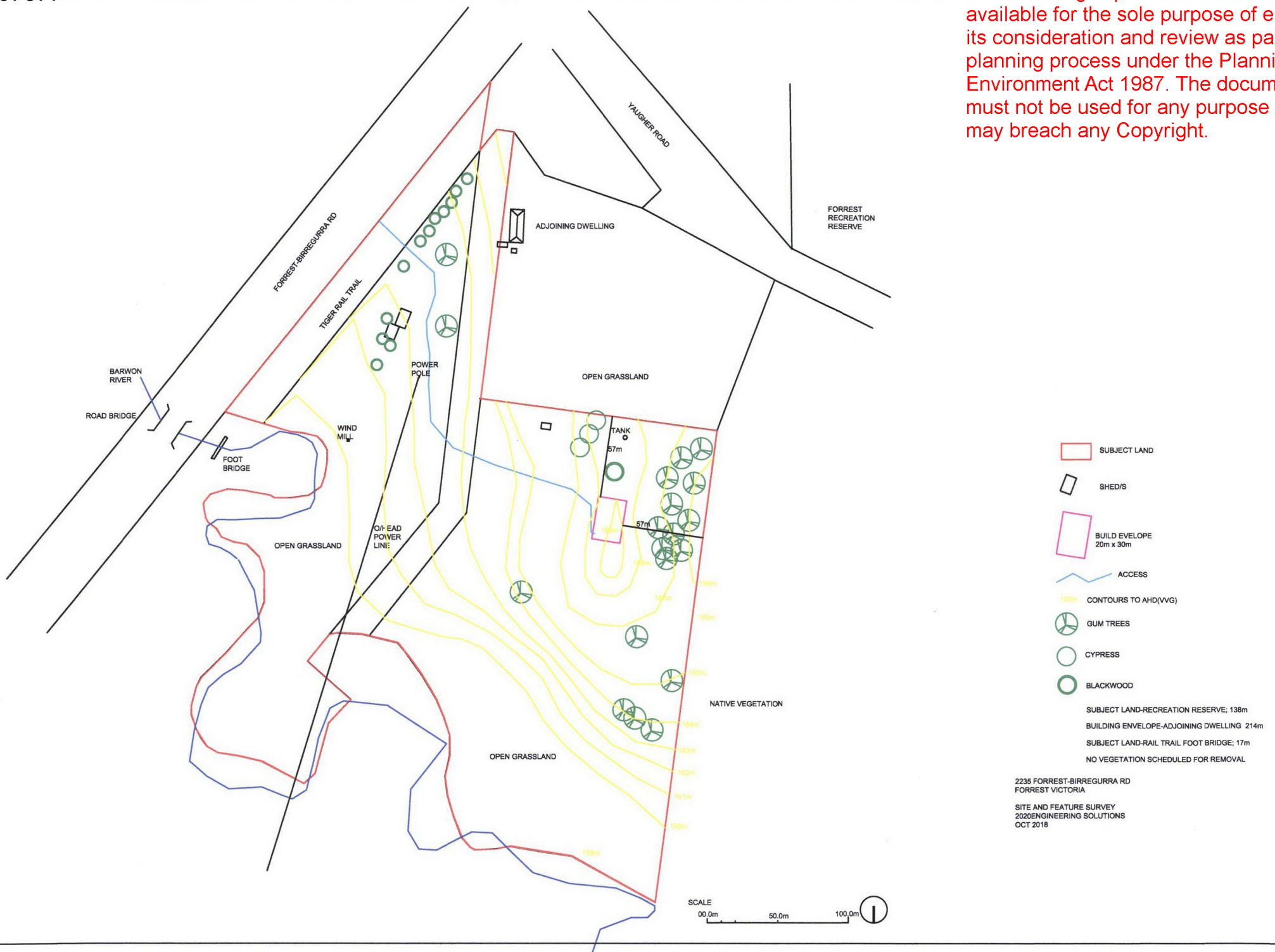
Yours truly,  
PG & SL Sott





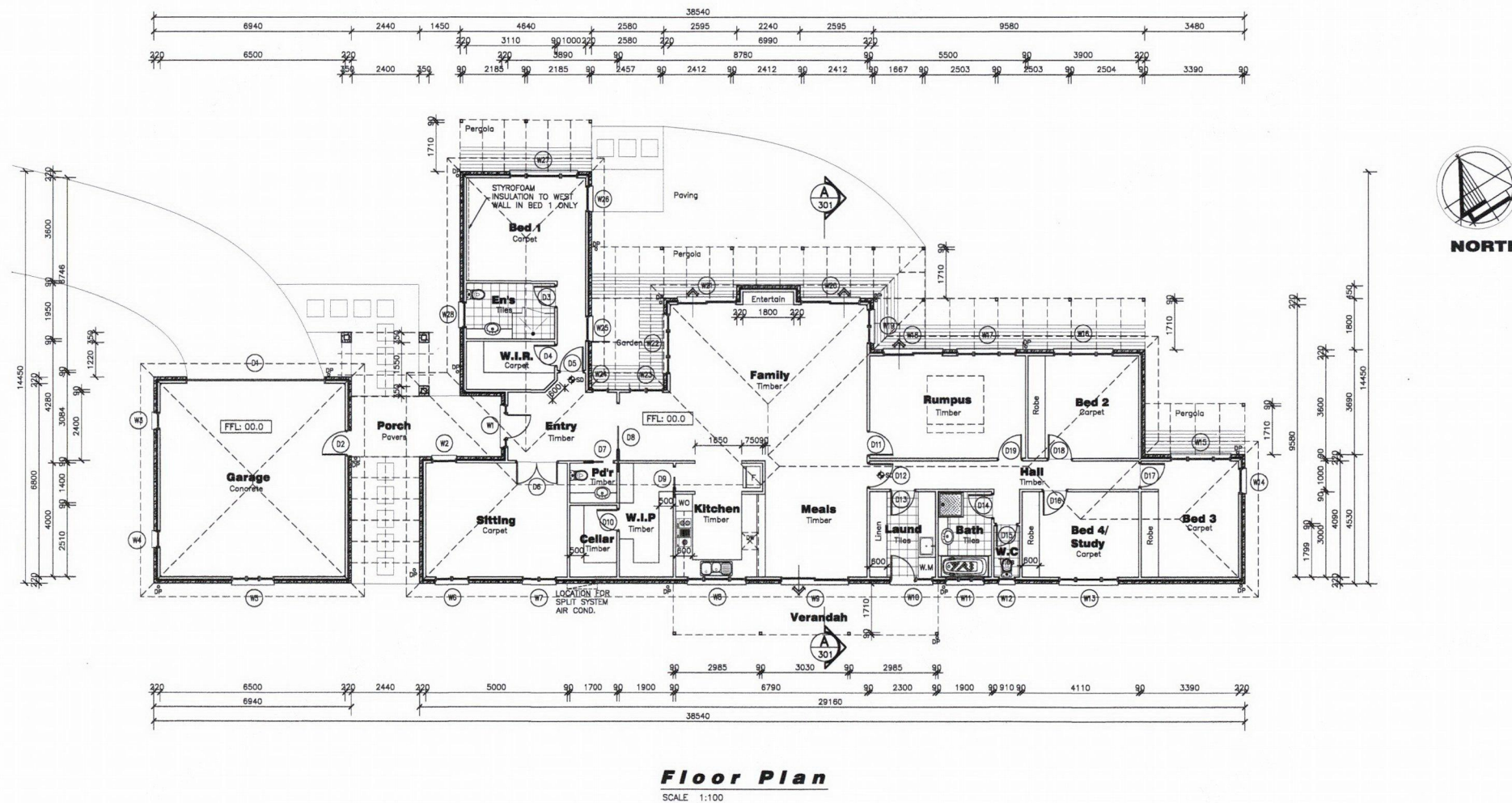


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S:\SOLAR SOLUTIONS\SOLAR STUDY SETS\COUNTRY-004\WD-101.DWG

Client : <b>COUNTRY 004 STUDY SET</b>	Drawing : <b>FLOOR PLAN</b>	REVISIONS	<p>Note: All work shall conform to the specification and other relevant drawings. Figured dimensions take precedence over scaled dimensions. Check all dimensions on site. Shop drawings shall be submitted to this office for approval before the commencement of any fabrication. © Copyright Solar Solutions Design &amp; Drafting 2005</p>	 <b>Solar Solutions</b> Design & Drafting Solar Solutions Pty. Ltd.	Suite 2/199 Stud Road Wantmire, Victoria 3152 Phone: (03) 9801 7247 Fax: (03) 9801 7707 Website <a href="http://www.solarsolutions.au.com">www.solarsolutions.au.com</a>	MEMBER  Building Designers Association Victoria
Project : <b>NOT FOR CONSTRUCTION NOT FOR CONSTRUCTION NOT FOR CONSTRUCTION</b>	Job No : 99777 Date : 13/02/06 Scale : 1:100 Drawn : D.W Checked : D.P.E Drg. No : <b>SS-101</b> Amendment No : -	No :                      Amendments :                      Date : _____ _____ _____				



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# LAND CAPABILITY ASSESSMENT

2235 Birregurra-Forrest Rd. Forrest, Victoria

2020Engineering Solutions  
11/22/2018



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**

#### **SECTION ONE**

1. Introduction & Background
2. Planning Reports
3. Declared Water Catchment Area
4. Topography (Planning Maps On Line)
5. Groundwater Bores (VVG)
6. Regional Land Use
7. Site Inspection & Field Investigations
8. Proposal
9. BORELOG
10. Soil Analysis
11. System Selection
12. Sizing The Effluent Disposal System
  - 12.1 Site Plan
  - 12.2 Applicable Setback Distances (From As1547:2012)
- 13 Planning Authority Land Capability Assessment/Confirmation.

#### **SECTION TWO**

MAV Tables

#### **SECTION THREE**

Site Management Plan

### **INSURANCE CERTIFICATE OF CURRENCY**

### **DISCLAIMER**

### **REPORT SUMMARY/EXECUTIVE SUMMARY**

This Report finds that the property can sustainably manage primary treated wastewater within boundaries to EPA requirements based upon water balance calculations, suitably sized Land Application Area of 130m<sup>2</sup>. (12m x 12 m), containing 52m<sup>2</sup> of base area.



## SECTION ONE

### 1 INTRODUCTION & BACKGROUND

This Report has been prepared to support Planning Application PP267/2018-1 Construction of a dwelling. Detailed plans were not available at the time of reporting, however a four bedroom dwelling on tank water with water reduction fittings will be the basis for the report.

**Address**

2235 Birregurra-Forrest Rd. Forrest

**Title**

Lot 1 TP120818

**Zoning**

FZ

**Overlays**

BMO EMO(Part) LSIO(Part) HO

**Size**

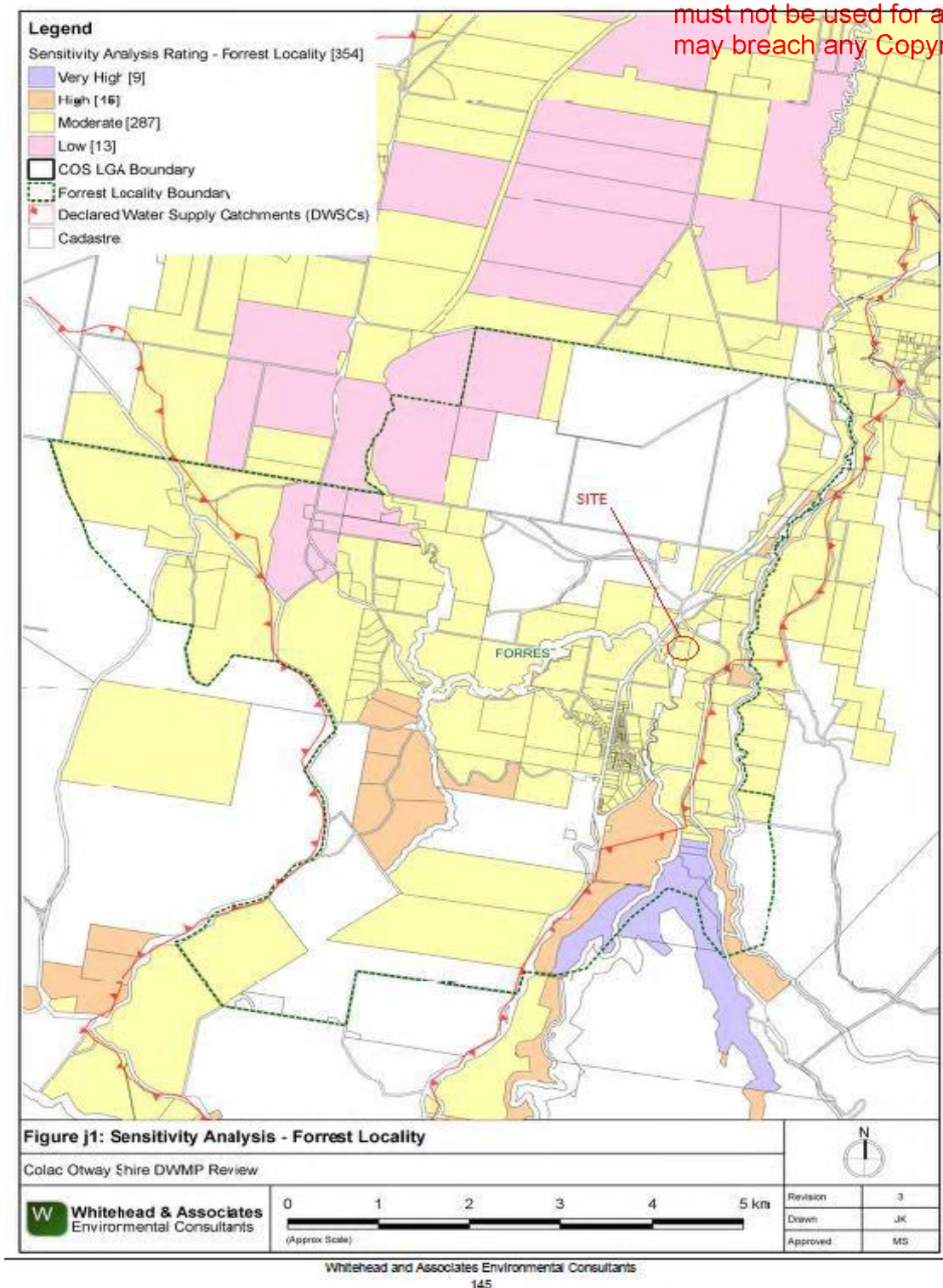
10.Ha

**Sensitivity Analysis Rating**

Moderate (DWMP)(See attached)

**Declared Water Catchment Area**

Not in water catchment area

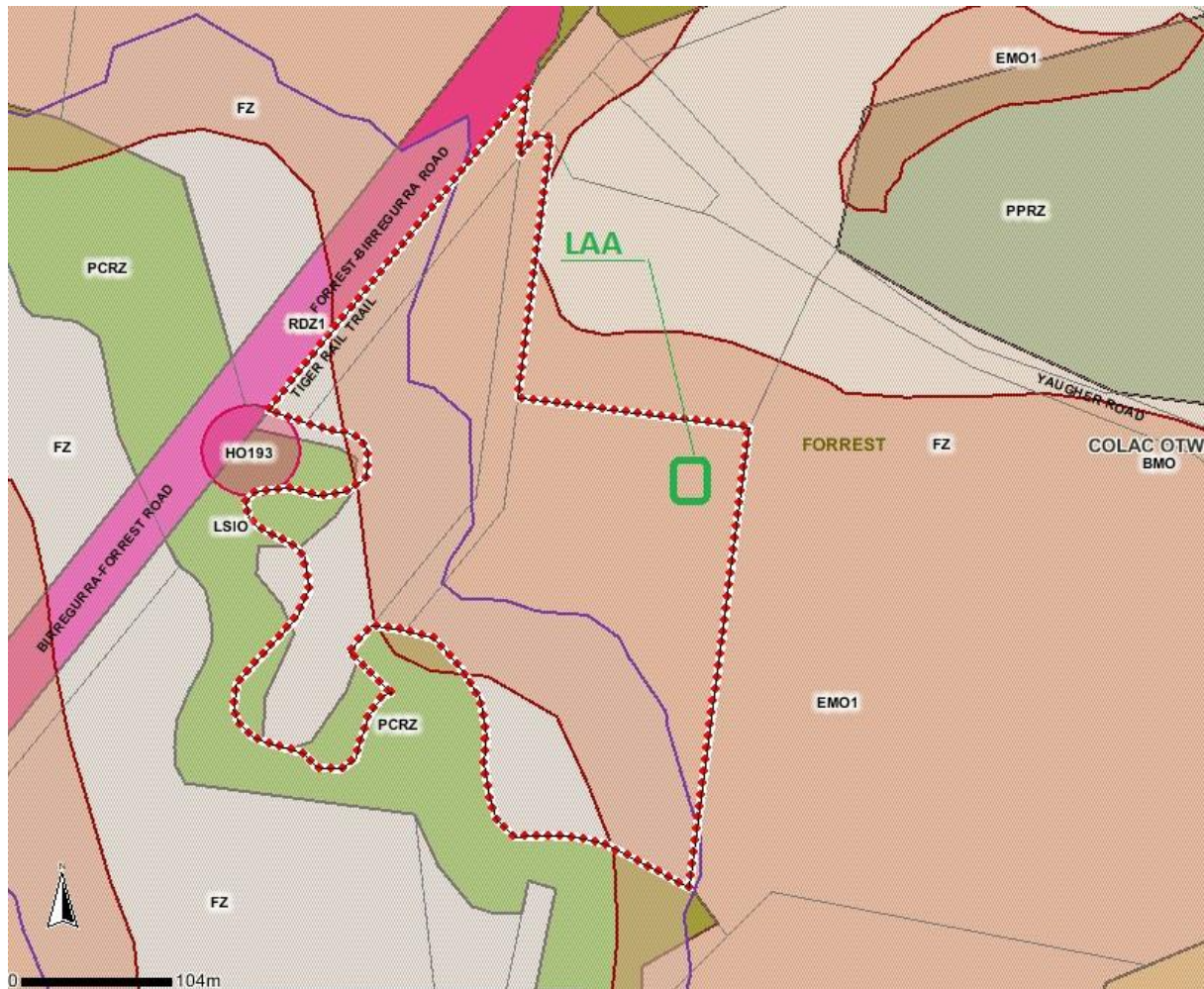


Moderate Sensitivity (DWMP) Standard Report.(DWMP)

DWMP mapping also indicates site not within water catchment zone



## 2 PLANNING REPORT



Location of LAA with respect to overlays. (Planning maps online)

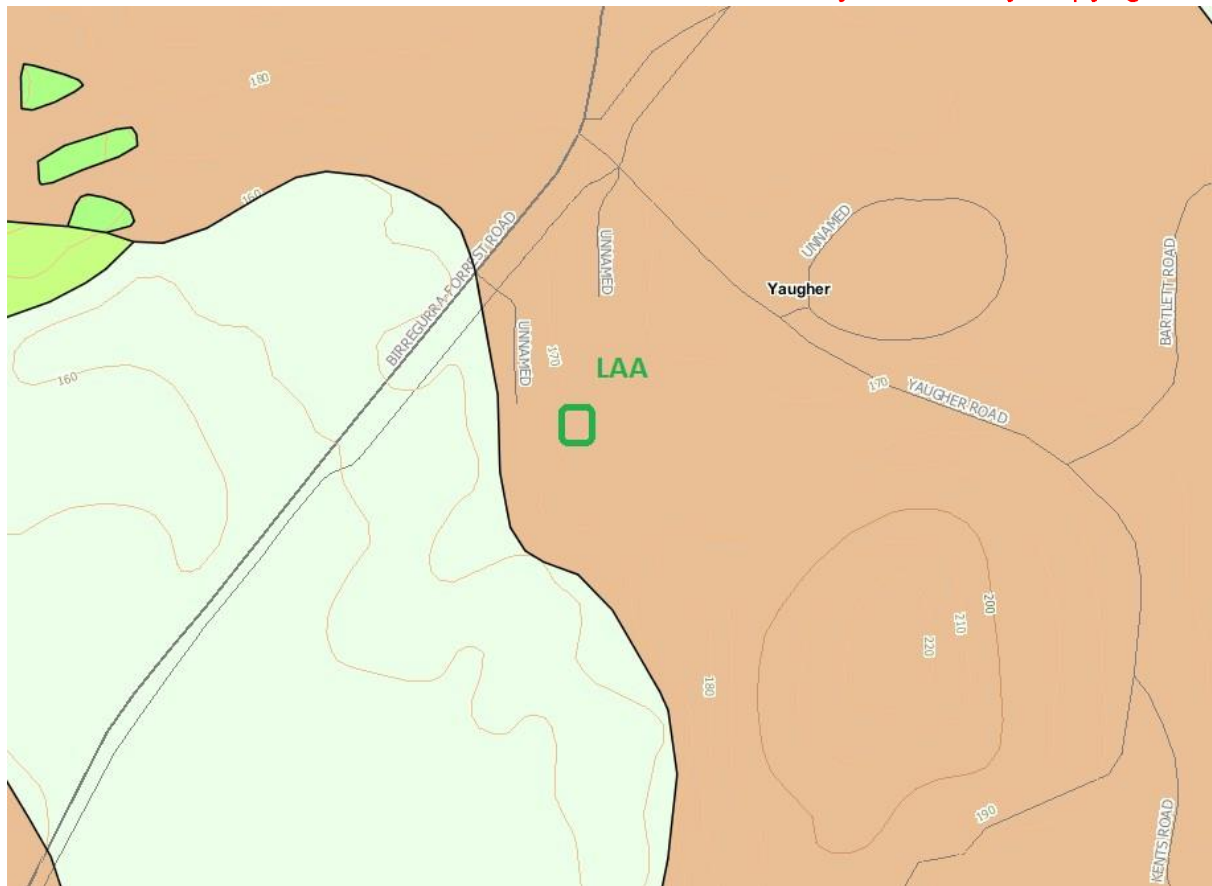
Note; LAA located outside Land Subject To Inundation.

ACN 11 9460 865



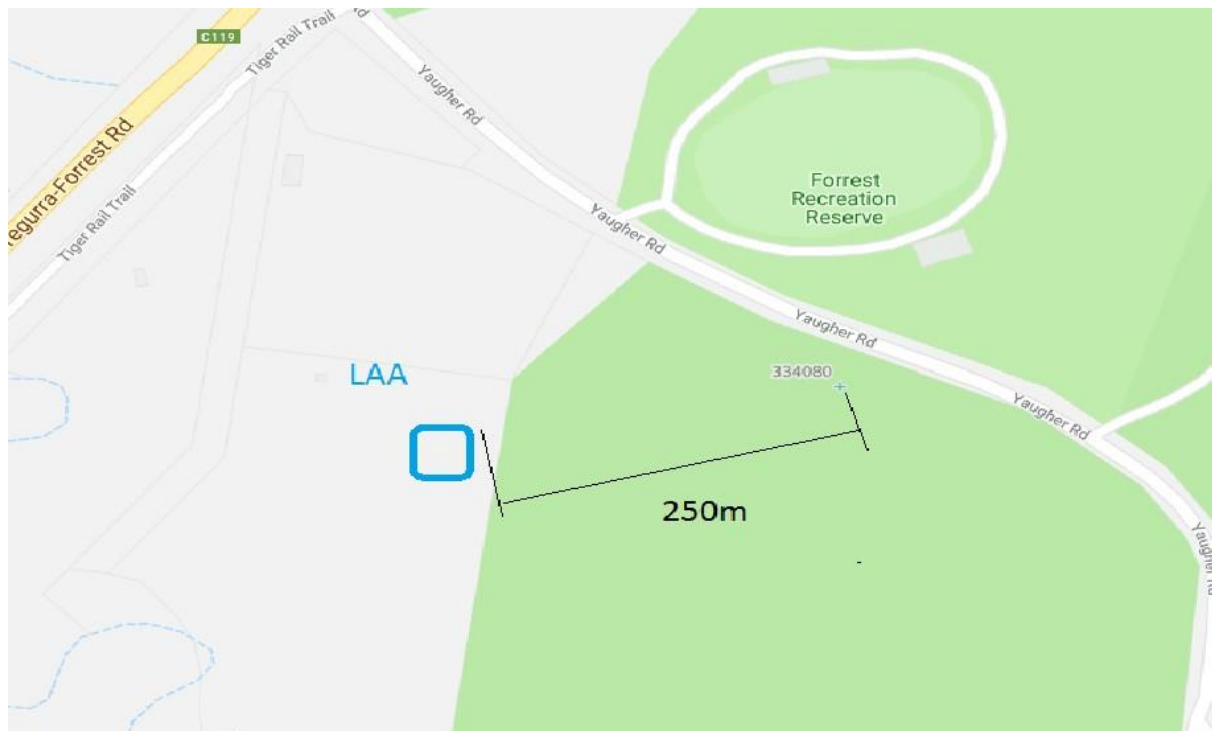


#### 4 GEOLOGY

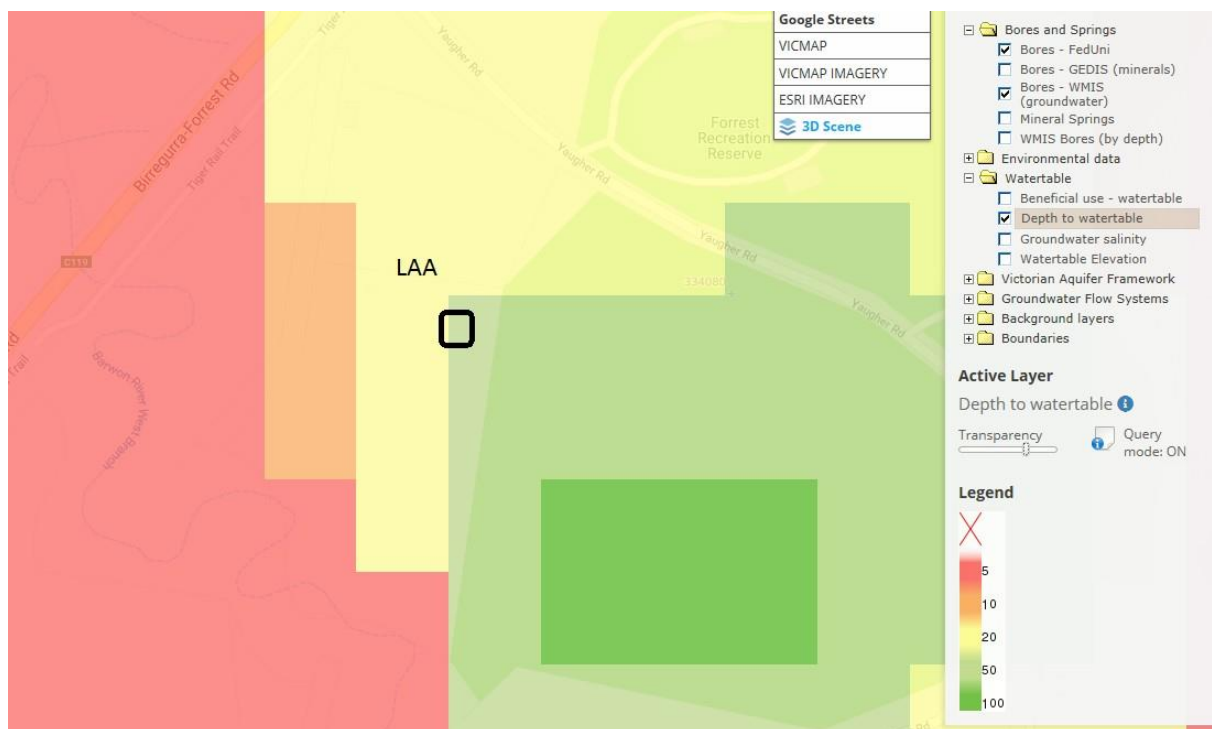


Published geological maps of the area indicate the property includes a range of TERTIARY AGE, Demons Bluff Formation material and Quaternary Age on the river flats, with the proposed building/disposal zones on an elevated portion of the Tertiary Age material.

## 5. GROUNDWATER BORES (VVG)



No bores within buffer zones of proposed LAA.(VVG).



Ground water indicated at about 50m. (VVG)



## 6. REGIONAL LAND USE



Aerial image indicates surrounding land use, cleared, open grassland, adjoining an area of bush.  
(Planning Maps Online)

Proposed LAA site appears to have a long history as part of an extensive grazing operation and at the time of inspection contained improved pasture.



## 7. SITE INSPECTION & FIELD INVESTIGATIONS



View to north across build envelope, with LAA to right.(Source; Author).



View to NE from edge of build envelope LAA surface comprises slightly undulating, open, cleared area of grassland currently used for grazing. Existing vegetation displays vigorous bracken growth.



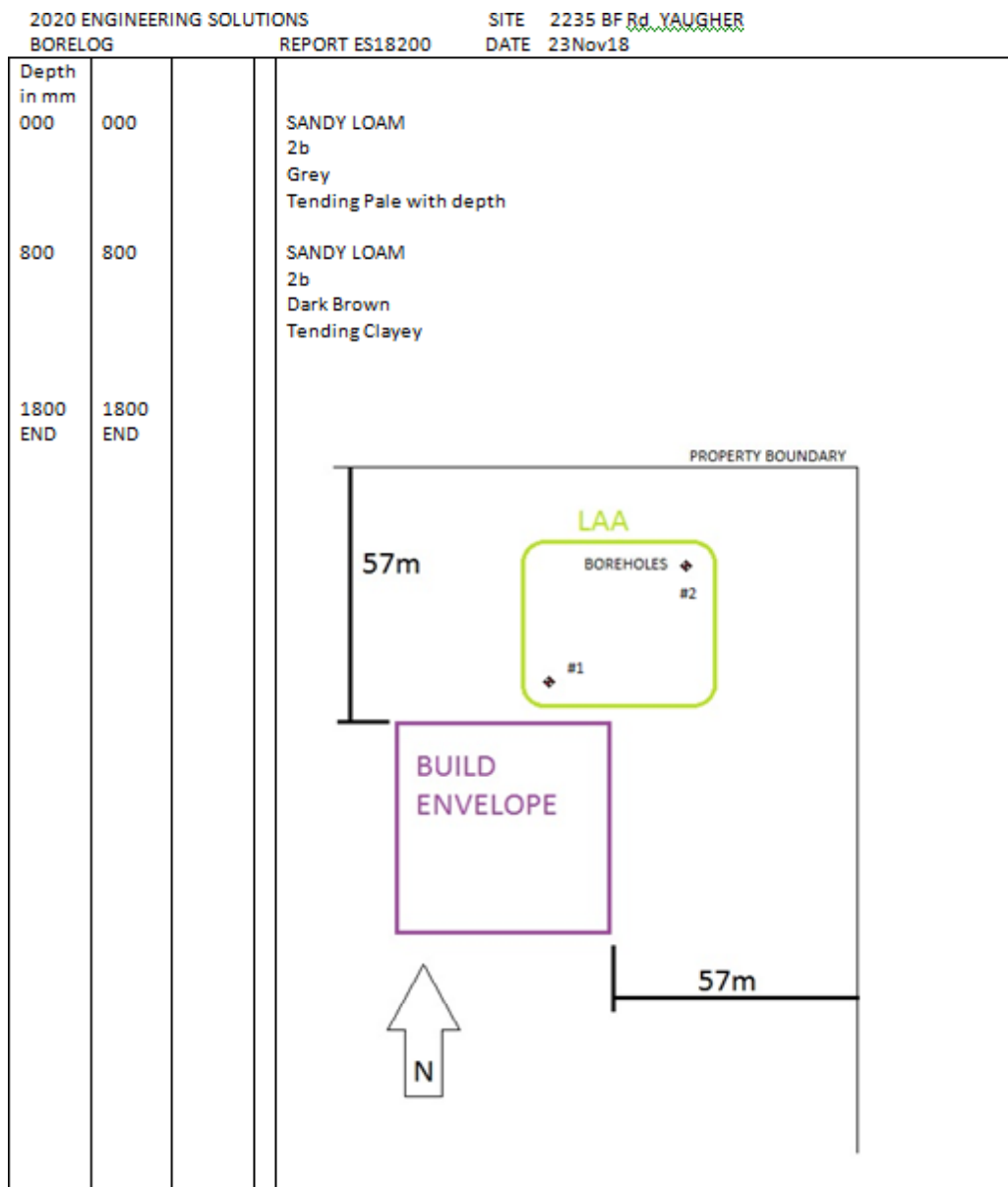
## 8.0 PROPOSAL

Proposed Plan indicating deemed wastewater production based upon 4 bedrooms, as (4 + 1) x 150 l/d = 750 l/d. Table 4 EPA 891.4

Full water reduction plumbing fittings give a deemed production rate of 150 l/d person or a total of 750 l/d. Table 4 EPA 891.4

Detailed plans were not available at the time of inspection and reporting.

## 9.0 BORELOG



## 10.0 SOIL ANALYSIS

IN FINAL REPORT

## 11 SYSTEM SELECTION

Based upon the site inspection, the size of the allotment, the local environment and the guidelines within the controlling documents, this report recommends primary treatment system discharging to ETA trenches.

*Sizing Tables for each system type were created using conservative monthly water balances, following methods described in the MAV Model LCA, 2014. The water balances used monthly 70<sup>th</sup> percentile rainfall and average evapotranspiration data for Gellibrand, as it was compared with that of Forrest and found to be very similar, with very little size differences in water balance results. The climate data for Gellibrand was sourced from SILO (Scientific Information for Land Owners) climate databases, which are managed by the Queensland Government. The SILO databases use accurate meteorological data collected throughout Australia over long time periods.*

*The Design Loading Rates (DLRs) and Design Irrigation Rates (DIRs) were taken from the current EPA Code of Practice. Where the Code of Practice has precluded use of a particular type of system on a certain soil type, it is shown as 'Not Applicable' for that soil type in the Sizing Tables. Where the evapotranspiration deficit requires unrealistically large land application areas for a particular system on a certain soil type, it is also shown as 'Not Applicable' for that soil type in the Sizing Tables. Detailed, site-specific LCAs and system designs would be required to further investigate the feasibility of systems deemed 'Not Applicable' in the sizing tables. Mitigation measures (such as importation of topsoil to appropriate depths in the land application area), may be required to sustainably achieve land application of effluent on constrained properties/parcels. .(DWMP)*

Based upon the commentary from the Colac Otway Domestic Wastewater Management Plan and with a controlling soil type of SANDY LOAM the indicated, conservative, DIR is 15. (Table L1, AS1547:2012).NOTE; INCONSISTENCY BETWEEN EPA 891.4 AND DWMP.

The following spread sheet/s produce a range of results for calculations. The water balance spread sheet indicates a trench base area of 51m<sup>2</sup> will be required, (85 x 0.6), supported by the DWMP which advises a similar figure of 52m<sup>2</sup>.

Following the spread sheets is a scale plan of the LAA within the subject land.



## 12 SIZING THE EFFLUENT DISPOSAL SYSTEM

Victorian Land Capability Assessment Framework			
Trench & Bed Sizing			
<b>FORMULA FOR TRENCH AND BED SIZING</b>			
$L = Q/DLR \times W$			From AS/NZS 1547:2012
<b>Where:</b>	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
<b>INPUT DATA</b>			
Design Wastewater Flow	Q	750	L/day Based on maximum potential occupancy and derived from Table 4 in the EPA Code of Practice (2013)
Design Loading Rate	DLR	15.0	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	50.0	m <sup>2</sup>
Selected trench or bed width	W	0.6	m As selected by designer/installer
<b>OUTPUT</b>			
Required trench or bed length	L	83.3	m
<b>CELLS</b>			
			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

Victorian Land Capability Assessment Framework														
Please read the attached notes before using this spreadsheet														
<b>Irrigation area sizing using Nominated Area Water Balance for Zero Storage</b>														
Site Address: <b>Forrest</b>														
Date: <b>Assessor: MD</b>														
<b>INPUT DATA</b>														
Design Wastewater Flow Q 750 L/day														
Design Irrigation Rate DIR 15.0 mm/day														
Nominated Land Application Area L 500 m <sup>2</sup>														
Crop Factor C 0.6-0.8 unitless														
Rainfall Runoff Factor RF 1.0 unitless														
Mean Monthly Rainfall Data														
Mean Monthly Pan Evaporation Data														
<div> <div>Parameter</div> <div>Symbol</div> <div>Formula</div> <div>Units</div> <div>Jan</div> <div>Feb</div> <div>Mar</div> <div>Apr</div> <div>May</div> <div>Jun</div> <div>Jul</div> <div>Aug</div> <div>Sep</div> <div>Oct</div> <div>Nov</div> <div>Dec</div> <div>Total</div> </div>														
<div> <div>Days in month</div> <div>D</div> <div></div> <div>days</div> <div>31</div> <div>28</div> <div>31</div> <div>30</div> <div>31</div> <div>30</div> <div>31</div> <div>31</div> <div>30</div> <div>31</div> <div>30</div> <div>31</div> <div>365</div> </div>														
<div> <div>Rainfall</div> <div>R</div> <div></div> <div>mm/month</div> <div>42</div> <div>41</div> <div>51</div> <div>72</div> <div>85</div> <div>101</div> <div>102</div> <div>115</div> <div>95</div> <div>86</div> <div>66</div> <div>54</div> <div>910</div> </div>														
<div> <div>Evaporation</div> <div>E</div> <div></div> <div>mm/month</div> <div>131</div> <div>108</div> <div>89</div> <div>55</div> <div>34</div> <div>23</div> <div>26</div> <div>39</div> <div>56</div> <div>82</div> <div>99</div> <div>121</div> <div>863</div> </div>														
<div> <div>Crop Factor</div> <div>C</div> <div></div> <div>unitless</div> <div>0.80</div> <div>0.80</div> <div>0.70</div> <div>0.70</div> <div>0.60</div> <div>0.60</div> <div>0.60</div> <div>0.60</div> <div>0.70</div> <div>0.80</div> <div>0.80</div> <div>0.80</div> <div>0.80</div> </div>														
<div> <div>ET</div> <div>ET</div> <div>ExC</div> <div>mm/month</div> <div>105</div> <div>86</div> <div>62</div> <div>39</div> <div>20</div> <div>14</div> <div>16</div> <div>23</div> <div>39</div> <div>66</div> <div>79</div> <div>97</div> <div>646</div> </div>														
<div> <div>Percolation</div> <div>B</div> <div>DIRxD</div> <div>mm/month</div> <div>465.0</div> <div>420</div> <div>465.0</div> <div>450.0</div> <div>465.0</div> <div>450.0</div> <div>465.0</div> <div>465.0</div> <div>450.0</div> <div>465.0</div> <div>450.0</div> <div>465.0</div> <div>450.0</div> <div>465.0</div> </div>														
<div> <div>Outputs</div> <div>ET+B</div> <div></div> <div>mm/month</div> <div>569.8</div> <div>506.4</div> <div>527.3</div> <div>488.5</div> <div>485.4</div> <div>463.8</div> <div>480.6</div> <div>488.4</div> <div>489.2</div> <div>530.6</div> <div>529.2</div> <div>561.8</div> <div>6121.0</div> </div>														
<b>INPUTS</b>														
<div> <div>Retained Rainfall</div> <div>RR</div> <div>RxRF</div> <div>mm/month</div> <div>42</div> <div>41</div> <div>51</div> <div>72</div> <div>85</div> <div>101</div> <div>102</div> <div>115</div> <div>95</div> <div>86</div> <div>66</div> <div>54</div> <div>910</div> </div>														
<div> <div>Applied Effluent</div> <div>W</div> <div>(OxD)/L</div> <div>mm/month</div> <div>46.5</div> <div>42.0</div> <div>46.5</div> <div>45.0</div> <div>46.5</div> <div>45.0</div> <div>46.5</div> <div>46.5</div> <div>45.0</div> <div>46.5</div> <div>45.0</div> <div>46.5</div> <div>45.0</div> <div>46.5</div> </div>														
<div> <div>Inputs</div> <div>RR+W</div> <div></div> <div>mm/month</div> <div>88.5</div> <div>83.0</div> <div>97.5</div> <div>117.0</div> <div>131.5</div> <div>146.0</div> <div>148.5</div> <div>161.5</div> <div>140.0</div> <div>132.5</div> <div>111.0</div> <div>100.5</div> <div>1457.5</div> </div>														
<b>STORAGE CALCULATION</b>														
<div> <div>Storage remaining from previous month</div> <div>S</div> <div>(RR+W)-(ET+B)</div> <div>mm/month</div> <div>0.0</div> <div>0.0</div> <div>0.0</div> <div>0.0</div> <div>0.0</div> <div>0.0</div> <div>0.0</div> <div>0.0</div> <div>0.0</div> <div>0.0</div> <div>0.0</div> <div>0.0</div> </div>														
<div> <div>Storage for the month</div> <div>M</div> <div></div> <div>mm</div> <div>-481.3</div> <div>-423.4</div> <div>-429.8</div> <div>-371.5</div> <div>-353.9</div> <div>-317.8</div> <div>-332.1</div> <div>-326.9</div> <div>-349.2</div> <div>-398.1</div> <div>-418.2</div> <div>-461.3</div> </div>														
<div> <div>Cumulative Storage</div> <div>N</div> <div></div> <div>mm</div> <div>0.0</div> <div>0.0</div> <div>0.0</div> <div>0.0</div> <div>0.0</div> <div>0.0</div> <div>0.0</div> <div>0.0</div> <div>0.0</div> <div>0.0</div> <div>0.0</div> </div>														
<div> <div>Maximum Storage for Nominated Area</div> <div>V</div> <div>lxL</div> <div>L</div> <div>0.00</div> <div>0</div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>														
<b>LAND AREA REQUIRED FOR ZERO STORAGE</b>														
<div> <div></div> <div></div> <div></div> <div>m<sup>2</sup></div> <div>44</div> <div>45</div> <div>49</div> <div>54</div> <div>58</div> <div>62</div> <div>61</div> <div>62</div> <div>57</div> <div>52</div> <div>49</div> <div>46</div> </div>														
<b>MINIMUM AREA REQUIRED FOR ZERO STORAGE:</b>														
<div> <div></div> <div></div> <div></div> <div>m<sup>2</sup></div> <div>63.0</div> </div>														
<b>CELLS</b>														
Please enter data in blue cells														
Red cells are automatically populated by the spreadsheet														
Data in yellow cells is calculated by the spreadsheet, DO NOT ALTER THESE CELLS														
<b>NOTES</b>														



# Victorian Land Capability Assessment Framework

Please read the attached notes before using this spreadsheet									
<b>Nitrogen Balance</b>									
Site Address:		Forrest							
SUMMARY - LAND APPLICATION AREA REQUIRED BASED NITROGEN BALANCE									
INPUT DATA <sup>1</sup>									
Wastewater Loading					Nutrient Crop Uptake				
Hydraulic Load	750	L/day	220	kg/ha/yr	which equals	60.27	mg/m <sup>2</sup> /day		
Effluent N Concentration	25	mg/L							
% N Lost to Soil Processes (Geary & Gardner 1996)	0.2	Decimal							
Total N Loss to Soil	3750	mg/day							
Remaining N Load after soil loss	15000	mg/day							
<b>NITROGEN BALANCE BASED ON ANNUAL CROP UPTAKE RATES</b>									
Minimum Area required with zero buffer					Determination of Buffer Zone Size for a Nominated Land Application Area (LAA)				
Nitrogen	249	m <sup>2</sup>				500	m <sup>2</sup>		
						-5.53	kg/year		
						0	m <sup>2</sup>		
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							
<b>NOTES</b>									
<sup>1</sup> Model sensitivity to input parameters will affect the accuracy of the result obtained. Where possible site specific data should be used. Otherwise data should be obtained from a reliable source such as: - EPA Guidelines for Effluent Irrigation - Appropriate Peer Reviewed Papers - Environment and Health Protection Guidelines: Onsite Sewage Management for Single Households - USEPA Onsite Systems Manual									

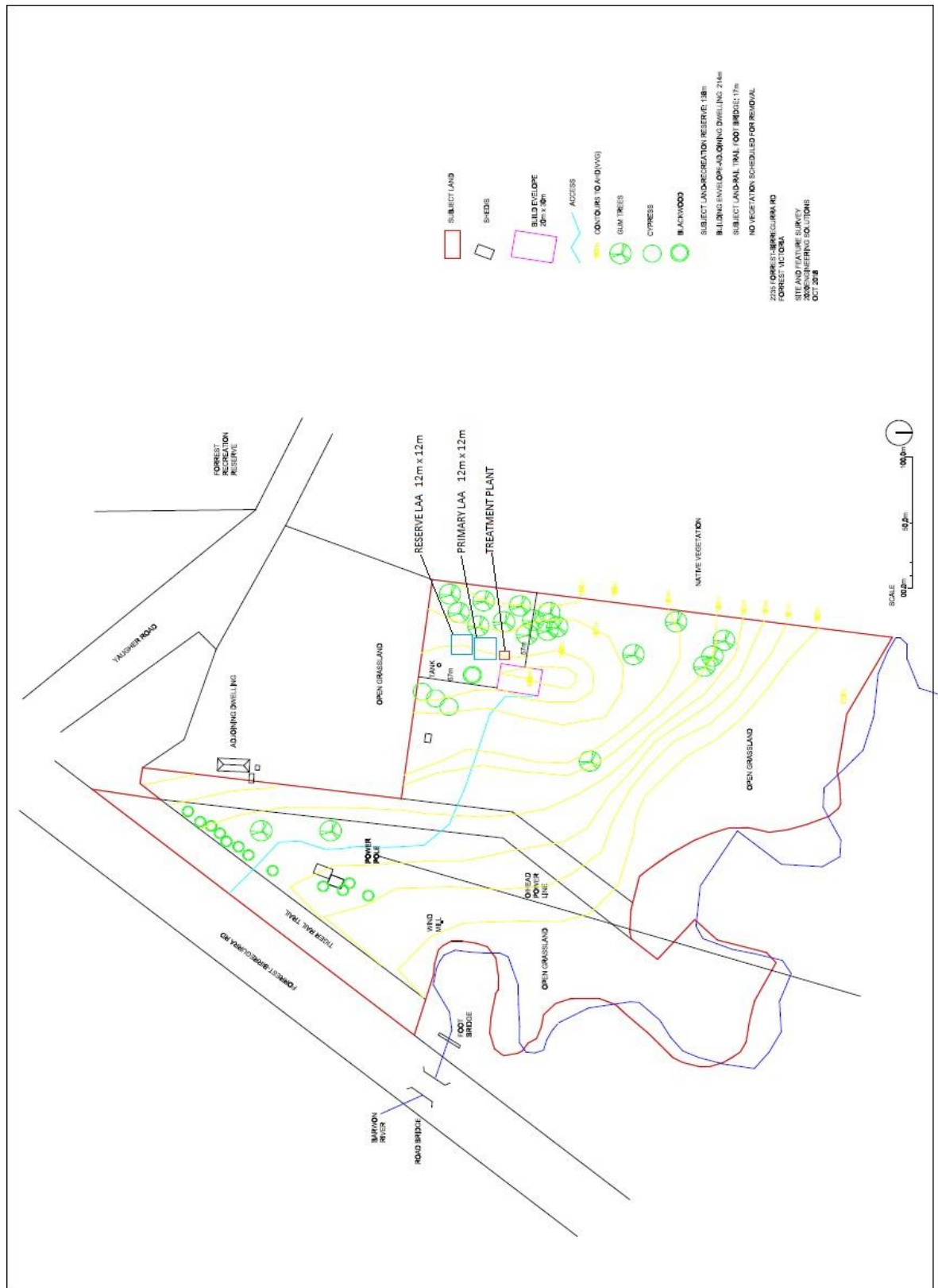
Forrest

Forrest	Systems' - Secondary Treated Effluent only													
	Drip and Spray Irrigation					Systems' - Secondary Treated Effluent only								
	Grawls & Sands (1)	Sandy Loams (2)	Loams (3)	Clay Loams (4)	Light Clays (5)	Medium to Heavy Clays (6)								
Development Type 5 + bedroom residence 4 bedroom residence 1-3 bedroom residence	5	5	4	3.5	3	2								
	Soil Category													
	DIR (mm)													
	Daily (L/day)													
	1,080	380	598	804	1,209	1,881								
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.	Total min. irrigation area required for zero wet weather effluent storage (m <sup>2</sup> ) not including spacing or setbacks	317	488	670	1,068	1,568								
	254	391	538	854	1,254									
Conventional Absorption														
Trenches and Beds - Primary Treated Effluent														
Development Type 5 + bedroom residence 4 bedroom residence 1-3 bedroom residence	Grawls & Sands (1)	Sandy Loams (2)	Loams (3)	Weak Loams & High/Mod Clay Loams (3 & 4)	Light Clays (5)	Massive Clay Loams (4)	Medium to Heavy Clays (6)							
	Soil Category													
	DIR (mm)													
	Daily (L/day)													
	1,080													
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.	Total min. irrigation area required for zero wet weather effluent storage (m <sup>2</sup> ) not including spacing or setbacks	317	488	670	1,068	1,568								
	254	391	538	854	1,254									
Evapotranspiration-Absorption														
Treated Effluent (Category 1 to 5) and Secondary Treated Effluent only (Category 6)														
Development Type 5 + bedroom residence 4 bedroom residence 1-3 bedroom residence	Grawls & 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			
	Soil Category													
	DIR (mm)													
	Daily (L/day)													
	1,080													
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.	Total min. irrigation area required for zero wet weather storage (m <sup>2</sup> ) not including spacing & setbacks	317	488	670	1,068	1,568								
	254	391	538	854	1,254									
LPED Irrigation Systems - Primary or Secondary Treated Effluent														
Development Type 5 + bedroom residence 4 bedroom residence 1-3 bedroom residence	Grawls & Sands (1)	Sandy Loams (2)	Loams (3)	Clay Loams (4)	Light Clays (5)	Medium to Heavy Clays (6)								
	Soil Category													

Whitehead and Associates Environmental Consultants



## 12.1 SITE PLAN



Scale drawing of proposed disposal area within subject land.(Planning Maps Online)

## 12.2 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	
<b>BUILDING</b>						
Wastewater field up-slope of building	<input checked="" type="checkbox"/>	6	<input type="checkbox"/>	3	<input type="checkbox"/>	3
Wastewater field down-slope of building	<input checked="" type="checkbox"/>	3	<input type="checkbox"/>	1.5	<input type="checkbox"/>	1.5
Wastewater field up-slope of cutting/escarpment	<input checked="" type="checkbox"/>	15	<input type="checkbox"/>	15	<input type="checkbox"/>	15
<b>ALLOTMENT BOUNDARY</b>						
Wastewater field up-slope of adjacent lot	<input checked="" type="checkbox"/>	6	<input type="checkbox"/>	3	<input type="checkbox"/>	1
Wastewater field down-slope of adjacent lot	<input checked="" type="checkbox"/>	3	<input type="checkbox"/>	1.5	<input type="checkbox"/>	0.5
<b>SERVICES</b>						
Water supply pipe	<input checked="" type="checkbox"/>	3	<input type="checkbox"/>	1.5	<input type="checkbox"/>	1.5
Wastewater field up-slope of potable supply channel	<input checked="" type="checkbox"/>	300	<input type="checkbox"/>	150	<input type="checkbox"/>	150
Wastewater field down-slope of potable supply channel	<input checked="" type="checkbox"/>	20	<input type="checkbox"/>	10	<input type="checkbox"/>	10
Gas supply pipe	<input checked="" type="checkbox"/>	3	<input type="checkbox"/>	1.5	<input type="checkbox"/>	1.5
In-ground water tank	<input checked="" type="checkbox"/>	15	<input type="checkbox"/>	4	<input type="checkbox"/>	3
Stormwater drain	<input checked="" type="checkbox"/>	6	<input type="checkbox"/>	3	<input type="checkbox"/>	2
<b>RECREATION AREAS</b>						
Children's grassed playground	<input checked="" type="checkbox"/>	6	<input type="checkbox"/>	3	<input type="checkbox"/>	2
In-ground swimming pool	<input checked="" type="checkbox"/>	6	<input type="checkbox"/>	3	<input type="checkbox"/>	2
<b>SURFACE WATERS UP-SLOPE OF</b>						
Dam, lake or reservoir (potable water supply)	<input checked="" type="checkbox"/>	300	<input type="checkbox"/>	150	<input type="checkbox"/>	150
Waterways (potable water supply)	<input checked="" type="checkbox"/>	100	<input type="checkbox"/>	100	<input type="checkbox"/>	50
Waterways, wetlands (continuous or ephemeral, non-potable); estuaries, ocean beach at high-tide mark; dams, lakes or reservoirs (stock & domestic, non-potable)	<input checked="" type="checkbox"/>	60	<input type="checkbox"/>	30	<input type="checkbox"/>	30
<b>GROUNDWATER BORES</b>						
Category 1 & 2a soils		NA	<input type="checkbox"/>	50	<input type="checkbox"/>	20
Category 2b – 6 soils	<input checked="" type="checkbox"/>	20	<input type="checkbox"/>	20	<input type="checkbox"/>	20
<b>WATERTABLE</b>						
Vertical depth from base of trench to highest seasonal water table	<input checked="" type="checkbox"/>	1.5	<input type="checkbox"/>	1.5	<input type="checkbox"/>	1.5
Vertical depth from irrigation pipes to highest seasonal water table	<input checked="" type="checkbox"/>	NA	<input type="checkbox"/>	1.5	<input type="checkbox"/>	1.5

\* X indicates compliance



### 13 PLANNING AUTHORITY LAND CAPABILITY ASSESSMENT/CONFIRMATION

Date Received:

1. Forwarded to Referral Authority:

☐

Yes

☐

No

Authority Name:

Date Forwarded:

Response within Statutory Time Frame:

☐

Yes

☐

No

Referral Authority Advice Conforming:

☐

Yes

☐

No

Reason for Non-Conformance:

2. Forwarded to Referral Authority:

☐

Yes

☐

No

Authority Name:

Date Forwarded:

Response within Statutory Time Frame:

☐

Yes

☐

No

Referral Authority Advice Conforming:

☐

Yes

☐

No

Reason for Non-Conformance:

Planning Authority Advice Conforming:

☐

Yes

☐

No

Date Assessed:

Responsible Planning Officer:

## **SECTION TWO**

### **MAV TABLES**

<b>Table 1: Key Site Features</b>		
<b>Feature</b>	<b>Explanation</b>	<b>Assessment Process</b>
<b>Aspect</b>	The aspect or the direction that a slope is facing influences solar exposure.	NE aspect, good exposure
<b>Climate</b>	Seasonal rainfall, evaporation and temperature patterns influence potential evapotranspiration in land application areas.	Incorporated into water balance spread sheet/s and LAA sizing from DWMP
<b>Erosion and Landslip</b>	Unstable areas (steep, unvegetated, dispersive soils etc.) are usually unsuitable for LAAs without mitigation.	No
<b>Fill (imported)</b>	Capacity to assimilate effluent depends on the physical and chemical characteristics of the imported fill material(s).	No fill.
<b>Flooding</b>	Requirements for siting onsite wastewater infrastructure (including LAAs) away from areas subject to flooding can vary between Councils.	No
<b>Ground-water</b>	Adequate depth of soil to protect groundwater resources largely depends on soil type and climate.	Not noted in boreholes
<b>LandSuitability</b>	An LCA is used to determine which land is suitable and unsuitable for LAAs.	All land suitable.
<b>Landform</b>	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 attached site plan  Broad even run-off



Feature	Explanation	Assessment Process
<b>Rock Outcrops</b>	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
<b>Setback Distances</b>	Determining the most appropriate position for LAAs should be prioritised over placement of building areas.	See included table from AS1547;2012
<b>Site Drainage</b>	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.
<b>Stormwater Run-on and Runoff</b>	LAAs should not be located in areas with high run-on, without mitigation such as upslope diversion structures. Downslope runoff diversion may be useful.	LAA near crest of hill, no storm water issues
<b>Slope</b>	Land application of effluent becomes increasingly constrained with increasing slope gradient, increasing the chances of effluent runoff or subsurface seepage.	Slope of land generally <5.0%
<b>Surface Waters</b>	Whether the setback distances specified in the Code can be achieved from LAAs.	Adequate setback from Barwon River, East Branch.
<b>Vegetation</b>	Good vegetation cover is important to prevent erosion as well as for uptake of water and nutrients from effluent.	Grasses/bracken.

**Table 2: Description of Key Chemical and Physical Soil Features**

<b>Feature</b>	<b>Explanation</b>	<b>Assessment Process</b>
<b>Cation Exchange Capacity</b>	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).	
<b>Colour and Mottling</b>	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
<b>Electrical Conductivity (EC)</b>	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.	



Feature	Explanation	Assessment Process
<b>Emerson Aggregate Class</b>	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).	
<b>Permeability and Design Loading Rate</b>	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, 15.
<b>pH</b>	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).	
<b>Rock Fragments</b>	Coarse rock fragments displace soil volume and therefore can limit assimilative capacity of soils.	No
<b>Sodicity [Exchangeable Sodium Percentage (ESP)]</b>	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.	
<b>Sodium Absorption Ratio (SAR)</b>	The ratio of sodium to calcium and magnesium (beneficial elements) in the soil solution, with higher ratios potentially damaging to plants and soils.	

Feature	Explanation	Assessment Process
<b>Soil Depth</b>	Deeper soils generally have a greater assimilative capacity for effluent (depending on soil type).	>1.8m
<b>Soil Texture</b>	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).	Cat. 2
<b>Watertable (depth to)</b>	The required soil depth to protect groundwater depends on soil type; high permeability soils generally require a greater separation distance (soil depth).	20.0m – 50.0m

Table 3: 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	<b>MAJOR</b>
Erosion <sup>1</sup> (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 <sup>2</sup> (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) <sup>3</sup>	Less than 1 in 100 years	Between 100 and 20 years	More than 1 in 20 years	NIL
Groundwater bores <sup>4</sup>	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	Moderate	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 landslide potential) <sup>5</sup>	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	MODERATE
Slope gradient <sup>6</sup> (%)				
(a) for absorption trenches and beds	<6%	6-15%	>15%	NIL
(b) for surface irrigation	<6%	6-10%	>10%	
(c) for subsurface irrigation	<10%	10-30%	>30%	
Soil Drainage <sup>7</sup> (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	
<b>Stormwater run-on</b>	Low likelihood of stormwater run-on		High likelihood of inundation by stormwater run-on	MINOR
<b>Surface waters - setback distance (m) <sup>3</sup></b>	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
<b>Vegetation coverage over the site</b>	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	
<b>Soil Drainage <sup>3</sup> (Field Handbook definitions)</b>	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	MINOR
			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	

The above MAV tables indicate one Moderate, (slope shape), and one MAJOR, (winter rainfall) constraints.

Slope shape, waxing plainer, is difficult to mitigate however trenches constructed along the contours will mitigate the constraint. Likewise with the elevated location, the LAA will have minimal stormwater run-on and the deep sandy soil will handle elevated rain fall producing a safe disposal method.

### SECTION THREE

#### **SITE MANAGEMENT PLAN**

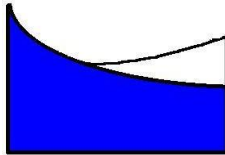
Attached

☒

Yes

☐

No



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

ABN 57 215 499 312 ACN 11 9460 865

www.2020es.com

### **PROPERTY MANAGEMENT PLAN**

**SITE:** 2235 Birregurra- Forrest Rd Forrest.

**DEVELOPER:** Scott

**REPORT NUMBER:** ES18232

**DATE:** 27/11/2018

**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



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### **5 DETAILS OF THE EFFLUENT DISPOSAL SYSTEM**

### **6 WASTEWATER TREATMENT SYSTEM MAINTENANCE**

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

### **Appendix 1 MAINTENANCE LOG**

## **1 PREAMBLE**

This Property Management Plan is intended for use by property owners in Barwon Water /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**

<b>PROPERTY MANGEMENT PLAN</b>	
<b>EMERGENCY OR ONSITE WASTEWATER MAINTENANCE CONTACT NUMBERS</b>	
POLICE, AMBULANCE, FIRE	000
PLUMBER	To be advised
ELECTRICIAN	To be advised
COUNCIL ENVIRONMENTAL HEALTH OFFICER	COLAC OTWAY SHIRE 03 5232 9400
EPA	1300 372 842
SYSTEM SUPPLIER	COLAC CEMENT PRODUCTS 03 5231 5231 or other
SYSTEM SERVICE AGENT	COLAC CEMENT PRODUCTS 03 5231 5231 or other
SEPTIC PUMPOUT TANKER	RICHARDSON'S LIQUID WASTE 03 5234 6585 or other
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/Wannon 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 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.

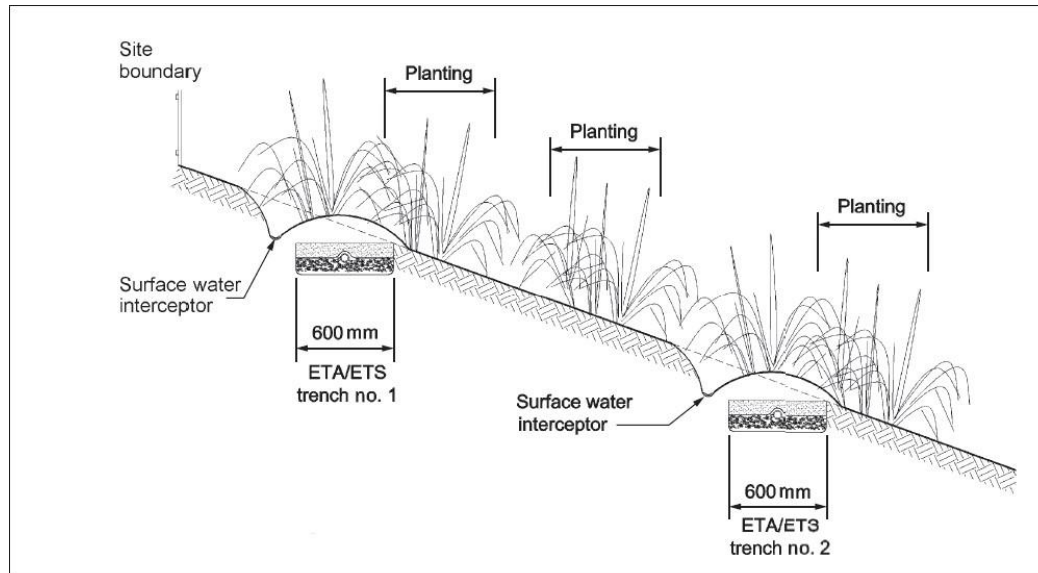
All details relevant to the above will be available and submitted after issue of the permit as they are post developmental.

### ***Sewage Treatment Plants***

Developer to select suitable primary treatment plant with EPA approval.

**NOTE:** Developer can supply following 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



### 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.

**FIGURE L7 ETA/ETS TRENCHES**

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 TREATMENT 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 & 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**

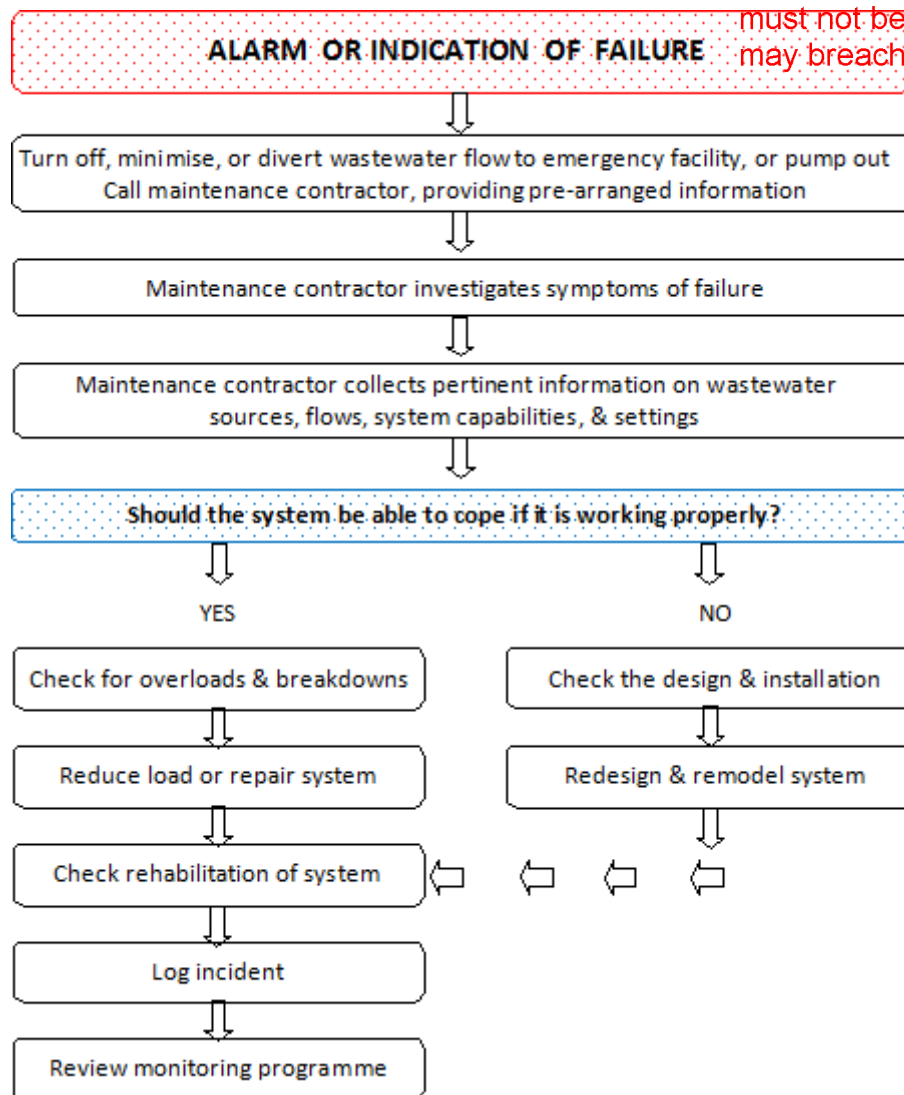
- use biodegradable soaps
- use low-phosphorus detergent
- use low-sodium detergent where soils are dispersive
- limit the use of cleaners such as bleaches, whiteners, nappy soakers & disinfectant, especially for toilet/shower cleaning
- do not put chemicals, thinners or paint down the drain or gulley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

## INSURANCE CERTIFICATE OF CURRENCY



Integro Insurance Brokers Limited  
2<sup>nd</sup> Floor • 100 Leadenhall Street • London  
EC3A 3BP  
Telephone: (0)20 7444 6000  
Fax: (0)20 7444 6001  
Website: www.integrouk.com

WEDNESDAY, 16 AUGUST 2017

### CERTIFICATE OF CURRENCY

**POLICY NUMBER:** IL1705880

**TYPE:** PROFESSIONAL INDEMNITY INSURANCE as may be more fully defined in the policy wording.

**INSURED:** 2020 Engineering Solutions

**ADDRESS:** 17/5 Colso-Forrest Road  
Colac VIC 3249  
Australia

**PERIOD OF INSURANCE:** From: 21<sup>st</sup> August 2017  
To: 31<sup>st</sup> August 2018

Both days at 16.00 Hours Local Standard Time at the Principal Address of the Insured

**LIMIT OF INDEMNITY:** AUD 2,000,000 any one Claim and in the aggregate including Costs and Expenses plus one reinstatement

**PLACED WITH:** 100% Certain Underwriters at Lloyd's

For and on behalf of Integro Insurance Brokers Limited

This certificate is a summary of the policy and is not intended to amend, extend, replace or override the policy terms and conditions. In the event of any consistency between this certificate and the policy, the policy prevails.

Authorised and regulated by the Financial Conduct Authority under reference number 305496  
Registered Office: 2<sup>nd</sup> Floor, 100 Leadenhall Street, London, EC3A 3BP  
Registered Company No. 2957627

## **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**

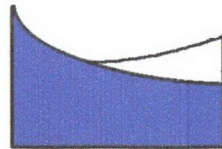
2020 will endeavour to identify any reasonably foreseeable risk factors on the site which may cause changed conditions. Samples are taken at reasonable intervals bearing in mind the cost to the client. In the absence of specific instructions or patent conditions it will be assumed that conditions observed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





**2020  
ENGINEERING  
SOLUTIONS**

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ABN 57 215 499 312ACN 11 9460 865  
info@2020es.com

## GEOTECHNICAL ASSESSMENT



**SITE;** 2235 Birregurra-Forrest Road  
Forrest, VICTORIA. 3236

**DEVELOPER;** P & S Scott

**REPORT NUMBER;** ES18200.1

**DATE;** 30/09/2019

**REPORTING TO;** COLAC OTWAY SHIRE  
Planning Scheme, Erosion Management  
Overlay Procedures (EMO), 2013.  
Amendment C68

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8.0 Plausible Failure Modes

8.1 Elements at Risk

8.2 Failure Analysis.

9.0 Risk Analysis

9.1 Consequence Analysis

9.2 Probability Analysis

9.3 Vulnerability Analysis

9.4 Spatial factor

9.5 Risk Analysis

10.1 Footing structure and Foundation Materials

10.2 Cut and Fill Earthworks

10.3 Soil Retention Structures

10.4 Drainage

10.5 Building Design and Structural System

10.6 Vegetation

10.7 Wastewater Management

10.8 On-going Maintenance and Mitigation Measures

10.9 Development Timeframe

10.10 Additional Geotechnical Requirements

11.0 Landslip Risk Assessment Statement

12. Report Recommendations

13. Report Restrictions

14. Professional Compliance Statement 15. Controlling and Referenced Documents

16. Site Conditions Photo (Author) 17. Geotechnical Declaration.

18. The Geotechnical Assessment / Landslip Risk Assessment 19. Report Limitation

## **Executive Summary**

Maximum Annual probability of loss of life, Barely Credible  
This figure is below the advised acceptable limit  
Property Risk would be Low  
This is also below the advised acceptable limit.

## **Succinct Recommendations**

- a) The proposal be allowed as the calculated risk is within the acceptable ranges for Life and Property
- b) Landslip Risk Assessment is not required

## **Preamble**

Note; This document reports to Schedule One to the Erosion Management Overlay as in operation at the time of commissioning.

*The Shire contains areas of land that are susceptible to landslip..... In areas susceptible to landslips, it is necessary to assess the potential impact of buildings, works and vegetation removal on the environment, in order to minimise risk to life and property.*  
(EMO Policy Basis)

The proposal comprises the construction of a management dwelling for a summer fruits orchard

This report considers the geotechnical implications of the proposal.



## 1.0 Consultant

Michael Daniel Delahunty  
'Culliamurra'  
1745 Colac – Forrest Road  
Colac Victoria Australia.

### 1.1 Details of Qualifications, Experience and Expertise

Bachelor Degree in Mining Engineering University of Ballaratt.

2001-2003 Civiltest, Geotechnical technologist

2006- to current 2020Engineering Solutions P/L  
Managing Director, Principal Engineer

Member Institute of Engineers Australia Member # 2274072

### 1.2 Specific Expertise

Over the past eighteen years I have personally conducted several hundred site and soil investigations across SW Victoria. This work, along with academic qualifications, has equipped me with an understanding of typical and atypical sub-soil conditions.

The author has valid professional indemnity insurance at the time of inspection and reporting. As part of a commitment to on-going professional development the author is undertaking the process of accreditation and attainment of chartered status.

### 1.3 Equipment

Kobelco 007 hydraulic mounted auger  
100mm hand auger  
GMC Digital spirit level  
Manual measuring devices  
Computer hardware and software

## 2.0 Date of Assessment

10<sup>th</sup>Sept2018

### 2.1 Reporting Date

12<sup>th</sup>Sept2018 Revision 30/09/19

### 3.0 Site Description

The subject property comprises a cleared, allotment in a rural lifestyle area overlooking the Barwon West River Valley. Landscape ranges from elevated plateau, moderate to steep hill-side, to river flats.

### 3.1 Address

2235 Birregurra-Forrest Rd. Forrest. 3236

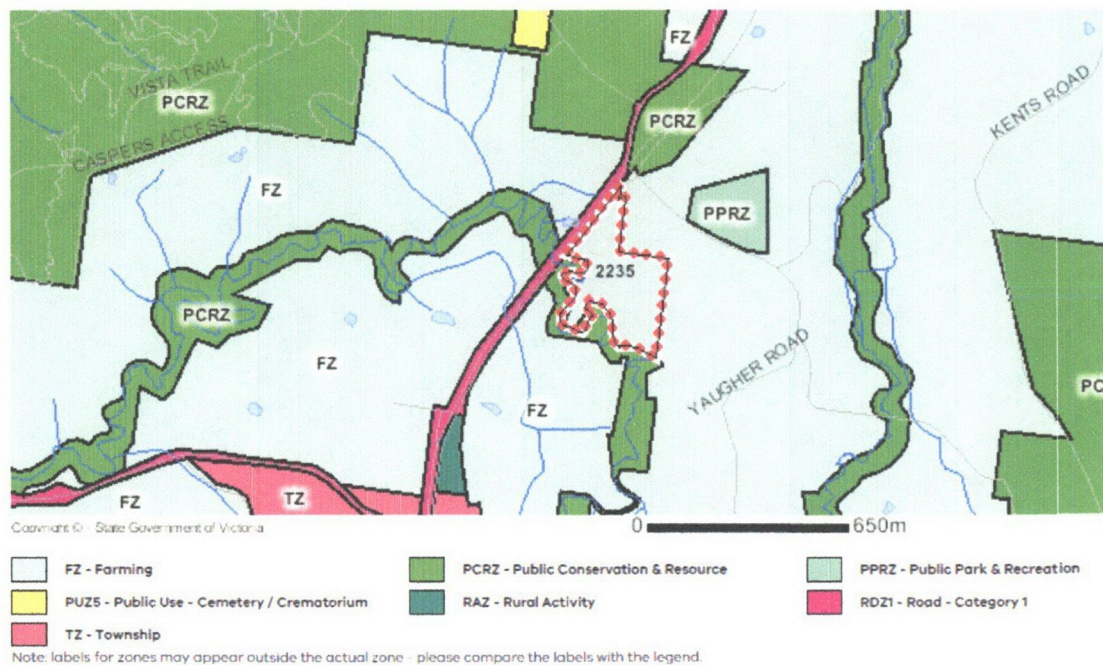


Fig 1.Planning Maps Online, subject land in red outline.



Lot 1 TP1266  
 Lot 1 TP120818  
 Lot 2 TP120818  
 Lot 1 H A      Note; proposed development within this allotment

## P &amp; S Scott

## P &amp; S Scott

Colac Otway Shire  
Rae St Colac 3250

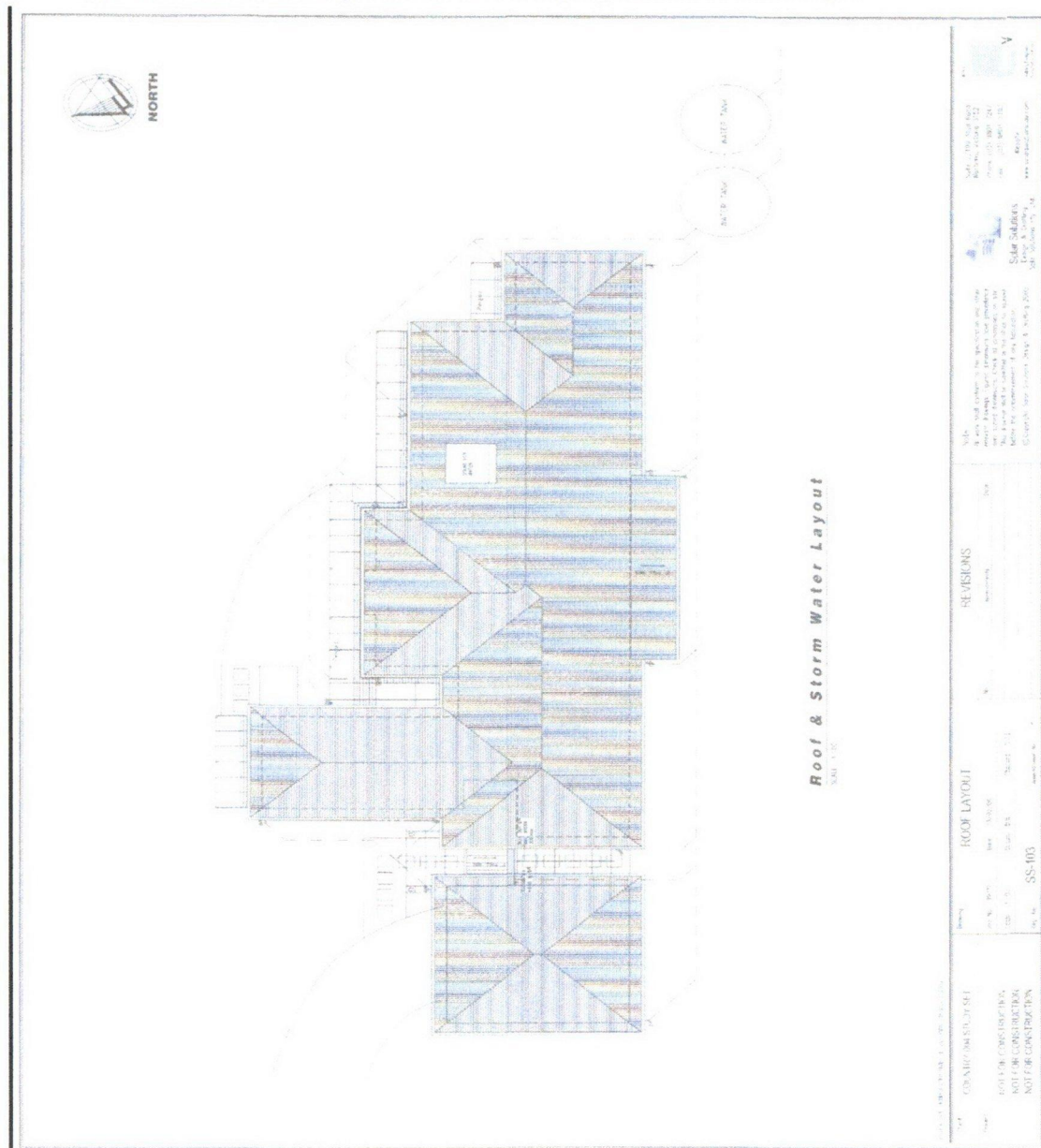


### 3.4.1 Planning Details

Planning Application; TBA.

### 4.0 Site Assessment Plans

This Report is to the dwelling below within the proposed build envelope.



Source; Solar Solutions.

## 5.0 Surface Conditions



Fig 3. Mixed title/vegetation image. (Source; Planning Maps Online). Build site comprises an elevated grassed area with bush to the west, Cypress trees to the north and moderate to steeply dipping ground to the west and south.

There was evidence of relic anthropogenic activity which has resulted in unusual soil formations, that are not evidence of instability.



Fig 4.View to north across proposed build envelope. (Source; Author)

### 5.1 Subsurface Conditions

Based upon numerous sub-surface drilling and investigations conducted by the author throughout the district, it is our opinion that the weathered in-situ subsurface profile comprised a Silty Sand over a deep Sandy Clay.

### 5.2 Groundwater

No discharge areas were noted on or near the propose build envelope, however there were some plant species on the lower slopes indicate zones which may have shallow groundwater during winter.

### 5.3. Geology

Published geological maps of the area indicate the property includes a range of TERTIARY AGE, Demons Bluff Formation material and Quaternary Age on the river flats, with the proposed building envelope on an elevated portion of the Tertiary Age material.





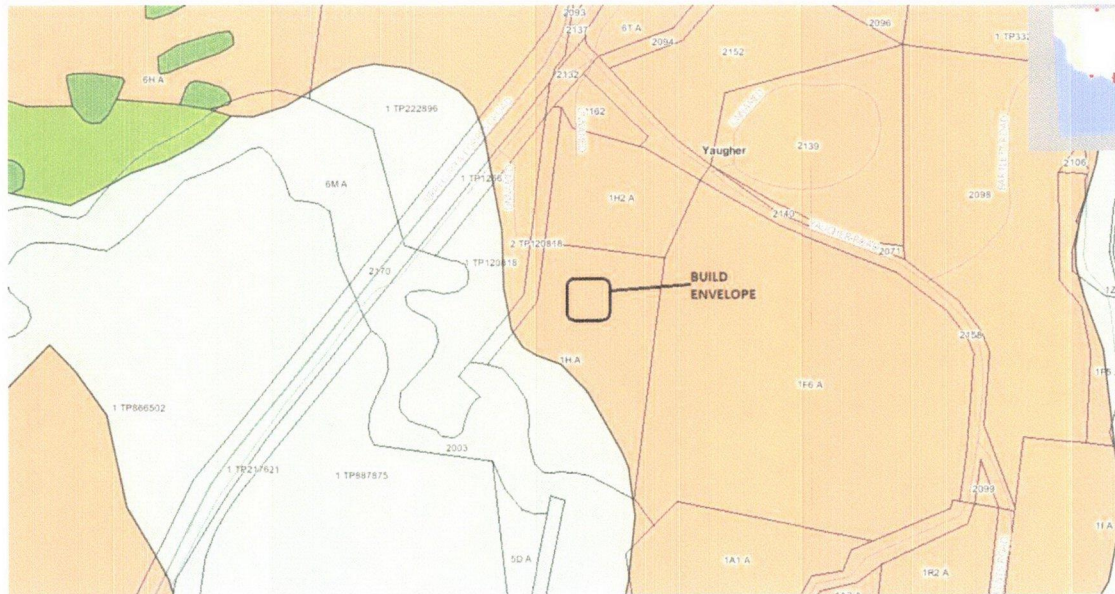


Fig 5.Site Geology (Source; Geovic)

#### 5.4 Geomorphic Process

Generally the geomorphic process that takes place throughout the Otways involves deeply weathered material, due to high rainfall, on steep slopes being subjected to a 'trigger' event such as extreme rainfall or anthropogenic activity. This proposed build envelope is on Tertiary Age, Demons Bluff, sediments which have a moderate tendency to display mass movement but generally only when subject to high slope angles.

Mitigating this risk will involve building placement and careful management of drainage and stormwater.

## 6.0 Regional Instability

### 6.1 Mapped

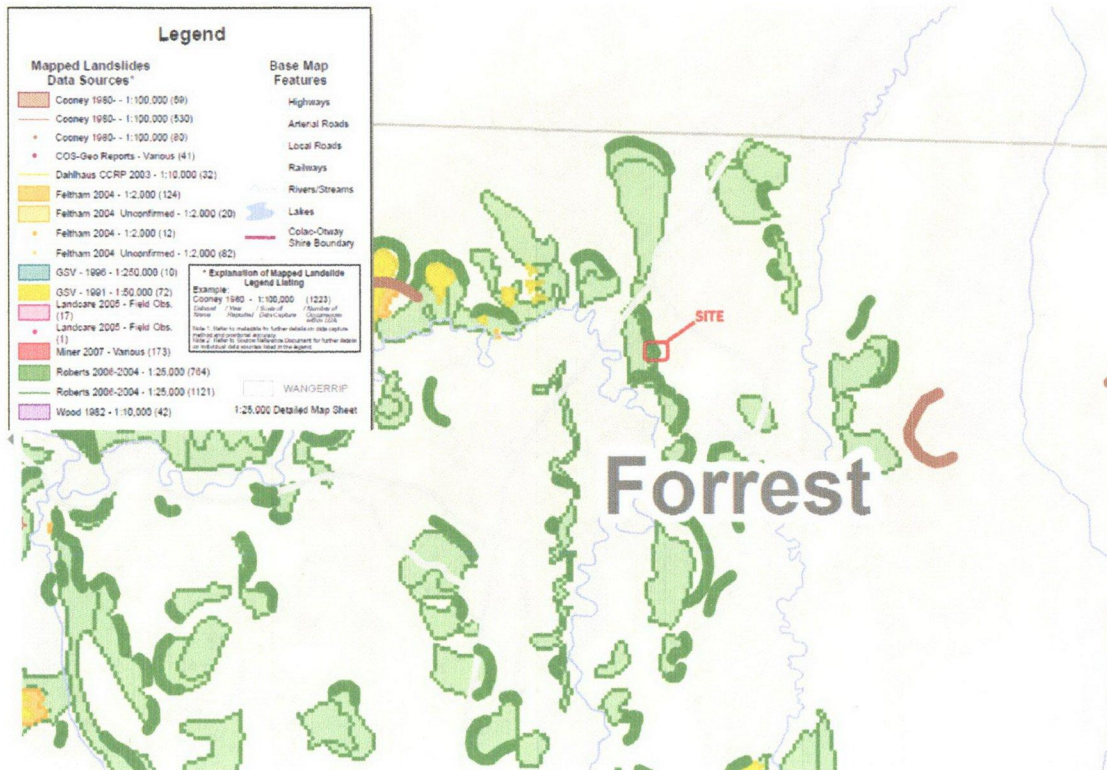


Fig 6. Mapped Slip Systems (Source; Colac Otway Shire)

Inventory of Landslides, Colac Otway Shire Map, shows numerous slip systems near the subject land and a major slip under the proposed site.

Based upon the site inspection it appears the data base compiler has incorrectly identified the aforementioned anthropogenic activity as a slip system.

### 6.2 Unmapped

No evidence of mass land instability was noted on or within impact distance of the proposed build envelope. Minor earth creep may be occurring on the steep slopes to the south of the build envelope but none of the unmapped systems have the potential to impact upon the proposed build envelope due to the slope of the build site and the distance from the systems.



## 7.0 Assessment Methodology

The principal assessment methodology of instability analysis for this development was visual and sub-surface soil logging informing a considered opinion and providing input for the following slope model.

### 7.1 Slope Model



Fig 7. Cross Section of Site



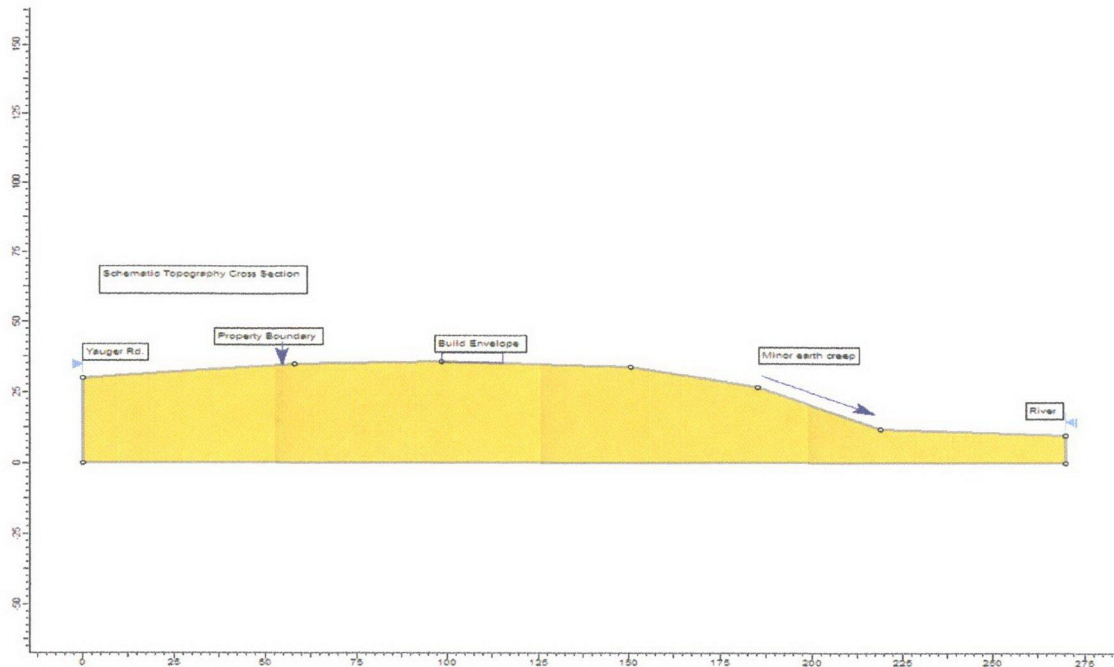


Fig 8. Topographic Slope Model.

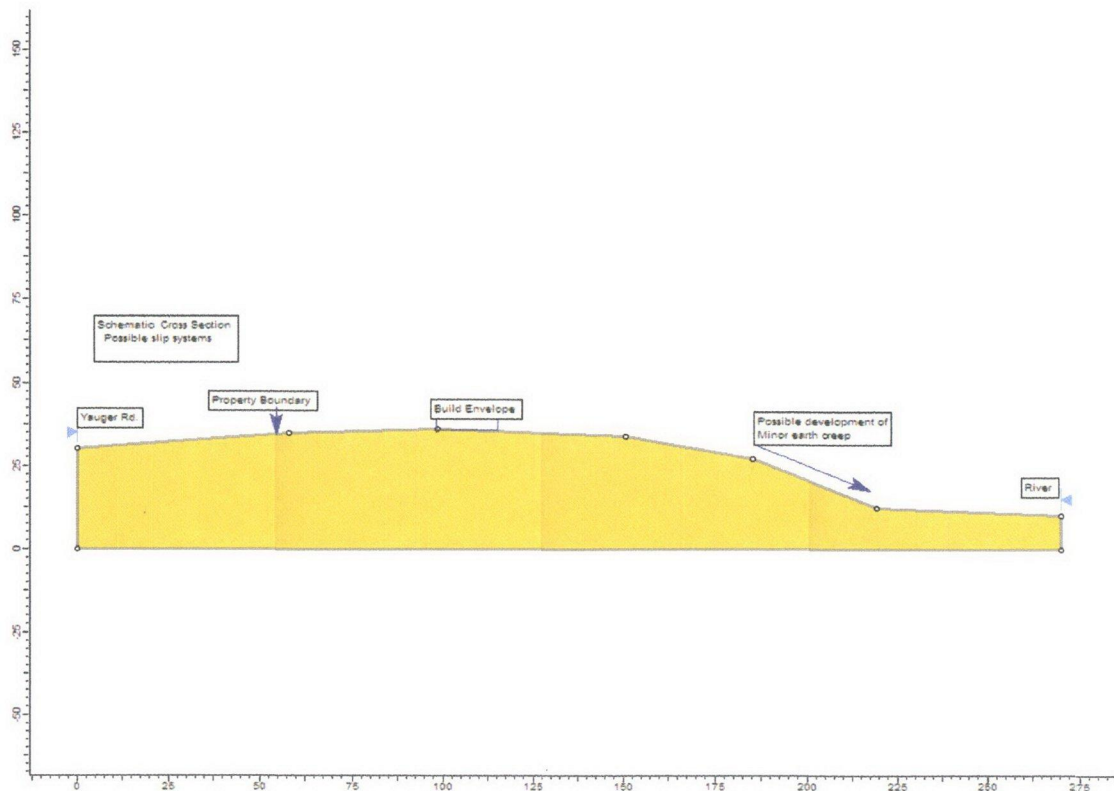


Fig 9. Slope model with possible failure modes.

## 8.0 Plausible Failure Modes

Of the 10 types of landslide systems, AGS Figure B1, and with reference to the information obtained during the site investigation there is no plausible failure mode with potential to impact on the proposed development.

Earth Creep may occur on the steep bank but the passage of time has indicated that the slope is relatively stable, an opinion reinforced by the proposal to plant shrubs across the slope.

## 8.1 Elements at risk

Given the proposal is, in part, for part of a dwelling, Life will be an element at risk, as will the proposed development. No third party exposure is expected.

## 8.2 Failure analysis

Based upon the foregoing assessment, and site inspection and expert opinion, failure analysis is not applicable.

## 9.0 Risk Analysis

Risk Analysis brings together Probability and Consequence

### 9.1 Consequence Analysis

If the entire dwelling was involved it probably would not collapse in a catastrophic fashion, avoiding serious injury, also an occupant may have a reasonable time to evacuate.

Life, Injury, 0.5 Property, Medium, 20%

### 9.2 Probability Analysis

The annual probability of a slope failure affecting this proposed building envelope will be considered as less than Rare or  $10^{-5}$ .

### 9.3 Vulnerability Analysis

Vulnerability for Property would be unity with Life at 0.1.

### 9.4 Spatial Factor

Factor incorporating probability of person being in that part of building that is damaged by a slope failure, 0.1.

### **9.5 Risk analysis**

Combining remote possibility, spatial factor and vulnerability generates a maximum annual probability of loss of life, Barely Credible  
This figure is below the advised acceptable limit  
Property Risk would be Low  
This is also below the advised acceptable limit.

### **10.1 Footing structure and Foundation Materials**

Conventional

### **10.2 Cut and Fill Earthworks**

No significant earthworks required due to almost flat surface.

Some work may be required for the access track, with site cuts and fill zones battered to a suitable angle of around 26 degrees and vegetated with perennial vegetation.

### **10.3 Soil Retention Structures**

All steep cut or fill batters over 1.0m require engineer designed retaining walls.

### **10.4 Drainage**

Roof water should be directed to suitable legal point of discharge.

### **10.5 Building Design and Structural System**

Conventional.

### **10.6 Vegetation**

At the time of inspection the site contained a surface covering of grass. No trees were on the proposed build envelope, none are proposed to be removed.

### **10.7 Wastewater Management**

As per LCA.

### **10.8 On-going Maintenance and Mitigation Measures**

This report does not recommend specific on-going erosion mitigation measures apart from general good practice in maintaining plumbing fittings, culvert cleaning, etc.



## 10.9 Development Timeframe

There is no geotechnical timeline for this development

## 10.10 Additional Geotechnical Requirements

Additional geotechnical requirements not required.

## 11.0 Landslip Risk Assessment Statement

Landslip Risk Assessment is not required due to the moderate slope angles across the property in association with the low slope angles under and around the build envelope.

## 12. Report Recommendations

a) The proposal be allowed as the calculated risks are within the acceptable range.

## 13. Report Restrictions

Should the final proposal differ substantially from the assessed proposal, the testing and resultant recommendations, may not be valid. It also assumes the 'as tested' conditions are consistent across the site. If this is not the case, the client would be advised to contact the author, should encountered conditions vary from those reported. 2020Engineering Solutions takes no responsibility for errors or omissions contained in sourced material. This report should be read in entirety and not selectively reproduced.

## 14. Professional Compliance Statement

The author has valid professional indemnity insurance at the time of inspection and reporting. As part of a commitment to on-going professional development the author is undertaking the process of accreditation and attainment of chartered status.

## 15 Controlling and Referenced Documents;

AS1726-1993 (incorporating amendments to #2-1994)

AS4360-2005 Risk Management Set

AS4200-2000 General Conditions of Contract for Engagement of Consultants

AS2870-2011 Residential Slabs and Footings

Colac Otway Shire

Planning Scheme, Erosion Management Overlay Procedures (EMO)

## Schedule 1

### Geographic Information System (GIS) Data base

Geological Survey of Victoria (GSV)

Colac 7621-3 Zone 54

1:50,000 Map Series

Tickell S.J. 1990.

Report 103 (Department of Agriculture, Energy and Minerals)

2020ES JSA 01.27.07.18

[www.dse.vic.gov.au](http://www.dse.vic.gov.au)

## 16. Site Condition Photo.




Fig 10.Surface conditions of build envelope, in foreground. (Source; Author)

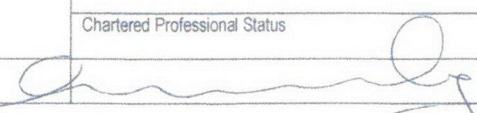


## 17. Geotechnical Declaration

Page 1 of 2

<b>FORM</b>	<b>A</b>	<b>Geotechnical Declaration and Verification Development Application</b>	
Office Use Only			
<p><b>To be submitted with planning application.</b> It must accompany the Geotechnical Assessment and/or Landslip Risk Assessment. This form is essential to verify that the Geotechnical Assessment and/or Landslip Risk Assessment has been prepared in accordance with Cl 44.01 of the Colac Otway Planning Scheme and that the author of the Assessment/s is a geotechnical engineer or engineering geologist as defined by this clause.</p>			
<b>Section 1</b>		<b>Related Application</b>	
Planning Application Number (if known)		TO BE ADVISED	
Site Address		2235 BIRREGURRA-FORREST ROAD, FORREST. VICTORIA. 3236	
Applicant		P & S SCOTT	
<b>Section 2</b>		<b>Geotechnical Assessment and /or Landslip Risk Assessment</b>	
Details		Report Title: GEOTECHNICAL ASSESSMENT	
Author's Company/ Organisation Name:		2020 ENGINEERING SOLUTIONS	Report Reference No: ES18200
Author:		MR MICHAEL DELAHUNTY	Dated: 18/09/2018
<b>Section 3</b>		<b>Checklist</b>	
<b>Geotechnical Requirements</b> (Tick as appropriate either Yes or No)		The following checklist covers the minimum requirements to be addressed in a Geotechnical Assessment and/or Landslip Risk Assessment. The report must also cover any additional matters required by Clause 44.01. This checklist must accompany each report. Each item is to be cross-referenced to the section or page of the Geotechnical Assessment and/or Landslip Risk Assessment which addresses that item.	
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	A review of readily available history of slope instability in the site or related land as per <SECTION 6 >	
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	An assessment of the risk posed by all reasonably identifiable geotechnical hazards as per <SECTION 6.1 >	
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Plans and sections of the site and related land as per <SECTIONS 17 >	
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Presentation of a geological model as per <SECTION 8 >	
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Photographs and/or drawings of the site as per <SECTION 16 >	
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	A conclusion as to whether the site is suitable for the development proposed to be carried out either conditionally or unconditionally as per <SECTION 12 >	
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	If any items above are ticked No, an explanation is to be included in the report to justify why < >	
<b>Is the approval subject to recommendations and conditions relevant to:</b>			
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Selection and construction of footing systems.	
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Earthworks.	
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Surface and sub surface drainage.	
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Recommendations for the selection of structural systems consistent with the geotechnical assessment of the risk.	
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Any conditions that may be required for the ongoing mitigation and maintenance of the site and the proposal from a geotechnical viewpoint.	
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Highlighting and detailing the inspection regime to provide the <PCA> and builder with adequate notification for all necessary inspections.	
FIFTY Years		State the Design Life of the Structure adopted in the Geotechnical Assessment and/or the Landslip Risk Assessment.	
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Are the risk mitigation measures as recommended in the Geotechnical Assessment and/or the Landslip Risk Assessment suitable for the design life of the structure?	
<b>NOTE:</b>		<Add Reference> - Add in the relevant section or page number of the listed Geotechnical Assessment and/or Landslip Risk Assessment which addresses each item	



FORM	A	Geotechnical Declaration and Verification Development Application <span style="float: right;">FIG 4.</span>				
<b>Section 4</b> List of Drawings referenced in Geotechnical Assessment and/or Landslip Risk Assessment						
Design Documents		Description	Plan or Document No.	Revision or Version No.	Date	Author
		SUBJECT LAND	FIG 1.			PLANNING MAPS ON LINE
		SUBJECT LAND	FIG 2.			PLANNING MAPS ON LINE
		MIXED TITLE/VEG IMAGE	FIG 3.			PLANNING MAPS ON LINE
		SITE GEOLOGY	FIG 5.			GEOVIC
		MAPPED SLIP SYSTEMS	FIG 6.			COS
		CROSS SECTION	FIG 7.			PLANNING MAPS ON LINE
		TOPOGRAPHIC MODEL	FIG 8.			M DELAHUNTY
		POSSIBLE FAILURE MODE	FIG 9.			M DELAHUNTY
<b>Section 5</b> Declaration						
Declaration (Tick all that apply)		I am a geotechnical engineer or engineering geologist as defined by the Colac Otway Planning Scheme and on behalf of the company below:				
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	I am aware that the Geotechnical Assessment and/or Landslip Risk Assessment I have either prepared or am technically verifying (referenced above) is to be submitted in support of a planning application for the proposed development site (referenced above) and its findings will be relied upon by the Colac Otway Shire Council in determining the planning application				
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> N/A	I prepared the Geotechnical Assessment and/or Landslip Risk Assessment referenced above in accordance with the Colac Otway Planning Scheme and the AGS Guidelines 2007 as defined in the planning scheme.				
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> N/A	I technically verify that the Geotechnical Assessment and/or Landslip Risk Assessment referenced above has been prepared in accordance with the Colac Otway Planning Scheme and the AGS Guidelines 2007 as appropriate.				
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	I technically verify that the Geotechnical Assessment prepared for the planning application for the site confirms the land can meet the acceptable risk criteria specified in the schedule to Clause 44.01 of the Colac Otway Planning Scheme taking into account the total development and site disturbance proposed.				
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> N/A	I technically verify that the Landslip Risk Assessment prepared for the planning application for the site confirms the land can meet the tolerable risk criteria specified in the schedule to Clause 44.01 of the Colac Otway Planning Scheme taking into account the total development and site disturbance proposed.				
<b>Section 6</b> Geotechnical Engineer or Engineering Geologist Details						
Company/ Organisation Name		2020 ENGINEERING SOLUTIONS PTY LTD				
Name (Company Representative)		Surname: DELAHUNTY	Dr / Mr / Mrs / Ms / Miss			
		Given Name(s) MICHAEL				
		Chartered Professional Status	Registration Number			
Signature 		Dated: 18/09/2018				

**Reference:** AGS Guidelines 2007c "Practice Note Guidelines for Landslide Risk Management", Australian Geomechanics Society, Australian Geomechanics, V42, N1 March 2007.

**Note:** N/A = Not Applicable

April 2013.

## 18. The Geotechnical Assessment

The initial level of assessment requires a report known as a "Geotechnical Assessment". A primary purpose of the Geotechnical Assessment is the collection of base information about the site. This is to include:

- A detailed site description typically including aspects of the site geomorphology, site drainage and site physiography including slope and aspect.
- It is expected that the site description also includes other site features such as existing development, access roads, retaining walls and site excavations and/or fills.
- Site assessment plans and cross sections of the subject site and related lands that may contribute to or be affected by instability at the site. This should include contours and ground slopes drawn to scale and dimensioned from a survey and recent field measurements. The plan and section should be separate from any geological model or stability model provided as additional analysis/assessment information.
- A detailed assessment of subsurface conditions including both surface and subsurface geology. Such information is vital in developing a geological model for the site and should include any exposures or outcrops as well as groundwater discharges or seeps
- The above information should then be summarised in a description of a geological/ geotechnical model for the site
- Details of all site investigations and any other information used in developing the Geotechnical Assessment.

The purpose of the base information is to effectively describe key aspects of the site in detail so as to clearly establish a context for the site conditions prior to the proposed development.

The next aim of the Geotechnical Assessment is to establish relevant features of the slope stability conditions of the site. This should include:

- A statement indicating whether there are natural slopes on or immediately adjacent to the subject lot which exhibit evidence of possible or past slope instability such as landslide, rockfall or erosion.
- The Geotechnical Assessment should list all credible, potential modes of failure.

By combining an understanding of the site conditions and aspects of slope stability, a primary finding from the Geotechnical Assessment must be:

- A statement indicating risks for all slope stability hazards identified are of an ACCEPTABLE RISK level (as defined by the schedule) and that these risks will remain at an ACCEPTABLE RISK level over the design life of the development.





An ACCEPTABLE RISK level by necessity must be defined by COS, but is expected to be in line with risk levels recommended in the Australian Geomechanics Society's (AGS) Landslide Risk Management Guidelines (AGS 2007c and d). For a typical low rise residential development, ACCEPTABLE levels of risk as recommended by AGS are as follows:

Risk Type for low rise residential development	ACCETABLE RISK level (as per AGS 2007 c and d)
Risk to Property and Infrastructure (Qualitative Assessment)	LOW
Risk to Life for existing slopes and development (Quantitative Assessment)	$1 \times 10^{-5}$
Risk to Life for new slopes and new development (Quantitative Assessment)	$1 \times 10^{-6}$

Note other combinations of building importance and slope conditions can result in different levels of ACCEPTABLE risk (e.g. a hay shed has less stringent criteria whilst heavily used building such as schools or recreation centers will require more stringent criteria). The AGS guidelines offer detailed recommendations on this aspect of ACCEPTABLE RISK.

If the Geotechnical Assessment cannot make the statement regarding ACCEPTABLE RISK levels for all slope hazards, then the assessment must proceed to a second more detailed assessment known as a "Landslide Risk Assessment".

It is generally not expected that detailed risk calculations would be included in a Geotechnical Assessment however a consultant may choose to include some calculations if they feel the need to justify the required statement regarding ACCEPTABLE RISK levels.

Other recommendations regarding the development must also be included in the Geotechnical Assessment where they have influence on the final recommendation for approval. These include:

- Determination of appropriate founding depths
- Location and depth of cuts and fills,
- Construction of retention systems
- Details of surface and sub-surface drainage
- Vegetation retention
- Drainage and effluent disposal
- Need for ongoing mitigation measures
- Timeframes for completion of works
- Any other geotechnical approvals



Finally the Geotechnical Assessment must include a statement on whether or not the next level assessment i.e. a Landslip Risk Assessment is required.

### ***The Landslip Risk Assessment***

A Landslip Risk Assessment may be required in one of two ways:

1. Where the Geotechnical Assessment cannot make the statement regarding all potential slope hazards are at an ACCEPTABLE risk level and hence the call for a more detailed assessment or;
2. Where landform data indicates the natural slopes on or immediately adjacent to the subject lot exceed certain slope angle thresholds for various geologic units (as defined in the schedule). In the case of the spatially extensive Eumeralla Formation (Otway Group) this threshold angle is 14°.

The Landslip Risk Assessment must include the initial Geotechnical Assessment OR must include all information required in a Geotechnical Assessment where the initial level of assessment was bypassed by the slope threshold requirement.

The Landslide Risk Assessment then requires a full risk assessment in accordance with the requirements of the AGS2007 guidelines.

This includes an assessment for risks for all reasonably identified geotechnical hazards and must be undertaken for risks to life and risk to property/infrastructure. Qualitative and quantitative calculations must be included in this assessment.

The Landslip Risk Assessment must include a specific statement as follows:

- A statement that the subject lots are suitable or can be made suitable for the proposed development and that the subject lot or the proposed development can meet the TOLERABLE RISK criteria as defined in the schedule.

As before, a TOLERABLE RISK level will need to be defined by COS but is again expected to be in line with risk levels recommended in the Australian Geomechanics Society's Landslide Risk Management Guidelines (AGS 2007c and d). For a typical low rise residential development TOLERABLE levels of risk as recommended by AGS are as follows:

<b>Risk Type for low rise residential development</b>	<b>TOLERABLE RISK level (as per AGS 2007 c and d)</b>
Risk to Property and Infrastructure (Qualitative Assessment)	MODERATE
Risk to Life for existing slopes and development (Quantitative Assessment)	1 x 10 <sup>-4</sup>
Risk to Life for new slopes and new development (Quantitative Assessment)	1 x 10 <sup>-5</sup>

It is again noted that different combinations of building importance and slope conditions may result in different levels of tolerable risk.

## 19. Report Limitations

### 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.

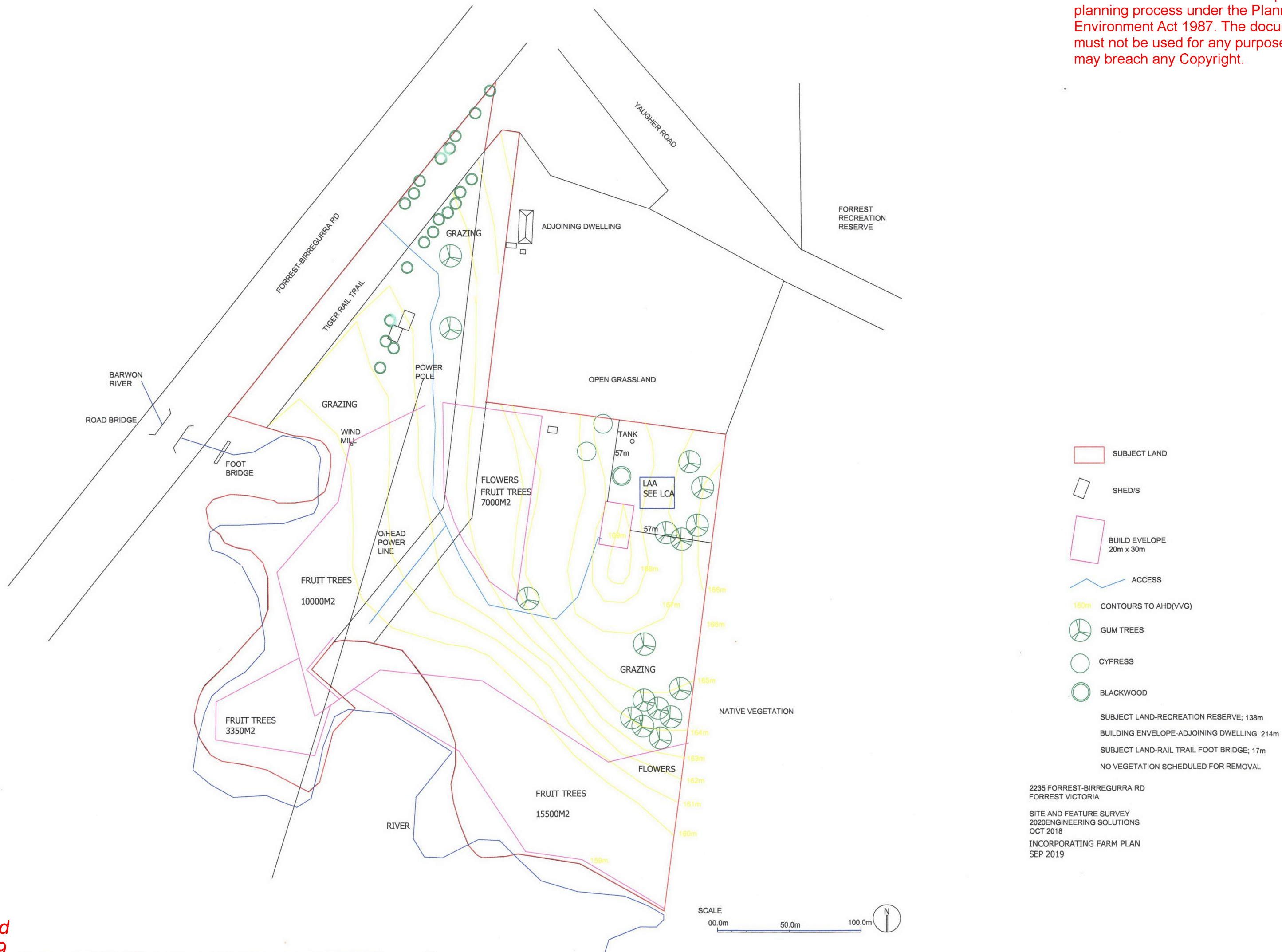
This document is provided to inform the client that their responsibility for risk is shared with 2020. The client will be responsible for inaccurate instructions or failure to instruct in relation to changed conditions, events that may cause changed conditions or when it becomes evident that assumptions 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









## Ruby Mills

---

**From:** Janet Forbes <elmbankforbes@gmail.com>  
**Sent:** Friday, 4 October 2019 8:46 AM  
**To:** Helen Evans  
**Cc:** Peter and Sandra Scott  
**Subject:** Addition to farm plan  
**Attachments:** Planning purposes.xlsx; ATT00001.txt

**Follow Up Flag:** Follow up  
**Flag Status:** Flagged

Good Morning Helen,

Peter has asked me to forward the attached table as an attachment to the farm plan It gives details of projected income from the property on the maturity of the trees based on standard yields In all cases production has been based on a lower to mid range figure Income for some plants has not been calculated this is because either  
they have a long life span prior to reaching maturity  
reliable Figures were not available  
they are complimentary products to the farm plan

Regards  
Janet Forbes

## Detailed proposed plantings for Planning purposes

This table has been compiled following desk top research in relation to yield production. Where reliable industry figures could be sourced these have been used to project irrigation requirements. Plantings (species and varieties) will be amended to reflect further findings in regard to yield production.

Plantings	Number of Varieties	Final total of Trees	Production per mature tree	1 Bushell = approx Kilo
Apples	14	100	8-18 bushells	19
Apricot	4	120	3-6 bushels	17
Berries - heritage varieties	6	300		
Cherries	5	120	3 bushell	17
Figs	4	120		
Grapefruit	2	30	150 - 180 kilo	
Lemon	3	10	150 - 180 kilo	
Lime	2	20	150 - 180 kilo	
Loquats	2	50	50 kilo	
Mandarin	2	30	150 - 180 kilo	
Mulberry	2	40	100 - 300 kilo	
Nectarine	4	120	3-5 bushells	17
Orange	3	60	150 - 180 kilo	
Peaches	5	120	4-6 bushells	17
Pears	5	100	4-6 bushells	18
Plums	5	140	2-6 bushells	17
Quinces	2	80	1 bushell	19
***Nuts (Walnuts, Almonds, Hazelnut)	6	100		
#Lavender	4	80		
#Proteas	5	50		



#Leucadendrons	5	50		
#Leucospermicus	2	20		
#Mixed other	5	50		

\* Spoilage rate is fruit not able to be sold in any form

\*\* The average price per kilo allow for some fruit to be sold at premium and some at

\*\*\* These plants have a long growth period prior to yield so have not been used to

# These complimentary plants will be for sale

ations for mature trees

income

ard to suitability to the location

Use Kilo for planning per tree	Fruit produced	*Spoilage rate %	Fruit for sale Kilo	Ave \$ per kilo**	Gross Income
228	22800	25	17100	2	\$34,200
51	6120	35	3978	3	\$11,934
	0		0		\$0
51	6120	35	3978	5	\$19,890
	0		0		\$0
150	4500	25	3375	2	\$6,750
150	1500	25	1125	2	\$2,250
150	3000	25	2250	2	\$4,500
30	1500	30	1050	2	\$2,100
150	4500	25	3375	2	\$6,750
150	6000	50	3000	4	\$12,000
51	6120	30	4284	3	\$12,852
150	9000	25	6750	2	\$13,500
68	8160	30	5712	3	\$17,136
72	7200	25	5400	2	\$10,800
51	7140	30	4998	2	\$9,996
15	1200	25	900	2	\$1,800
	0				\$0
					\$0
					\$0
					\$0
					\$0

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					\$0
					\$0
					\$0
			67275		\$166,458

as damaged / cooking etc  
calculate income



## Ruby Mills

**From:** Janet Forbes <elmbankforbes@gmail.com>  
**Sent:** Friday, 4 October 2019 10:02 AM  
**To:** Helen Evans  
**Cc:** Peter and Sandra Scott  
**Subject:** Re: PP182/2019 - 2235 Birregurra Forrest road Forrest - further information still outstanding

Hi Helen,

In response to the points raised in your email below I wish to clarify,

4. Clarification about whether any on-site sales to the public are proposed. (see further requirements below if necessary)

**There are no on-site sales to the public proposed.**



**There will be no direct to public sales from the property.**

**Sales are planned to be a mix of wholesale together with local farmer markets throughout the Region.**

8. A full set of building plans without the 'not for construction' notation across the plan. Alternatively, written confirmation that an amended plans condition requiring such plans would be acceptable should a permit be issued.

**We wish to confirm that an amended plans condition requiring building plans without the 'not for construction' notation would be acceptable should a permit be issued.**

**Regards**  
**Janet Forbes**  
**On behalf of PG & SL Scott**

On 4 Oct 2019, at 9:23 am, Helen Evans <[Helen.Evans@colacotway.vic.gov.au](mailto:Helen.Evans@colacotway.vic.gov.au)> wrote:

Hi Peter, Sandra and Janet,  
Thank you for the further information submitted. This list of proposed plantings will supersede the list Sandra handed to me on 1 October 2019.

I note that points 4, 5 and 8 of my letter dated 26/9/19 have not been addressed.