PP5/2019-1

85 Bushbys Road BARONGAROOK

Lot: 76 LP: 125752 V/F: 9447/131

Construct New Dwelling with Garage

Hamlan Homes Pty Ltd

Officer - Vikram Kumar

EXHIBITION FILE

This document is made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any Copyright.

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.
Application for a Planning Permit

If you need help to complete this form, read MORE INFORMATION at the back 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 concerns, 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.

Application Type
Is this a VicSmart application?*

☐ No  ☐ Yes
If yes, please specify which VicSmart class
VicSmart class or classes:

If the application falls into one of the classes listed under Clause 92 or the schedule to Clause 94, it is a VicSmart application.

Pre-application Meeting
Has there been a pre-application meeting with a Council planning officer?

☐ No  ☐ Yes
If 'Yes', with whom? over the phone / Various persons
Date: 2018 day / month / year

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

Street Address *

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.:  ☐ Lodged Plan  ☐ Title Plan  ☐ Plan of Subdivision  No.: LP125752

OR

B
Crown Allotment No.:  Section No.:  Parish/Township Name:
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?

CONSTRUCT NEW 3 BED DWELLING WITH ATTACHED DOUBLE GARAGE.

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.

Cost $310,000.00

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

If the application is for land within metropolitan Melbourne (as defined in section 3 of the Planning and Environment Act 1987) and the estimated cost of the development exceeds $1 million (adjusted annually by CPI) the Metropolitan Planning Levy must be paid to the State Revenue Office and a current levy certificate must be submitted with the application. Visit www.sro.vic.gov.au for information.

Existing Conditions

Describe how the land is used and developed now.

VACANT LAND

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

Title Information

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.

<table>
<thead>
<tr>
<th>Name:</th>
<th>Title: Mr</th>
<th>First Name: DENNIS</th>
<th>Surname: SEXTON</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organisation (if applicable):</td>
<td>HAMLAN HOMES P/L</td>
<td></td>
<td></td>
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**Postal Address:**

<table>
<thead>
<tr>
<th>Unit No.:</th>
<th>St. No.:</th>
<th>St. Name:</th>
<th>Postcode:</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>PO BOX 1837</td>
<td>3220</td>
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**Contact information for applicant OR contact person below**

<table>
<thead>
<tr>
<th>Business phone:</th>
<th>Email:</th>
<th>Mobile phone:</th>
<th>Fax:</th>
</tr>
</thead>
<tbody>
<tr>
<td>5226 2009</td>
<td><a href="mailto:dennis@hamlan.com.au">dennis@hamlan.com.au</a></td>
<td></td>
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</tr>
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</table>

**Contact person's details**

<table>
<thead>
<tr>
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**Owner**

The person or organisation who owns the land.

<table>
<thead>
<tr>
<th>Name:</th>
<th>Title: Mr</th>
<th>First Name: RUSSELL</th>
<th>Surname: BAYLISS</th>
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</thead>
<tbody>
<tr>
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**Postal Address:**

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<td>VIC</td>
<td>3040</td>
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**Owner's Signature (Optional):**

Date: 21/11/2018

---

**Information requirements**

Is the required information provided?

- Yes
- No

---

**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: [Signature]

Date: 09.01.1959

---

THIS COPIED DOCUMENT IS MADE AVAILABLE FOR THE SOLE PURPOSE OF ENABLING ITS CONSIDERATION AND REVIEW AS PART OF A PLANNING PROCESS UNDER THE PLANNING AND ENVIRONMENT ACT 1987. THE DOCUMENT MUST NOT BE USED FOR ANY PURPOSE WHICH MAY BREACH COPYRIGHT.
LAND DESCRIPTION

Lot 76 on Plan of Subdivision 125752.

PARENT TITLES:
Volume 06322 Folio 295
Volume 07606 Folio 036
Volume 08195 Folio 216

Created by instrument J391803 23/03/1981

REGISTERED PROPRIETOR

Estate Fee Simple

Joint Proprietors

RUSSELL CHRISTY BAYLISS
KATHLEEN LOUISE BAYLISS both of 717/38 MOUNT ALEXANDER ROAD TRAVANCORE VIC 3032
AN248815J 07/11/2016

ENCUMBRANCES, CAVEATS AND NOTICES

MORTGAGE AN248816G 07/11/2016
WESTPAC BANKING CORPORATION

COVENANT J391803 23/03/1981

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

AGREEMENT Section 173 Planning and Environment Act 1987
AL289193D 13/08/2014

DIAGRAM LOCATION

SEE LP125752 FOR FURTHER DETAILS AND BOUNDARIES

ACTIVITY IN THE LAST 125 DAYS

NIL

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

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

Street Address: 85 BUSHBYS ROAD BARONGAROOK VIC 3249

ADMINISTRATIVE NOTICES

NIL

eCT Control 19525E WESTPAC BANKING CORPORATION
Effective from 07/11/2016

DOCUMENT END
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PLAN OF SUBDIVISION OF CROWN ALLOTMENT 47c & PART OF CROWN ALLOTMENT 47b
PARISH OF BARONGAROOK
COUNTY OF POLWARTH
MEASUREMENTS ARE IN METRES
VOL. 8195 FOL. 216
VOL. 7606 FOL. 036
VOL. 6322 FOL. 295
DEPTH LIMITATION: 15.24m

SEE SHEET 2
# MODIFICATION TABLE

**RECORD OF ALL ADDITIONS OR CHANGES TO THE PLAN**

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<th>MODIFICATION</th>
<th>DEALING NUMBER</th>
<th>DATE</th>
<th>TIME</th>
<th>EDITION NUMBER</th>
<th>ASSISTANT REGISTRAR OF TITLES</th>
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<td>L.G.D.3730</td>
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<td></td>
</tr>
<tr>
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**PLAN NUMBER**

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The document is invalid if this cover sheet is removed or altered.
APPLICATION BY A RESPONSIBLE AUTHORITY FOR THE
MAKING OF A RECORDING OF AN AGREEMENT

Planning and Environment Act 1987

Lodged at the Land Titles Office by:

Name: Harwood Andrews
Phone: 5225 5225
Address: 70 Gheringhap Street, Geelong, 3220
DX 22019 Geelong
Ref: 4JMH:21305835
Customer Code: 2235J

The Authority having made an agreement referred to in section 181(1) of the Planning and Environment Act 1987 requires a recording to be made in the Register for the land.

Land: Certificate of title volume 10064 folio 213
Certificate of title volume 9447 folio 131

Authority: Colac Otway Shire Council of 2-6 Rae Street, Colac 3250

Section and Act under which agreement made: Section 173 of the Planning and Environment Act 1987.

A copy of the agreement is attached to this application.

[Signature]

Signature for the Authority:

[Name of Officer and position held]

Date: 11/7/14
PLANNING AND ENVIRONMENT ACT 1987

SECTION 173 AGREEMENT

BETWEEN

COLAC OTWAY SHIRE COUNCIL
- and -

SHANE JASON FOSTER
- and -

BARWON REGION WATER CORPORATION

in relation to

land at:

85 Bushbys Road, Barongarook VIC 3249
THIS AGREEMENT is made the 11th day of July 2013

BETWEEN

1. COLAC OTWAY SHIRE COUNCIL of 2-6 Rae Street, Colac in the State of Victoria (the "Responsible Authority") and

2. SHANE JASON FOSTER of 85 Bushbys Road, Barongarook in the State of Victoria (the "Owner").

3. BARWON REGION WATER CORPORATION of 61-67 Ryrie Street, Geelong in the State of Victoria ("Barwon Water")

RECATALS:

R.1. The Owner is the registered proprietor of the land known as 85 Bushbys Road, Barongarook, in the State of Victoria, being the land contained in Certificate of Title Volume 10084 Folio 213 and Certificate of Title Volume 9447 Folio 131 and being more particularly described as Lot 1 on TP 651108J and Lot 76 on Plan of Subdivision LP 125752 (the "Land").

R.2. The Responsible Authority is responsible for the administration and enforcement of the Planning Scheme pursuant to the provisions of the Act.

R.3. The Responsible Authority issued planning permit number PP132/2013-1 on 3 September 2013 allowing building and works comprising construction of a dwelling, generally in accordance with the endorsed plans (the "Permit").

R.4. Condition 6 of the Permit relevantly provides as follows:

vii) Prior to a building permit being issued for construction of a dwelling the owner must enter into an agreement with the Responsible Authority and Barwon Water in accordance with Section 173 of the Planning and Environment Act 1987 requiring that:

(a) The Owner is to enter into a service contract to have wastewater treatment facility and effluent disposal system for the dwelling inspected and maintained in accordance with the EPA Certificate of Approval for the chosen system.

(b) The Owner must provide to Barwon Water and the Responsible Authority an annual report on the condition and operation of the wastewater treatment system, which documents the effluent quality achieved and provides laboratory inspection and maintenance reports for the preceding 12 months.

(c) The Owner shall have the wastewater treatment facility desludged at least once every 3 years or as otherwise determined by Council's Environmental Health Officer. Evidence of this desludging shall be provided in the annual report referred to in Clause (b) herein.

(d) The Owner shall carry out any works considered necessary by the service contractor to ensure the satisfactory operation of the wastewater treatment facility and effluent disposal system.

(e) The Owner will maintain all drainage lines at all times to divert surface water and subsurface water clear of the effluent disposal field.

(f) The Owner and the Responsible Authority agree to do all things necessary to register a memorandum of this Agreement on the title of the land pursuant to Section 181 of the Planning and Environment Act 1987.
(g) The Owner shall meet all costs of inspections, reports and works referred to in Clauses (a), (b), (c), (d) and (e) herein and all costs of the Responsible Authority in relation to stamping and registration of this Agreement.

(h) The Owner shall not sell or enter into any contract to sell the land until this Agreement has been registered pursuant to Clause (f) herein.

R.5. This Agreement is entered into between the Responsible Authority, the Owner and Barwon Water pursuant to section 173 of the Act in order to meet the requirements of condition 6 of the Permit and to achieve and advance the objectives of planning in Victoria.

R.6. The Land is subject to registered mortgage number AK412220F registered on 20 June 2013 in favour of Commonwealth Bank of Australia, which mortgagee, as evidenced by its consent on the attestation pages, consents to this Agreement.

IT IS AGREED AS FOLLOWS:

Definitions

1. In this Agreement unless inconsistent with the context or subject matter:

1.1. "Act" means the Planning and Environment Act 1987;

1.2. "Agreement" means this Agreement and any agreement executed by the parties varying or expressed to be supplemental to this Agreement;

1.3. "Barwon Water" means Barwon Region Water Corporation as a statutory water corporation and includes its agents, officers, employees, servants, workers and contractors and any subsequent person or body under the Water Act 1989.

1.4. "Land" means the land described in Recital R.1;

1.5. "Mortgagee" means the person or persons registered or entitled from time to time to be registered by the Register of Titles as Mortgagee of the Land or any part of it;

1.6. "Owner" means the person or persons registered or entitled from time to time to be registered by the Registrar of Titles as the proprietor or proprietors of an estate in fee simple of the Land or any part thereof, and includes a Mortgagee in possession;

1.7. "party or parties" means the Owner, Barwon Water and the Responsible Authority under this Agreement as appropriate;

1.8. "Permit" means the planning permit issued by the Responsible Authority described in Recital R.3;

1.9. "Planning Scheme" means the Colac Otway Planning Scheme and any successor instrument or other planning scheme which applies to the Land;

1.10. "Responsible Authority" means Colac Otway Shire Council as the authority responsible for administering and enforcing the Planning Scheme and includes its agents, officers, employees, servants, workers and contractors and any subsequent person or body which is the responsible authority for the Planning Scheme; and

1.11. "Tribunal" means the Victorian Civil and Administrative Tribunal or any successor tribunal, court, institution or body.

Interpretation

2. In the interpretation of this Agreement unless inconsistent with the context or subject matter:
2.1. The singular includes the plural and the plural includes the singular;
2.2. A reference to a gender includes a reference to all other genders;
2.3. Words (including defined expressions) denoting persons will be deemed to include all trustees, bodies and associations, corporate or unincorporated, and vice versa;
2.4. A reference to a person includes a reference to a firm, corporation, association or other entity and their successors in law;
2.5. If a party consists of more than one person this Agreement binds them jointly and each of them severally;
2.6. A reference to a statute includes any statute amending, consolidating or replacing that statute and includes any subordinate instruments made under that statute;
2.7. The Recitals to this Agreement are and will be deemed to form part of this Agreement including any terms defined within the Recitals;
2.8. References to the parties will include their transferees, heirs, assigns, and liquidators, executors and legal personal representatives as the case may be;
2.9. Reference to a document or agreement includes reference to that document or agreement as changed, novated or replaced from time to time; and
2.10. Where a word or phrase is given a definite meaning in this Agreement, a part of speech or other grammatical form for that word or phrase has a corresponding meaning.

Specific Obligations of the Owner

3. The Owner covenants, acknowledges and agrees with the Responsible Authority that it will:
   3.1. enter into a service contract to have wastewater treatment facility and effluent disposal system for the dwelling inspected and maintained in accordance with the EPA Certificate of Approval for the chosen system;
   3.2. provide to Barwon Water and the Responsible Authority an annual report on the condition and operation of the wastewater treatment system, which documents the effluent quality achieved and provides laboratory inspection and maintenance reports for the preceding 12 months;
   3.3. desludge the wastewater treatment facility at least once every 3 years or as otherwise determined to the satisfaction of the Colac Otway Shire Council Environmental Health Officer. Evidence of this desludging shall be provided in the annual report referred to in Clause 3.2 of this Agreement;
   3.4. carry out any works considered necessary by the service contractor to ensure the satisfactory operation of the wastewater treatment facility and effluent disposal system;
   3.5. maintain all drainage lines at all times to divert surface water and subsurface water clear of the effluent disposal field; and
   3.6. pay all reasonable costs of inspections, reports and works referred to in Clauses 3.1, 3.2, 3.3, 3.4 and 3.5 of this Agreement;

Further Covenants of the Owner

4. The Owner warrants and covenants with the Responsible Authority that:
4.1. It is the registered proprietor (or entitled to be so) of the Land;

4.2. Save as shown in the certificate of title to the Land, there are no mortgages, liens, charges, easements or other encumbrances or any rights inherent in any person affecting the Land or any part thereof and not disclosed by the usual searches;

4.3. Neither the Land nor any part of it is subject to any right obtained by adverse possession or subject to any easements, rights or encumbrances mentioned in section 42 of the Transfer of Land Act 1958 (Vic);

4.4. It will not sell, transfer, dispose of, assign, mortgage or otherwise part with possession of the Land or any part thereof without first providing to its successors a copy of this Agreement;

4.5. It will within 28 days of written demand pay to the Responsible Authority and Barwon Water the Responsible Authority's reasonable costs (including legal costs) and Barwon Water's reasonable costs (including legal costs) and expenses incidental to the:

4.5.1 negotiation, preparation, execution, an amendment and recording of this Agreement; and

4.5.2 assessment, negotiation, preparation, execution and recording of any proposed amendment to this Agreement.

To the extent that such costs and expenses constitute legal professional costs, the Responsible Authority may at its absolute discretion have these costs assessed by the Law Institute of Victoria and in the event the parties shall be bound the amount of that assessment, with any fee for obtaining such an assessment being borne equally by the Responsible Authority and the Owner. Such costs payable by the Owner will include the costs and disbursements associated with the recording, cancellation or alteration of this Agreement in the Registrar.

4.6. It will do all that is necessary to enable the Responsible Authority to make an application to the Registrar of Titles to make a recording of this Agreement on the Certificate of Title to the Land in accordance with Section 181 of the Act, including the signing of any further agreement, acknowledgment or other document; and

4.7. Until such time as this Agreement is registered on the certificate of title to the Land, the Owner shall ensure that successors in title will give effect to this Agreement, and do all acts and sign all documents which will require those successors to give effect to this Agreement, including executing a deed agreeing to be bound by the terms of this Agreement.

Further assurance

5. The parties to this Agreement shall do all things necessary (including signing any further agreement, acknowledgement or document) to give full effect to the terms of this Agreement and to enable the Responsible Authority to register this Agreement on the titles to the Land in accordance with the Act.

Amendment

6. This Agreement may be amended only in accordance with the requirements of the Act.

No waiver

7. No waiver by any party of any default in the strict and literal performance of or compliance with any provision, condition or requirement in this Agreement will be deemed to be a waiver of strict and literal performance of and compliance with any other provision, condition or requirement of this Agreement nor to be a waiver of or in any way release any party from
compliance with any provision, condition or requirement in the future nor will any delay or omission of any party to exercise any right under this Agreement in any manner impair the exercise of such right accruing to it thereafter.

No Fettering of Powers of Responsible Authority

8. The parties acknowledge and agree that this Agreement does not fetter or restrict the power or discretion of the Responsible Authority to make any decision or impose any requirements or conditions in connection with the granting of any planning approval or certification of any plans of subdivision applicable to the Land or relating to any use or development of the Land.

Notices

9. All notices and other communications under this Agreement will be sent by prepaid mail, by hand delivery, email or by facsimile to the addresses of the parties as specified in this Agreement or to such other address or person as any party may specify by notice in writing to the other party or parties, and may be sent by an agent of the party sending the notice. Each notice or communication will be deemed to have been duly received:

9.1. not later than two business days after being deposited in the mail with postage prepaid;

9.2. when delivered by hand;

9.3. if sent by email upon production of a delivery confirmation report received by the sender which records the time the email was delivered unless the sender received a delivery failure notification; or

9.4. if sent by facsimile transmission upon completion of that transmission and production of a transmission report stating that the facsimile was sent to the addressee’s facsimile number.

Costs on Default

10. If the Owner defaults in the performance of any obligations under this Agreement it will pay to the Responsible Authority its reasonable costs of action taken to achieve compliance with this Agreement.

Jurisdiction

11. This Agreement will be governed by and construed in accordance with the law of the State of Victoria and each of the parties hereby submits to the jurisdiction of the Courts of the State of Victoria and the Victorian Civil and Administrative Tribunal.

Invalidity of any Clause

12. Notwithstanding anything to the contrary in this Agreement, if any provision of this Agreement will be invalid and not enforceable in accordance with its terms, all other provisions which are self-sustaining and capable of separate enforcement without regard to the invalid provisions and will be and continue to be valid and enforceable in accordance with those terms.

Agreement Binding on Successors of Owners

13. This Agreement will extend to and bind the Owner’s successors, assigns, administrators, transferees and legal personal representatives and the obligations imposed upon them shall also be binding on their successors, transferees, purchasers, mortgagees and assigns as if each of them had separately executed this Agreement.

Joint Obligations

14. In the case of each party that consists of more than one person (including in that expression any corporation) each of those persons covenants, agrees and declares that all of the covenants, agreements, declarations and consents contained in this Agreement and made
and given by that party have been entered into, made and given and are binding upon that
person both severally and also jointly with the other person or persons constituting that party.

Entire Agreement

15. This Agreement constitutes the entire agreement between the parties in connection with its
subject matter and supersedes all previous Agreements or understandings between the
parties in connection with its subject matter.

Commencement and Ending of Agreement

16. This Agreement shall commence on date that it bears.
17. This Agreement shall end by agreement between the parties or otherwise in accordance with
the Act.

EXECUTED AS A DEED

SIGNED SEALED AND DELIVERED by
SHANE JASON FOSTER in the presence of

[Signature]
Witness

REBECCA NICOLE
Witness name and address
46 Bow St, Mossman Q 4873

SIGNED SEALED AND DELIVERED on behalf of Colac Otway Shire Council by General
Manager, Sustainable Planning and Development, pursuant to an instrument of
delegation authorised by a Council, in the presence of:

[Signature]
(Witness name & signature)

THE COMMON SEAL of the BARWON REGION WATER CORPORATION was hereunto affixed in
the presence of:

[Signature]
Director

Joe Adamski
Managing Director

Michael Watson
Secretary
MORTGAGEE CONSENT

COMMONWEALTH BANK OF AUSTRALIA as Mortgagee under Instrument of Mortgage No. AK412220F consents to the Owner entering into this Agreement and agrees to be bound by the terms and conditions of this Agreement.

DATED:

Executed for and on behalf of

SIGNED, SEALED AND DELIVERED in Sydney for and on behalf of the COMMONWEALTH BANK of AUSTRALIA by its Attorney

Tanya Lewis

under Power dated 11 December 2000 a certified copy of which is filed in Permanent Order Book No. 277 at Page 016 who certifies that he/she is Manager Post Settlements

Sydney of COMMONWEALTH BANK OF AUSTRALIA in the presence of:

Payal Pandya

150 George Street Parramatta
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The document is invalid if this cover sheet is removed or altered.
G. N. HEILBORN
(2.CYGNUS MAGNUS)
FRANZ-HEILBORN
LEOER TEMPEAR
VICTORIA

THE GEOGRAPHY OF LAND TRANSFER

GARTH BOYD EVANS Farmer and MARY EVANS Married Woman both of Yeoland

the registered proprietors of an estate in fee simple in the land herein-

after described subject to the encumbrances notified in consideration of

the sum of ONE HUNDRED AND FIFTY-THREE THOUSAND FIVE HUNDRED DOLLARS (153,500.00)
paid to us by the Transferee DO HEREBY TRANSFER to TANLON PTY. LTD. of 1012

Doncaster Road, East Doncaster ALL our estate and interest in ALL those pieces

of land being Lots 60 - 66 inclusive on Plan of Subdivision No. 125752 and

being the whole of the land more particularly described in Certificates of

Title Volume 9303 Folio 197 - 199, Lots 36 - 41 inclusive on Plan of Subdivision No. 125752 and being the

whole of the land more particularly described in Certificates of Title Volume 9303 Folio 180 - 185, Lot 49 on Plan of Subdivision No. 125752 and being part of the land more particularly described in Certificate of Title Volume 8195 Folio 216, Lots 24 - 28 inclusive on Plan of Subdivision No. 125751 and being

the whole of the land more particularly described in Certificates of Title Volume 9303 Folio 174 - 179, Lots 50, 51 and 53 on Plan of Subdivision No. 122693 and being the whole of the land more particularly described in Certificate of Title Volume 9232 Folio 448, Volume 9232 Folio 449 and Volume 9232 Folio 451, Lots 58 and 59 on Plan of Subdivision No. 122870 and being the

whole of the land more particularly described in Certificate of Title Volume 9305 Folio 941 and Volume 9305 Folio 942 and Lot 76 on Plan of Subdivision No. 125752 and being the whole of the land more particularly described in Certificate of Title Volume 9303 Folio 295.
AND the abovenamed Purchaser with the intent that the benefits of this covenant shall be attached to and run at law and in equity with each and every lot on the said Plan of Subdivisions other than the said lots hereby transferred and that the burden of this covenant shall be annexed to and run at law and in equity with the said lots hereby transferred for itself its successors in title and transferees the registered proprietors for the time being of the said lots hereby transferred and as separate covenants JOINTLY AND SEVERALLY COVENANTS with the Vendors and their transferees the registered proprietors or proprietors for the time being of the land comprised in the said Plan of Subdivision other than the said lots hereby transferred—
(a) that no dwelling house having an area of less than one hundred square metres will be erected on any of the lots transferred.
(b) that no pigs are to be brought onto kept or reared on any one of the lots transferred.
(c) that no more than four dogs shall be kept on the lots transferred at any one time.
(d) that no effluent is to be disposed of on the lot or lots transferred save and except by means of an all wastes septic tank linked with a sub-soil drainage system or in the case of sullage waste by means of a grease trap through which sullage wastes are to pass into a sub-soil drainage system on the lots transferred.
(e) that no dwellinghouse is to be erected on the lots transferred within thirty metres from the road frontage to the said lots.

AND it is intended that this covenant shall be set out as an encumbrance on the Certificate of Title issued or to issue for each of the said lots hereby transferred and shall run with the land.

DATED this 23rd day of March 1981

SIGNED by the said GARTH BOYD EVANS and
MARY EVANS in the State of Victoria in the presence of:
THE COMMON SEAL of TANLON PTY. LTD. was hereunto affixed in accordance with its Articles of Association in the presence of:

DIRECTOR

ENCUMBRANCES REFERRED TO:

As set out at the foot of the said Certificates of Titles.
Ex-amin-Ing Draughtsman’s Report

8 CERTS TO ISSUE

ALL CERTS FEE 15.24 MTS.

PARISH BAROUGH ROOK

COUNTY POLWORTH

1ST CERT TO 4TH CERT

CONSEL

0.11 YR. 8195 F. 216 Pt

7606 F. 036 Pt

Being A Lot on

Pls 125752 & Being

Pt of CAS 47B & 47C

1ST CERT

Being Lot 61

AREA 7.441 M².

2ND CERT

Being Lot 62

AREA 7.840 M².

3RD CERT

Being Lot 75

AREA 3.263 ha.

4TH CERT

Being Lot 49

AREA 1.578 ha.

5TH CERT

CONSEL

0.11 YR. 6322 F. 295 (WA)

V. 7606 F 036 (PT)

V. 8195 F. 216 (PT)

Being Lot 76

AREA 2.974 ha

CONT. SEE OVR.
Exaining Draughtsman's Report

6th Cert.

97/59303 F.177 BAL
Being Pt Lot 33 on
P/L 125751
Area 1.038 ha

7th Cert.

97/59303 F.178 BAL
Being Pt Lot 34 on
P/L 125751
Area 2.630 ha

8th Cert.

97/59303 F.179 BAL
Being Pt Lot 35
on P/L 125751

ENC

A' Earth 98

Area 2.924 ha

No Certs as to Others

Ex 15/12/81
The Registrar of Titles,
Titles Office,
283 Queen Street,
MELBOURNE, 3000.

Dear Sir,

re Dealing 3261813 lodged 20.11.80
Dealing 3363740 lodged 2.3.81
Dealing 3991803 lodged 23.3.81
Dealing 3991872 lodged 28.3.81

Please hand Control of the abovenamed Dealings to Tanlon Pty. Ltd. and Montran Pty. Ltd., whose registered office is at 1012 Doncaster Road, East Doncaster, and upon completion issue the relevant duplicate Certificates of Title to Tanlon Pty. Ltd. and Montran Pty. Ltd.

Dated this 1st day of June, 1981.

THE COMMON SEAL of EDSA NOMINEES PTY. LTD. was herefo affixed by authority of the directors in the presence of

[Signature]

EDSA NOMINEES PTY. LTD.
TOWN PLANNING ASSESSMENT REPORT

Buildings & Works Associated with the Construction of a Dwelling
85 Bushbys Road, Barongarook, Vic, 3249

Prepared for Hamlan Homes
By Planit Consulting Pty Ltd

November 2018
This report has been prepared by:

Planit Consulting Pty Ltd
ABN 20 099 261 711

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Geelong VIC 3220

PO Box 112
Geelong VIC 3220

Telephone: (03) 5229 7411

Email: admin@planitconsulting.com.au
Web: www.planitconsulting.com.au

Document Control

<table>
<thead>
<tr>
<th>Issue</th>
<th>Date</th>
<th>Description</th>
<th>Prepared By</th>
<th>Checked By</th>
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<tr>
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<td>Draft</td>
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Section 1 - Development Application Forms
- Application Form

Section 2 - Supporting Document
- Town Planning Report
- Title Searches

Section 3 - Plans and Drawings
- Development Plans prepared by HamIan Homes

Section 4 - Specialist Reports
- Bushfire Management Statement prepared by South Coast Bushfire Consultants
- Land Capability Assessment prepared by South East Soil & Water
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1 Introduction

1.1 Application Sought

Planit Consulting has been engaged by the permit applicant to assess and submit an application for the construction of a single dwelling at 85 Bushbys Road, Barongarook (Lot 76 on LP125752).

The subject land is within a Rural Living Zone and is subject to the Bushfire Management Overlay, Environmental Significance Overlay Schedule 2 & 3, Significant Landscape Overlay Schedule 1 and Vegetation Protection overlay Schedule 1 pursuant to the Colac Otway Planning Scheme.

The purpose of this report is to provide:

- A Bushfire Management Statement in accordance with Clauses 44.06-3 & 53.02-3 of the Colac Otway Planning Scheme.
- An assessment of the proposal against the relevant environmental, landscape and vegetation elements of the site in relation to the objectives and strategies of the Colac Otway Planning Scheme.
- An assessment of the proposal against relevant polices contained within the Colac Otway Planning Scheme.

Overall the development proposal is consistent with the relevant strategic directions contained in the State and Local Planning Policy Frameworks of the Colac Otway Planning Scheme as they relate to protection of landscape character, retention of vegetation, maintenance of water quality and protection of significant habitats.

The proposed dwelling with its modest size and being located within a cleared area of the site will have little impact on the landscape and environmental values of the land. The appearance and design detail of the dwelling will also harmonise with the existing landscape character of the area through the selection of appropriate construction materials.

The Bushfire Management Statement ensures the site and location of the dwelling will be provided with appropriate measures for the protection of human life and demonstrates risk from bushfire is at an acceptable level. The Land Capability Assessment provides support to ensure the site is capable of treating and retaining wastewater while minimising impacts on ground water quality.

Accordingly, the application is considered worthy of Council support.
1.2 Summary of Application Details

Table 1- Basic Information

<table>
<thead>
<tr>
<th>Basic Information</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Applicant</strong></td>
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<td><strong>Application</strong></td>
</tr>
<tr>
<td><strong>Address</strong></td>
</tr>
<tr>
<td><strong>Property Description</strong></td>
</tr>
<tr>
<td><strong>Title Restrictions</strong></td>
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<tr>
<td><strong>Total Site Area</strong></td>
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<td><strong>Zone</strong></td>
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<td><strong>Overlays</strong></td>
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<td><strong>Permit Triggers</strong></td>
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<tr>
<td><strong>Other</strong></td>
</tr>
</tbody>
</table>

1.3 Public Notification

The application is not exempt from notice requirements or third-party appeal rights.
2 Site Analysis

2.1 Subject Site

The subject site is located within Barongarook, approximately 12 kilometres south of Colac (see Figure 1).

At a local context, the site is situated on the south side of Bushbys Road. It consists of a single allotment and is formally described as Lot 76 on LP125752, 85 Bushbys Road, Barongarook.

The following provides a general summary of the subject site:

- The site is rectangle in shape with a 115.12m frontage to Bushbys Road and side boundaries of approximately 257.85m giving a total area of 2.97ha.
- An unused road reserve measuring 20m in width cuts through the site approximately one third from the front of the site (see Figure 2).
- The topography of the land is generally flat.
- The site is vacant.
- The site contains a small natural dam located in the middle of the site towards the western boundary.
- There is an existing crossover located on the north-west corner of the site which provides access to the property from Bushbys Road.
- Existing vegetation is predominantly within the southern two thirds of the site and consists of significant remnant bushland. The front third is mostly grassed with trees lining the side boundaries.
- The site is enclosed by a post and wire fence which defines the property boundary.

The subject site is located within the Rural Living Zone and is affected by a Bushfire Management Overlay, Environmental significant overlay Schedule 2 & 3, Significant Landscape Overlay Schedule 1 and Vegetation Protection Overlay Schedule 1.

The site is connected to utilities and services including electricity, water and telecommunications. As the area is not sewered the site will be serviced by a septic system.
Figure 1 Site location map

Figure 2 Cadastral map (site highlighted)
2.2 Surrounds

As shown in Figure 3, the site is located within a well-established semi-rural area of Barongarook.

The surrounding area contains bush lifestyle properties with the majority of lots containing a dwelling with associated outbuildings. The retention of significant vegetation is evident with most lots being substantially treed.

Dwellings have generally been constructed within a naturally cleared area of the site retaining the natural bush character of the area.

The surrounding properties to the north, east and west share the same zone and generally the same overlays while the land adjoining to the south is located within a Farming Zone.

The land to the south would appear to be cropped while land 500m to the west contains a sand extraction quarry.
3.1 Development

The application proposes to construct a single storey modest sized dwelling at 85 Bushbys Road, Barongarook.

The dwelling will be constructed in a cleared area of the site approximately 46.2m from the Bushbys Road boundary. The dwelling will be located centrally within the site with a minimum setback of 10.0m from the unused road reserve to the south.

No trees are required to be removed, destroyed or lopped to accommodate the construction of the dwelling. A minimal amount of ground cover is required to be excavated for the construction of the dwelling and this will be done in the form of a site cut and fill.

The dwelling will be modest in size and will be constructed of brick, weatherboard features and a hipped sheet metal roof. The dwelling will have a maximum height of 5.0m and will be of ranch style with a verandah constructed along the front of the dwelling. It will contain a double garage, three bedrooms, bathroom, laundry, en-suite and open plan kitchen/meals/living area.

The existing crossover will be used for access to the site and new dwelling.

4 Permit Triggers, Notice & Referrals

4.1 Permit Triggers

A planning permit is required pursuant to:

<table>
<thead>
<tr>
<th>Clause</th>
<th>Use/Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clause 35.03-4</td>
<td>Construction of a building within 100 metres from a waterway, wetlands or designated flood plain</td>
</tr>
<tr>
<td>Clause 42.01-2</td>
<td>to construct a building or construct or carry out works within ES02 &amp; 3</td>
</tr>
<tr>
<td>Clause 42.03-2</td>
<td>to construct a building or construct or carry out works within SLO1</td>
</tr>
<tr>
<td>Clause 44.06-2</td>
<td>to construct a building or construct or carry out works associated with accommodation within BMO</td>
</tr>
</tbody>
</table>

4.2 Notice requirements

This application is not exempt from public notice requirements.

4.3 External Referrals

Pursuant to Schedule 2 of the Environmental Significance Overlay an application must be referred to the Department of Environment, Land, Water and Planning as a determining referral authority under Section 55 of the Act unless in the opinion of the responsible authority the proposal satisfies requirements or conditions previously agreed in writing between the responsible authority and the referral authority.

Pursuant to Schedule 3 of the Environmental Significance Overlay an application must be referred to Barwon Region Water Corporation as a determining referral authority under Section 55 of the Act unless
in the opinion of the responsible authority the proposal satisfies requirements or conditions previously agreed in writing between the responsible authority and the referral authority.

Pursuant to Clause 44.06-6 of the Colac Otway Planning Scheme an application must be referred to the relevant fire authority as a recommending referral authority under Section 55 of the Act unless a schedule to this overlay specifies otherwise. A schedule to this overlay does not apply to this land.

5 Planning Policy

5.1 Zone

Pursuant to the Colac Otway Planning Scheme the site is zoned Rural Living Zone. The purpose of the RLZ is:

- To implement the Municipal Planning Strategy and the Planning Policy Framework.
- To provide for residential use in a rural environment.
- To provide for agricultural land uses which do not adversely affect the amenity of surrounding land uses.
- To protect and enhance the natural resources, biodiversity and landscape and heritage values of the area.
- To encourage use and development of land based on comprehensive and sustainable land management practices and infrastructure provision.

5.2 Overlay

The site is subject to an Environmental Significance Overlay - Schedule 2 (Lakes, Wetlands and Watercourses) & 3 (Declared Water Supply Catchments).

The objective of the ESO2 is:

- To protect the quality of water entering lakes, watercourses and wetlands.
- To protect and enhance lakes, watercourses and wetlands with significant flora, fauna and fisheries habitat.
- To minimise erosion along Lake foreshore areas and surrounding waterways and catchments.
- To protect and enhance the quality of lake foreshores and riparian strips along watercourses.
- To prevent pollution and increased turbidity of water in natural watercourses.
- To maintain the ability of streams and watercourses to carry natural flows.
- To prevent erosion of banks, streambeds and adjoining land and the siltation of watercourses, drains and other features.
- To consider the intensity of the development of environmentally sensitive land.
- To promote environmental solutions in siting and design in preference to modification of natural systems through technical and engineering measures.

The objective of the ESO3 is:

- To protect the public health of communities that depend on water from declared water supply catchments.
- To protect and maintain water quality and water yields in the declared water supply catchments.
- To ensure that subdivision, land use and development meets the requirements of any Land Use Determination.
- To provide for appropriate land use and development within these declared water supply catchments.
- To manage the impact of incremental development on water quality and yield.
The site is subject to a Vegetation Protection Overlay - Schedule 1 (Significant and Remnant Vegetation)

The objective of the VP01 is:

- To protect and manage the remnant vegetation in the Otway Ranges as viable habitat areas for animals and birds, for catchment management and for its scenic and recreational value.
- To protect and manage the remnant grassland as identified in the Flora and Fauna Guarantee Act 1988 and in particular in Action Statement No 53, Western (Basalt) Plains Grassland Community.
- To encourage natural regeneration and replanting with indigenous species and to remove or modify threatening processes and introduced plant species.

The site is subject to a Significant Landscape Overlay - Schedule 1 (Valleys, Hills and Plains Landscape Precinct)

The objective of the SLO1 is:

- To conserve and enhance areas of natural beauty, wildlife habitat, and important natural features.
- To limit clearance of remnant native vegetation that provides wildlife habitat and forms an important part of the visual landscape.
- To protect wetland areas as important habitat for birdlife by preventing the drainage of the wetland areas and by ensuring that existing water flow patterns and water quality are not adversely affected.
- To protect the landscape character of the stony rises and lava flows, including the stone fences which form a landscape feature of historic interest.
- To protect and enhance the visual quality of waterways, waterbodies, lake foreshores and riparian zones.
- To protect landscape features including volcanic cones and significant views within the Shire.

The site is subject to a Bushfire Management Overlay.

The purpose of the BMO is:

- To implement the Municipal Planning Strategy and the Planning Policy Framework.
- 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.

5.3 State Planning Policy Framework

The State Planning Policy framework (SPPF) sets out the specific policies relating to environmental, social and economic factors. The sections of the SPPF relevant to the consideration of this application are:

- Clause 12.00 - Environmental and Landscape Values
- Clause 12.01 - Biodiversity
- Clause 12.03 - Water Bodies and Wetlands
- Clause 13.02 - Bushfire
The above SPPF provisions primarily seek to:

- Ensure that planning protects, restores and enhances sites and features of nature conservation, biodiversity, geological or landscape value.
- Protect and enhance river corridors, waterways, lakes and wetlands.
- Assist the protection and conservation of Victoria’s biodiversity.
- Strengthen the resilience of settlements and communities to bushfire through risk-based planning that prioritises the protection of human life.

5.4 Local Planning Policy Framework

Local Planning Policy Framework (LPPF) is comprised of the Municipal Strategic Statement (MSS) and local polices.

5.4.1 Municipal Strategic Statement

The Colac Otway Strategic Statement identifies a number of local planning issues for development within the municipality. Of most relevance to the consideration of this application are the following clauses:

- Clause 21.04-2 - Water
- Clause 21.04-3 - Vegetation
- Clause 21.04-8 - Landscape character

The relevant objectives to Clause 21.04-2 (Water) is:

- To protect water catchments.
- To retain and improve water quality and water yield.

The relevant strategies are:

- Promote the introduction of improved septic tank systems and alternative waste treatment systems in areas where sewerage systems are not available.

The relevant objectives to Clause 21.04-3 (Vegetation) is:

- To protect and manage remnant native vegetation communities.

The relevant strategies are:

- Maintain bio-diversity through the protection of significant habitats including remnant vegetation.
- Protect native vegetation and other significant stands of vegetation in order to prevent land degradation, maintain water quality and protect the bio-diversity of flora and fauna species.

The relevant objectives to Clause 21.04-8 (Landscape Character) is:

- To retain the open and rural character of views and outlooks, particularly from main road corridors.
- To maintain the dominance of the natural landscape when viewed from main road corridors and tourist routes outside townships.
- To protect the variety of landscape features and landmarks of the precincts identified in the CORRLAS.
To increase indigenous planting in the Landscape precincts to further emphasise natural features such as creeks.

To protect ridgelines from inappropriate development and vegetation removal.

The relevant strategies are:

- Retain existing indigenous and native trees and understorey wherever practical.
- Discourage the loss of indigenous vegetation particularly in or adjacent to landform features such as rocks.
- Utilise finishes and colours that complement those found naturally in the hinterland landscape, with consideration as to how the material will weather over time.
- Between townships, site development a substantial distance from main roads wherever possible.
- Discourage the loss of rural outlook and openness from main road corridors.

5.4.2 Local Planning Policy

None applicable.

6 Particular & General Provisions

6.1 Clause 65 – Decision Guidelines

Refer to Planning Assessment section of this report.

7 Planning Assessment

7.1 Overview

In considering the planning implications of the proposed development we have analysed the suitability of the site, the proposal’s compliance with State and Local Planning Policies, including Zoning & Overlay Controls, and General Provisions contained within the Colac Otway Planning Scheme.

7.2 Rural Living Zone

The use of the land for a dwelling within the Rural Living Zone is a Section 1 subject to the following conditions being met:

<table>
<thead>
<tr>
<th>Condition</th>
<th>Requirement</th>
</tr>
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<tbody>
<tr>
<td>The lot must be at least the area specified in a schedule to this zone.</td>
<td>The schedule to the zone specifies an area of 1.2ha for which no permit is</td>
</tr>
<tr>
<td>If no area is specified, the lot must be at least 2 hectares.</td>
<td>required to use land for a dwelling. The subject site has an area of 2.974ha.</td>
</tr>
<tr>
<td>Must be the only dwelling on the lot.</td>
<td>The site is currently vacant and only one dwelling is proposed.</td>
</tr>
<tr>
<td>Must meet the requirements of Clause 35.03-2.</td>
<td>The dwelling will be provided with an all-weather access road, a septic</td>
</tr>
<tr>
<td></td>
<td>system in</td>
</tr>
</tbody>
</table>
accordance with the EPA requirements, a potable water supply as well as adequate storage for firefighting purposes and a reticulated electricity supply.

As the proposed development meets all conditions a permit is not required for the use of the land for a dwelling.

Although the use of a dwelling is ‘as of right’ a permit is triggered as the dwelling will be constructed within 100m of a waterway.

Before deciding on an application, in addition to the decision guidelines in Clause 65, the responsible authority must consider, as appropriate:

<table>
<thead>
<tr>
<th>Decision Guideline</th>
<th>Assessment</th>
</tr>
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<tbody>
<tr>
<td><strong>General Issues</strong></td>
<td></td>
</tr>
<tr>
<td>The purpose of this zone.</td>
<td></td>
</tr>
<tr>
<td>Any Regional Catchment Strategy and associated plan applying to the land.</td>
<td>The site is located within a declared water supply catchment therefore the development must not impact on the quality or quantity of water. A Land Capability Assessment submitted with the application demonstrates the sites ability to contain and treat wastewater on site minimizing impact on water quality. The modest size of the dwelling will reduce any impact on quantity of water yield.</td>
</tr>
<tr>
<td>The capability of the land to accommodate the proposed use or development.</td>
<td>The land size is 2.974ha and certainly capable of accommodating the proposed development.</td>
</tr>
<tr>
<td>Whether the site is suitable for the use or development and whether the proposal is compatible with adjoining and nearby land uses</td>
<td>The area is described as an established rural living area with the majority of properties within the area containing dwellings.</td>
</tr>
<tr>
<td><strong>Environmental Issues</strong></td>
<td></td>
</tr>
<tr>
<td>The impact on the natural physical features and resources of the area and in particular any impact caused by the proposal on soil and water quality and by the emission of noise, dust and odours.</td>
<td>The modest size of the development with have little impact on the natural physical features and resources of the area.</td>
</tr>
<tr>
<td>The impact of the use or development on the flora, fauna and landscape features of the locality</td>
<td>No significant vegetation is proposed to be removed other than ground cover necessarily required for the construction of the dwelling.</td>
</tr>
<tr>
<td>The need to protect and enhance the biodiversity of the area, including the need to retain vegetation and faunal habitat and the need to revegetate land including riparian buffers along waterways, gullies, ridgelines, property boundaries and saline discharge and recharge area</td>
<td>The biodiversity of the area will be protected through the retention of vegetation and habitat.</td>
</tr>
<tr>
<td>The location of on-site effluent disposal areas to minimise the impact of nutrient loads on waterways and native vegetation.</td>
<td>The on-site effluent disposal area will be located to reduce the impact of nutrient loads on waterways and native vegetation.</td>
</tr>
<tr>
<td><strong>Design and Siting Issues</strong></td>
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</tr>
<tr>
<td>The impact of the siting, design, height, bulk, colours and materials to be used, on the natural environment, major roads, vistas and water features and the measures to be undertaken to minimise any adverse impacts.</td>
<td>The proposed dwelling is modest in size, will use basic construction materials, is single storey in height and will not impact vistas or water features.</td>
</tr>
</tbody>
</table>
The impact on the character and appearance of the area or features of architectural, historic or scientific significance or of natural scenic beauty or importance. | The area has picturesque rural outlook and the proposed dwelling will have little impact on this.
---|---
The location and design of existing and proposed infrastructure including roads, gas, water, drainage, telecommunications and sewerage facilities | The proposal will have no impact on the location or design of existing or proposed infrastructure.
Whether the use or development will require traffic management measures. | The development will not require traffic management measures.

### 7.3 Environmental Significance Overlay (Schedule 2)

Schedule 2 to the Environmental Significance Overlay (Lakes, Wetlands and Watercourses) aims to protect significant lakes, wetlands and watercourses from inappropriate development.

It is considered that the proposed development is consistent with the objectives of this schedule in that the construction of this single dwelling will have little impact on the function of any lake, wetland or watercourse. This is due to the modest size of the dwelling, flat topography of the land and lack of surrounding stream bank which would indicate that the siting location of the dwelling is not within or near a watercourse.

A Land Capability Assessment has been prepared for the site to demonstrate its ability to treat and maintain discharged effluent within the site.

### 7.4 Environmental Significance Overlay (Schedule 3)

Schedule 3 to the Environmental Significance Overlay (Declared Water Supply Catchments) aims to protect and maintain water quality and quantity through careful management of land use and development.

It is considered that proposed development will have little environmental impact on the site as the land is flat and the Land Capability Assessment demonstrates the sites ability to contain and treat wastewater on site.

The area is described in the Colac Otway Rural Living Strategy as having limited opportunity for development due to it sitting within a water supply catchment area with development being restricted to infill on existing vacant lots. This site is one of only a handful of sites identified as being available for development and the proposal is considered appropriate due to the modest size of the dwelling having little impact to water quality or yield.

### 7.5 Vegetation Protection Overlay (Schedule 1)

A permit is not triggered by the Vegetation Protection Overlay as no native vegetation will be removed, destroyed or lopped as part of the construction of the dwelling. A small amount of ground cover necessary for the excavation for the dwelling will be removed however the area has been subject to mowing and slashing over a number of years and is considered to be highly modified and consists mostly of weeds or exotic ground covers.
Cleared area of the site where the dwelling will be sited.

7.6 Significant Landscape Overlay (Schedule 1)

Schedule 1 to the Significant Landscape Overlay (Valleys, Hills and Plains Landscape Precinct) aims to conserve and enhance the landscape character within the Shire.

It is considered that the proposed dwelling will harmonise with the landscape character of the area due to its modest size, location on naturally cleared land and use of a mix of construction materials designed to blend in with the surrounding area. No vegetation is proposed to be removed other than ground cover that is considered necessary for the excavation for the dwelling. If the dwelling was to be sited in any other location significant tree removal may be required.

The site is located within Precinct 2.1 (Northern Foothills) in the Great Ocean Road Region Landscape Assessment Study (GORRLAS) and is described as Lowland Forest. The site certainly contains remnant native vegetation which requires protection and given the application does not propose to remove any of this significant vegetation the location of the dwelling is considered appropriate.

The proposed dwelling will not be constructed in an area that will affect significant views, will not cause erosion and will have little impact on the drainage of the site.

7.7 Bushfire Management Overlay

A Bushfire Management Statement (attached) has been prepared for this development in line with the requirements of Clause 44.06-3 and 53.02-3. It is considered that all of the approved measures have been incorporated into this application to demonstrate that the risk to life and property has been reduced to an acceptable level.

7.8 Policy

It is considered that the proposal is consistent with the general policy directives at both the State and Local level by effectively

In addition, the proposed development will:

- Protect the biodiversity of the area through the retention of remnant vegetation within the site;
- Protect water quality through the submission and implementation of an appropriate Land Capability Assessment designed to adequately treat and retain wastewater;
7.9 Decision Guidelines

7.9.1 Clause 65.01 Decision Guidelines

Clauses 65.01 of the Colac Otway Planning Scheme list a number of matters for consideration by the responsible authority when considering a proposal to approve an application. The matters for consideration as follow:

- The proposal is consistent with relevant policies of the Planning Policy Framework, zone and overlay requirements, as addressed above.
- All matters required to be considered by the zone, overlay or other provisions have been suitably addressed.
- The proposal is consistent with orderly planning of the area.
- The development will not negatively impact on the amenity of the area.
- The subject site is not located near public land.
- It is not considered that the proposal will incur, cause or contribute to land degradation, salinity or reduced water quality. Stormwater discharge will be directed in accordance with the recommendations of Council engineers and effluent will be treated and retained appropriately.
- The quality of stormwater within and exiting the site will not be reduced in quality as a consequence of the development.
- The site contains significant lowland forest vegetation within the southern 2/3 of the site that will not be removed or destroyed as a result of this development.
- All native vegetation on the site will be protected and allowed to regenerate.
- A Bushfire Management Statement has been prepared for the site to minimize the potential for any fire hazard.
- There are not expected to be any traffic flow and road safety impacts.

8 Conclusion

In summary, the proposal is considered to respond to the features of the site and surrounding landscape character. The siting of the dwelling will require no vegetation to be removed other than what is reasonably necessary to facilitate the construction of the dwelling.

The proposed development will have little impact on the environmental features of the area due to the modest size of the dwelling, flat topography of the land and lack of surrounding stream bank which would indicate that the siting location of the dwelling is not within or near a watercourse.

The development is able to suitably demonstrate compliance with approved measures applicable to bushfire management and retention and treatment of wastewater in accordance with relevant requirements within the Colac Otway Planning Scheme.

Accordingly, the proposed development is considered to be appropriate and worthy of support.
BUSHFIRE MANAGEMENT STATEMENT — LOT 76, 85 BUSHBYS ROAD BARONGAROOK

REF: 2018-243

9th November 2018

South Coast Bushfire Consultants
South Coast Bushfire Consultants

P.O. Box 721, Torquay, Vic 3228

Phone: 0401 328 757  Email: kylie@scbconsult.com.au

Principal Consultant — Kylie Steel

Qualifications / Accreditations:
- Accredited Bushfire Consultant (BPAD level 2) with the Fire Protection Association Australia (FPA) (2014)
- Preparing and assessing an application under the Bushfire Management Overlay — Planet (Department of Planning and Community Development) (2013)
- Postgraduate Certificate in Bushfire Planning and Management — The University of Melbourne (2013)
- Postgraduate Certificate in Business — The University of Notre Dame, Broome (2002)
- Bachelor of Science, Honours — The University of Melbourne (1998)
- Native Vegetation Planning Permit Applications — Planet (Department of Planning and Community Development) Training Seminar (2013)

Disclaimer

This report has been made with careful consideration and with the best information available to South Coast Bushfire Consultants at the time of writing. Before relying on information in this report, users should evaluate the accuracy, completeness and relevance of the information provided for their purposes. South Coast Bushfire Consultants do not guarantee that it is without flaw or omission of any kind and therefore disclaim all liability for any error, loss or other consequence that may arise from you relying on any information in this report.

Requirements detailed in this document do not guarantee survival of the buildings or the occupants. The client is strongly encouraged to develop and practice a bushfire survival plan.

Information and assistance including a template for a Bushfire Survival Plan is provided as part of the ‘Fire Ready Kit’ available through the CFA website at http://www.cfa.vic.gov.au or through your local CFA Regional office.

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Version Control

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<th>Date Completed</th>
<th>Comments</th>
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<td>8/11/18</td>
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<td>Report</td>
<td>Kylie Steel</td>
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<td>Mapping</td>
<td>Kylie Steel</td>
<td>8/11/18</td>
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DEFINITIONS, ABBREVIATIONS AND ACRONYMS


CFA – Country Fire Authority

Clause – A clause relates to a specific piece within the planning scheme.

Clause 44.06 – Bushfire Management Overlay

Clause 53.02 – Planning for Bushfire

DEPI – Department of Environment Planning and Infrastructure (now DELWP)

DELWP – Department of Environment, Land, Water and Planning

BAL – Bushfire Attack Level

BPA – Bushfire Prone Area

BMO – Bushfire Management Overlay

BMS – Bushfire Management Statement

Method 1 – refers to methodology in AS 3959-2009 for determining a BAL with a number of predetermined inputs.

Method 2 – refers to methodology in AS 3959-2009 for determining a site specific BAL

Pathway 1 – refers to an application pathway in Clause 53.02 of the planning scheme.

Pathway 2 – refers to an application pathway in Clause 53.02 of the planning scheme.

Planning Practice Note – a guide for using various sections of the planning scheme prepared by DTPI

RA – Responsible Authority

SCBC – South Coast Bushfire Consultants

Total Fire Ban Day – is declared by CFA on days when fires are likely to spread rapidly and could be difficult to control.
Bushfire Management Statement — Lot 76, 85 Bushbys Road Barongarook

1. SUMMARY

This report has been prepared to accompany a planning permit application for new dwelling at Lot 76, 85 Bushbys Road, Barongarook. The site is within the Bushfire Management Overlay (BMO) and as such needs to demonstrate that the development has regard for the associated bushfire risk.

The report includes the following components:

- A site analysis considering localised hazards, defendable space and the bushfire attack level.
- The bushfire management plan and the standard CFA permit conditions.
- The site’s response to the relevant approval measures in Clause 53.02 from the Colac Otway Shire planning scheme.

The development site is in a rural settlement on a large allotment and is able to manage defendable space within the property boundary to enable a BAL of 19. The vegetation on neighbouring properties to the south east, south west and within the property to the south have been classified as woodland. Beyond the low-density residential properties are large areas of land used for farming and present as a grassfire hazard. Beyond the grassland to the south is the Otway Forest Park.

The development site is close to Brushbys Road and will provide a static water supply of 10,000L in accordance with the permit conditions detailed in section 8 of this report.

The dwelling is expected to be affected by moderate levels of radiant heat and ember attack in the event of a landscape bushfire. A BAL of 19 is deemed appropriate given the area of defendable space available within the property.
2. INTRODUCTION
This Bushfire Management Statement (BMS) has been prepared to enable the applicant to respond to the requirements of Clause 44.06 Bushfire Management Overlay (BMO) (known from this point on as Clause 44.06), and associated Clause 53.02 Bushfire Protection: Planning Requirements (known from this point on as Clause 53.02).

3. METHODOLOGY
The methodology used to satisfy the requirements of the BMO include the following:

- A Bushfire Hazard Landscape Assessment
- A Bushfire Hazard Site Assessment
- A method 1 BAL Assessment
- A Bushfire Management Plan
- A Bushfire Management Statement – response to Clause 53.02.

4. PLANNING AND BUILDING CONTROLS

4.1 Planning and building controls

<table>
<thead>
<tr>
<th>Clause Number</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>35.03</td>
<td>Rural Living Zone (RLZ)</td>
</tr>
<tr>
<td>Schedule</td>
<td></td>
</tr>
<tr>
<td>44.06</td>
<td>Bushfire Management Overlay</td>
</tr>
<tr>
<td>42.01</td>
<td>Environmental Significance Overlay (ESO)</td>
</tr>
<tr>
<td>Schedule 2</td>
<td></td>
</tr>
<tr>
<td>Schedule 3</td>
<td></td>
</tr>
<tr>
<td>42.03</td>
<td>Significant Landscape Overlay (SLO)</td>
</tr>
<tr>
<td>Schedule 1</td>
<td></td>
</tr>
<tr>
<td>42.02</td>
<td>Vegetation Protection Overlay (VPO)</td>
</tr>
<tr>
<td>Schedule 1</td>
<td></td>
</tr>
</tbody>
</table>
5. **BUSHFIRE HAZARD LANDSCAPE ASSESSMENT**

The Bushfire Hazard Landscape Assessment includes a plan that describes the bushfire hazard of the general locality surrounding the site (Map 1).

### 5.1 Vegetation extent in the broader landscape

The site is located in a rural settlement approximately 8km south of Colac. The settlement of Barongarook is made up of low-density residential development and is surrounded by grassland on farming properties.

There are a number of remnant patches of woodland vegetation in the surrounding landscape and there is a quarry to the west of the site.

The Otway Forest Park is approximately 1.3km to the south east of the development and presents as the closest major landscape bushfire hazard. The landscape between the forest and proposed dwelling is dominated by grassland.

The roadside vegetation and windbreaks throughout the farming districts present as a hazard, however, they are unable to sustain woodland or forest fire intensities due to the narrowness of the form.

### 5.2 Surrounding Road Network

The road network is good with Bushby’s road allowing travel to the east or west and then north to Colac.

### 5.3 Bushfire History of the Area

Historical bushfire weather analysis shows that the most likely directions a bushfire will impact the settlement of Barongarook is from the south west or north. Historically life loss and significant property damage corresponds with the introduction of a south westerly cold change and the vegetation to the south west has large areas of unmanaged forest vegetation and farming lands.

There have been a number of historical bushfire events within Australia that have caused devastating losses and it is for this reason that building homes resilient to bushfire attack is imperative where development is in close proximity to large areas of unmanaged vegetation.

The Ash Wednesday Bushfires (1983) and the Black Saturday (2009) events show how devastating a bushfire can be under prolonged drought. Both events occurred across a large geographical area and were significantly influenced by topography, seasonal dryness and extreme fire weather. A map of historical bushfire events is included in appendix 1 of this document.
6. BUSHFIRE HAZARD SITE ASSESSMENT

The Bushfire Hazard Site Assessment includes a plan that describes the bushfire hazard within 150 meters of the proposed development. The description of the hazard is prepared in accordance with AS 3959-2009 Construction of buildings in bushfire prone areas (Standards Australia) excluding paragraph (a) of section 2.2.3.2 (Vegetation Exclusions).

6.1 Site Details

Address: 85 Bushbys Road, Barongarook 3249
Lot and Plan Number: This property has 2 parcels:
Lot 76 LP125752 - 76\LP125752
Lot 1 TP651108 - 1\TP651108
Municipality: Colac Otway
BMO Schedule: N/A
Existing Dwellings: Vacant Land
Private Bushfire Shelter: N/A
Application Pathway: Clause 53.02-2
Directory Reference: VicRoads 92 B8
Site Area: 2.952ha
Map 2 – Bushfire Hazard Site Assessment

BUSHFIRE HAZARD SITE ASSESSMENT
Lot 76, 85 Bushbys Rd, Barongarook, Victoria

LEGEND

- Assessment Zone (150m Radius)
- Bushbys Rd
- Defendable Space
- Grassland
- Low Threat Vegetation
- Property Boundary
- Proposed Driveway
- Proposed Residence
- Road Reserve
- Water Tank (10,000L)
- Woodland

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6.2 Vegetation

The vegetation within the 150 metre assessment area was classified according to AS 3959-2009, ‘Practice note 65 (DTPLI 2014) and the ‘Overall fuel hazard assessment guide’ (DSE 2010).

The AS 3959-2009 approach uses a generalised description of vegetation based on the AUSLIG (Australian Natural Resources Atlas: No.7 Native Vegetation) classification system. According to this method, vegetation can be classified into seven categories. Each category indicates a particular type of fire behavior and these categories or classifications are then used to determine bushfire intensity.

Table 1 – Vegetation Assessment

<table>
<thead>
<tr>
<th>Woodland</th>
<th>AS 3959-2009 Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Woodland / Open Woodland</td>
<td>Trees 10-30m high; 10-30% foliage cover dominated by eucalypts, understorey or low trees to tall shrubs typically dominated by Acacia, Callitris or Casuarina</td>
</tr>
</tbody>
</table>

Site Description

The vegetation on the neighboring allotments to the south east and south west support woodland vegetation. The vegetation to the south within the property is also classifiable as woodland. These areas of vegetation are fragmented and would not enable a fire front as assumed in AS 3959-2009, however, they are connected to large areas of unmanaged grassland and must be classified.

A road reserve runs through the property to the south and is lined with eucalypts that present as woodland vegetation.

Figure 1 – Vegetation within the assessment zone.
Figure 2 – Vegetation within the assessment zone.

Figure 3 – Vegetation within the assessment zone.
6.3 Topography

The shed is located in an area that has small undulations throughout the landscape associated with drainage lines. Within the 150m assessment zone the land is relatively flat with a drainage line to the south east and other to the north east. These small depressions would not increase the intensity of a landscape bushfire.

The wider landscape surrounding the property is undulating and would contribute to the intensity of a landscape bushfire. Particularly the forested areas to the south in the Great Otway National Park.

Map 3 - Topography of the surrounding area.
6.4 Bushfire Attack Level (BAL) for the proposed development

The bushfire attack level (BAL) is a means of measuring the severity of a building’s potential exposure to ember attack, radiant heat and direct flame contact, using increments of radiant heat expressed in kilowatts per meter squared. The BAL is also the basis for establishing the requirements for construction to improve protection of building elements from attack by bushfire.

The highest BAL determines the construction requirements for the dwelling. A reduction of one BAL level may be applied if facades of the house are shielded from the bushfire hazard. Shielding is not appropriate for this development proposal.

The BAL for this site has been calculated using a ‘Forest Fire Danger Index’ (FFDI) of 100 and a Flame Temperature of 1090K. These parameters are in accordance with the risk parameters set in Clause 53.02.

Table 2 — BAL determination

<table>
<thead>
<tr>
<th>Orientation</th>
<th>Highest threat vegetation</th>
<th>Slope under classifiable vegetation</th>
<th>Distance to Classified Vegetation</th>
<th>Defendable Space</th>
<th>Bushfire Attack Level (BAL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>North</td>
<td>Grassland</td>
<td>Flat</td>
<td>19m</td>
<td>19m</td>
<td>12.5</td>
</tr>
<tr>
<td>East</td>
<td>Woodland</td>
<td>Flat</td>
<td>24m</td>
<td>24m</td>
<td>19</td>
</tr>
<tr>
<td>South</td>
<td>Woodland</td>
<td>Upslope</td>
<td>24m</td>
<td>24m</td>
<td>19</td>
</tr>
<tr>
<td>West</td>
<td>Woodland</td>
<td>Flat</td>
<td>24m</td>
<td>24m</td>
<td>19</td>
</tr>
</tbody>
</table>
## 7. Defendable Space and Vegetation Management

### Objectives

<table>
<thead>
<tr>
<th>Vegetation Management Requirements</th>
<th>Sites Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Grass must be short cropped and maintained during the declared fire danger period.</td>
<td>Grass will me managed to a low threat condition.</td>
</tr>
<tr>
<td>2. All leaves and vegetation debris must be removed at regular intervals during the declared fire danger period.</td>
<td>Regular debris removal will be undertaken during and prior to the declared fire danger period.</td>
</tr>
<tr>
<td>3. Within 10 metres of a building, flammable objects must not be located close to the vulnerable parts of the building.</td>
<td>The location of flammable objects such as; wood heaps, additional plastic water tanks and treated pine retaining walls will not be located within 10m of a vulnerable part of the building (including glazing and external doors).</td>
</tr>
<tr>
<td>4. Plants greater than 10 centimetres in height must not be placed within 3 metres of a window or glass feature of the building.</td>
<td>The landscape plan will ensure that plantings are located over 3m from a window or glass feature.</td>
</tr>
<tr>
<td>5. Shrubs must not be located under the canopy of trees.</td>
<td>Shrubs will not be located under the canopy of trees.</td>
</tr>
<tr>
<td>6. Individual and clumps of shrubs must not exceed 5 square metres in area and must be separated by at least 5 metres.</td>
<td>Any further planting of shrubs will ensure that they are not planted in densities greater than 5m².</td>
</tr>
<tr>
<td>7. Trees must not overhang or touch any elements of the building.</td>
<td>Existing trees must be trimmed to ensure they do not touch or overhang any element of the dwellings.</td>
</tr>
<tr>
<td>8. The canopy of trees must be separated by at least 5 metres.</td>
<td>The canopy of trees must be separated by at least 5 metres.</td>
</tr>
<tr>
<td>9. There must be a clearance of at least 2 metres between the lowest tree branches and ground level.</td>
<td>There will be a clearance of at least 2 metres between the lowest tree branches and ground level.</td>
</tr>
</tbody>
</table>
Bushfire Mitigation Measures

Construction
The dwelling will be constructed to a minimum BAL-19 from AS 3959-2009.

Defendable space
An area of defendable space for the designated BAL around the proposed building / or to the property boundary where vegetation (and other flammable materials) will be modified and managed in accordance with the following distances:
- North – Grassland – Flat – 19m
- East – Woodland – 24m
- South – Woodland – 24m
- West – Woodland – 24m

Vegetation Management requirements include:
An area of defendable space for the designated BAL around the proposed building / or to the property boundary where vegetation (and other flammable materials) will be modified and managed in accordance with the following requirements:
- Grass must be short cropped and maintained during the declared fire danger period.
- All leaves and vegetation debris must be removed at regular intervals during the declared fire danger period.
- Within 10 meters of a building, flammable objects must not be located close to the vulnerable parts of the building.
- Plants greater than 10 cm in height must not be placed within 3m of a window or glass feature of the building.
- Shrubs must not be located under the canopy of trees.
- Individual and clumps of shrubs must not exceed 5sq. metres in area and must be separated by at least 5 metres.
- Trees must not overhang or touch any elements of the building.

Water Supply
The site is required to have 10,000 Litres of water supply for fire fighting purposes which meets the following requirements:
- Is stored in an above ground water tank constructed of concrete or metal.
- All fixed above-ground water pipes and fittings required for fire fighting purposes must be made of corrosive resistant metal.
- Incorporate a ball or gate valve (British Standard Pipe (BSP) 6.5mm) and coupling (64mm CFA 3 thread per inch male fitting).
- The outlet/s of the water tank must be within 4m of the accessway and be unobstructed.
- Be readily identifiable from the building or appropriate identification signage to the satisfaction of CFA must be provided.
- Any pipework and fittings must be a minimum of 65mm (excluding the CFA coupling).
9. BUSHFIRE MANAGEMENT STATEMENT – SITES RESPONSE TO APPLICABLE SUB CLAUSES OF 53.02

Clause 53.02 contains a range of sub clauses with objectives, approved measures (AM), alternative measures (AltM) and decision guidelines. The table below details which clauses are relevant to this application. The following section demonstrates how the requirements have been met for the relevant standards.

Table 5 - Relevant clauses and measures applicable to the proposed development.

<table>
<thead>
<tr>
<th>Clause</th>
<th>Approved Measure</th>
<th>Achieved</th>
<th>Justification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clause 53.02-3 – Dwellings in existing settlements – Bushfire protection objective</td>
<td>AM 1.1</td>
<td>Not Applicable</td>
<td></td>
</tr>
<tr>
<td></td>
<td>AM 1.2</td>
<td>Not Applicable</td>
<td></td>
</tr>
<tr>
<td></td>
<td>AM 1.3</td>
<td>Not Applicable</td>
<td></td>
</tr>
<tr>
<td>Clause 53.02-4.1 Landscape, siting and design objectives</td>
<td>AM 2.1</td>
<td>Applicable</td>
<td>The development is able to meet these clauses.</td>
</tr>
<tr>
<td></td>
<td>AM 2.2</td>
<td>Applicable</td>
<td></td>
</tr>
<tr>
<td></td>
<td>AM 2.3</td>
<td>Applicable</td>
<td></td>
</tr>
<tr>
<td>Clause 53.02-4.2 Defendable space and construction objective</td>
<td>AM 3.1</td>
<td>Applicable</td>
<td>This clause can be met.</td>
</tr>
<tr>
<td></td>
<td>AM 3.2</td>
<td>Not Applicable</td>
<td></td>
</tr>
<tr>
<td></td>
<td>AltM 3.3</td>
<td>Applicable</td>
<td></td>
</tr>
<tr>
<td></td>
<td>AltM 3.4</td>
<td>Applicable</td>
<td></td>
</tr>
<tr>
<td></td>
<td>AltM 3.5</td>
<td>Applicable</td>
<td></td>
</tr>
<tr>
<td></td>
<td>AltM 3.6</td>
<td>Not Applicable</td>
<td></td>
</tr>
<tr>
<td>Clause 53.02-4.3 Water supply and access objectives</td>
<td>AM 4.1</td>
<td>Applicable</td>
<td>This clause can be met.</td>
</tr>
<tr>
<td></td>
<td>AM 4.2</td>
<td>Not Applicable</td>
<td></td>
</tr>
<tr>
<td>Clause 53.02-4.4 Subdivision objectives</td>
<td>AM 5.1</td>
<td>Not Applicable</td>
<td>This application is not a subdivision.</td>
</tr>
<tr>
<td></td>
<td>AM 5.2</td>
<td>Not Applicable</td>
<td></td>
</tr>
<tr>
<td></td>
<td>AM 5.3</td>
<td>Not Applicable</td>
<td></td>
</tr>
<tr>
<td></td>
<td>AM 5.4</td>
<td>Not Applicable</td>
<td></td>
</tr>
<tr>
<td></td>
<td>AltM 5.5</td>
<td>Not Applicable</td>
<td></td>
</tr>
</tbody>
</table>
1.1.1 Landscape, siting and design objectives

Development is appropriate having regard to the nature of the bushfire risk arising from the surrounding landscape.

Development is sited to minimise the risk from bushfire.

Development is sited to provide safe access for vehicles, including emergency vehicles.

Building design minimises vulnerability to bushfire attack.

<table>
<thead>
<tr>
<th>Approved Measure</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM 2.1</td>
<td>The bushfire risk to the development from the landscape beyond the site can be mitigated to an acceptable level.</td>
</tr>
<tr>
<td></td>
<td>Response:</td>
</tr>
<tr>
<td></td>
<td>The allotment is large and is able to manage defendable space for a BAL of 19 within the property boundaries.</td>
</tr>
<tr>
<td></td>
<td>The property is situated close to a major road is within a low-density residential area where nearby properties have created fragmentation of fuels across the landscape.</td>
</tr>
<tr>
<td></td>
<td>The dwelling will be constructed in accordance with AS 3959-2009 and will provide a 10,000L Static water supply.</td>
</tr>
<tr>
<td>AM 2.2</td>
<td>A building is sited to ensure the site best achieves the following:</td>
</tr>
<tr>
<td></td>
<td>• The maximum separation distance between the building and the bushfire hazard.</td>
</tr>
<tr>
<td></td>
<td>• The building is in close proximity to a public road.</td>
</tr>
<tr>
<td></td>
<td>• Access can be provided to the building for emergency service vehicles.</td>
</tr>
<tr>
<td></td>
<td>Response:</td>
</tr>
<tr>
<td></td>
<td>The dwelling has been located within an existing cleared area that is close to Bushbys Road.</td>
</tr>
<tr>
<td></td>
<td>Bushbys road is a wide, open road that provides travel east and west of the development site.</td>
</tr>
<tr>
<td></td>
<td>Access to the to the static water supply will be provided to the CFA and the dwelling will enable emergency service vehicles access.</td>
</tr>
<tr>
<td>AM 2.3</td>
<td>A building is designed to be responsive to the landscape risk and reduce the impact of bushfire on the building.</td>
</tr>
<tr>
<td></td>
<td>Response:</td>
</tr>
<tr>
<td></td>
<td>The building will be constructed in accordance with AS 3959-2009. The design will minimise the number of re-entrant corners and area where embers can accumulate.</td>
</tr>
</tbody>
</table>
## 1.1.2 53.02-4.2 Defendable space and construction objective

Defendable space and building construction mitigate the effect of flame contact, radiant heat and embers on buildings.

**AM 3.1**

A building used for a dwelling (including an extension or alteration to a dwelling), a dependent person’s unit, industry, office or retail premises is provided with defendable space in accordance with:

- AM 3.1 Table 2 Columns A, B or C and Table 6 to Clause 53.02-5 wholly within the title boundaries of the land; or
- If there are significant siting constraints, Table 2 Column D and Table 6 to Clause 53.02-5.

The building is constructed to the bushfire attack level that corresponds to the defendable space provided in accordance with Table 2 to Clause 53.02-5.

**Response:**

The site is able to manage defendable space within the property boundary, with the exception of the road reserve that runs through the middle of the property.

The defendable space overlaps into the road reserve to the south and this is deemed appropriate. The road reserve in this location is largely managed and is not heavily vegetated.

## 1.1.3 53.02-4.3 Water supply and access objectives

A static water supply is provided to assist in protecting property. Vehicle access is designed and constructed to enhance safety in the event of a bushfire.

**AM 4.1**

A building used for a dwelling (including an extension or alteration to a dwelling), a dependent person’s unit, industry, office or retail premises is provided with: AM 4.1

- A static water supply for fire fighting and property protection purposes specified in Table 4 to Clause 53.02-5.
- Vehicle access that is designed and constructed as specified in Table 5 to Clause 53.02-5.

The water supply may be in the same tank as other water supplies provided that a separate outlet is reserved for fire fighting water supplies.

**Response:**

The development will include a 10,000L static water supply and provide access to the CFA in accordance with the conditions detailed in the Bushfire Management Plan (Section 8 of this document).

Vehicle access will be in accordance with Table 5 to Clause 53.02-5 and is detailed in the Bushfire Management Plan (section 8).
10. REFERENCES


11. APPENDICES

Appendix 1 – Bushfire History and Prescribed Burns in the Area (DEPI – Biodiversity Interactive Map – showing bushfire history).

Figure 1 – Natural Bushfires in the area since 1970. Pink areas on the map indicate wildfires.
LAND CAPABILITY ASSESSMENT
FOR ON-SITE DOMESTIC WASTEWATER MANAGEMENT.

Prepared for: Soil Industries on behalf of Hamlan Homes.
Lot 76, 85 Bushbys Road, Barongarook. VIC, 3249.

Prepared by: Christian Bannan.
B. Ag (Hons), Adv. Dip Ag, SSA, CPSS.
Certified Professional Soil Scientist.
June 2019.

South East Soil & Water
Environmental & Agricultural Science

Postal: PO Box 5097, SANDHURST EAST. VIC. 3550.
Office: 3 Murphy Street, Kennington. Vic. 3517.
Phone: Mob. 0439 341 265. Office. 03 5443 5139
Website: www.sesw.com.au E-mail: info@sesw.com.au
Updated Report.

Photograph overlooking part of the site inspected for domestic wastewater land application.

DISCLAIMER:
This report is intended to serve as a guide only. Because soil mapping, soil chemical, physical and biological properties, and any other factors relating to soil and water may be influenced by factors beyond the author’s control, South East Soil and Water, their staff & contractors hereby disclaim any liability for commercial loss or damage to any person, property or thing in respect to the information and recommendations contained in this document. Every effort has been made to ensure that field information, laboratory results, maps and recommendations are as correct as possible from the information collected and provided at the date of printing of this document.
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Land Capability Assessment for On-Site Management of Domestic Wastewater.
Lot 76, 85 Bushys Road, Barongarook, Victoria. 3249.
Updated Report.

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SUMMARY

Introduction: This report provides the results of a Land Capability Assessment for On-Site Domestic Wastewater Management at Lot 76, 85 Bushbys Road, Barongarook, Victoria. The report is prepared for Hamlan Homes. This LCA is required to support the construction of a new home. The site is not serviced by town sewerage. The site lies within the Colac Otway Shire Council (COSC) region. The site also lies within a potable water supply catchment of the Barwon River.

To meet the requirements of Colac Otway Shire Council for site development, the site must be capable of supporting the disposal of domestic wastewater in accordance with EPA Victoria Publication 891.4 ‘Code of Practice Onsite Wastewater Management’ (“the Code”) and the Australian/ New Zealand Standard 1547:2012 ‘On-Site Domestic Wastewater Management’, where appropriate. The Colac Otway Shire Domestic Wastewater Management Plan (DWMP) has also been used for the development of this report.

In November 2018 a ‘standard’ LCA was prepared for the site. On the 13th of February 2019 the COSC responded via email requesting further information. The COSC response was based on a ‘moderate’ land sensitivity rating in accordance with COSC Domestic Wastewater Management Plan, whereby a comprehensive LCA was required (Whitehead and Associates, November 2015). This classification has now changed to 2.1, deemed ‘low’, requiring only a standard LCA. It is understood that this application was caught in a changeover period. These details have not been updated on the COSC website.

The author has visited the site on the 23rd of May 2019 and provided clarity around the presence of waterways, dams, drainage lines and their interaction in the area. During this visit the author discussed all components of this email with Mr. Michael Shelly to confirm the minimum requirements were able to be met. Additional boreholes were inspected to confirm subsurface conditions.

The COSC require LCA’s to be prepared using 75th percentile rainfall. To remain conservative, the author has adopted 90th percentile rainfall for preparing a zero water balance.

Methodology: In assessing the suitability of this site for disposal of domestic wastewater, the following process was employed:

1. Four boreholes drilled and logged by Mr. Simon Christie of Soil Industries, Geelong. This occurred during field inspection 1.

2. A site inspection by Christian Bannan of SESW (author). This was a comprehensive assessment which included a review of all surface water features including drainage lines and dams. A further two hand-augured holes were installed to check existing bore logs and confirm accuracy.

3. Samples from all boreholes and hand augured holes tested by South East Soil and Water for agricultural chemical analysis including Electrical Conductivity (salinity), soil pH, Slaking Class and Dispersion Class.
4. Development of this updated report by Christian Bannan off South East Soil and Water discussing the suitability of the site for disposal of domestic wastewater. Results are based on soil bore logs, soil test results and experience.

Results: Results are summarised in Tables A, B & C.

Table A. Results of the Land Capability Assessment – Desktop Review & Site Inspection.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description &amp; Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land Sensitivity Rating (Colac Otway Shire Council)</td>
<td>Rating is ‘2.1’, deemed low. This rating is based on personal communication from Mr. Michael Shelly, Environmental Health Officer at the COSC. This rating differs from the rating of moderate, as listed by Whitehead and Associates (November 2015). As discussed with Mr. Michael Shelly, changes to the sensitivity rating occurred between November 2018 and March 2019.</td>
</tr>
<tr>
<td>Overlays</td>
<td>To the understanding of the author, the zoning and overlays provide basis for detailed Land Capability Assessment. With special management measures, on-site management of domestic wastewater management can occur on land where these overlays exist. A zero water balance using the VCLAF spreadsheet with 90th percentile rainfall has been adopted to reduce risk of off-site discharge. There are no Cultural Heritage overlay issues identified.</td>
</tr>
<tr>
<td>Land Parcel Size (m2)</td>
<td>Total property size approximately 2.97 Hectares. The area for development and wastewater field concerns the northern section of the site (north of government road) is approximately 0.9 hectares (9000m2).</td>
</tr>
<tr>
<td>Number of Bedrooms</td>
<td>A floor plan was provided by Hamlan Homes showing the number of bedrooms. The home will have 3 bedrooms, with no other rooms that can be shut off to form a bedroom. In accordance with the Code, the total bedrooms is the number of bedrooms plus 1, totalling 4 bedrooms.</td>
</tr>
<tr>
<td>Daily Wastewater Generation</td>
<td>180 litres/person/day, total of 720 litres/day.</td>
</tr>
<tr>
<td>Proposed Water Supply</td>
<td>Rooftop rainfall generation.</td>
</tr>
<tr>
<td>Landform &amp; Geology (Geovic, 2019)</td>
<td>‘-Pdw’, an abbreviation for Dilwyn Group (Geovic 2019). Material of this type consists of shallow marine, coastal barrier and back beach lagoonal deposits. This includes dark brown, carbonaceous sandy clay and silt, interbedded with fine- to medium-grained, clean to clayey sand, with minor coarse sand and gravel.</td>
</tr>
<tr>
<td>Climate</td>
<td>Climate is Mediterranean with cold wet winters and warm dry summers. Rainfall is winter and spring dominant with falls averaging up to 105mm in August. Evaporation exceeds rainfall in the months of October to April.</td>
</tr>
<tr>
<td>Vegetation &amp; Exposure</td>
<td>Trees were extensive on the eastern and western boundaries of the northern section of the site. The northern section also contains a large belt of trees that appear within a disused easement / government road. The northern side of the site is exposed to Bushby’s road and northerly winds. The site has full pasture or vegetation cover.</td>
</tr>
<tr>
<td>Slope</td>
<td>Approximately 1:20 grade to the north.</td>
</tr>
<tr>
<td>Rocks, Rock Outcrops or Coarse Fragments</td>
<td>No rock was encountered.</td>
</tr>
</tbody>
</table>
Surface Water, including Dams

<table>
<thead>
<tr>
<th>Surface water including dams on the property and neighbouring land are listed as follows (See Figure A):</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Dam 1 – Located approximately 120 metres south of the proposed wastewater field on this property, on the south side of a ridge (area where a belt of native trees and disused laneway pass through the property). There is no connection between surface water and runoff from the north and south sides of this ridge. This dam lies on a natural drainage line and is not positioned on a waterway.</td>
</tr>
<tr>
<td>• Dam 2 – Eastern neighbour. This dam is closest to the proposed development. The dam is located upslope of this site. Overflow from this dam passes to the north-east towards Bushy’s Road. Water impounded has no connection with surface water runoff from this development site.</td>
</tr>
<tr>
<td>• Dam 3 – Western neighbour. This property has one dam, located on the south side of the ridge. This dam is on the same drainage line as Dam 1. Water impounded has no connection with surface water runoff from this development site.</td>
</tr>
<tr>
<td>• Dam 4 – Far western neighbour. This property has one dam, located on the south side of the ridge on the same drainage line as Dams 1 and 3. Water impounded has no connection with surface water runoff from this development site.</td>
</tr>
<tr>
<td>• Dam 5 – North dam located approximately 130 metres north of the development site on a waterway. This dam is outside of the minimum setback distance of 30 metres from a waterway (secondary treated wastewater). Risk of runoff from the development site is minimised if the wastewater field is designed in accordance with the Code, with a conservative zero water balance using 90th percentile rainfall as well as a perimeter drain around the wastewater field allowing stormwater to pass around the wastewater field.</td>
</tr>
<tr>
<td>• Dam 6 – Approximately 220 metres north-west of the proposed wastewater field site. Water impounded has no connection with surface water runoff from this development site.</td>
</tr>
</tbody>
</table>

Note that all dams in the nearby area are outside of the minimum setback distance of 30 metres from a non-potable dam (secondary treated wastewater).

Presence of Waterways or Ephemeral Drainage Lines:

| There are no declared waterways on the property (VVG, 2019; Geovic, 2019). The nearest waterway starts approximately 40 metres north of the northern boundary of this property. The northern part of the site contains an ephemeral drainage line and man-made drain alongside the entry driveway. These pass into a waterway approximately 75 metres north of the property. The southern part of the site has an ephemeral drainage line connecting Dam 4, Dam 3 and Dam 1. These are not on a marked waterway (VVG, 2019). |

Flood Potential

| There are no flood overlays. |

Stormwater run-on and upslope seepage

| Moderate. Care will be required to ensure drainage is installed around the wastewater field. High rainfall in winter will create stormwater runoff. |

Erosion Potential

| Low to moderate with actively growing pastures and maintenance of trees. Moderate with poor pastures, an absence of vegetation or overgrazing. |

Groundwater (VVG, 2019)

| Not observed in any boreholes. No groundwater bores within 350 metres of the site. VGG (2019) note the groundwater conditions as: |
| • Salinity: Approximately 500 mg/kg TDS |
| • Depth: Approximately 10 metres of depth. |

Available Land Application Area

| Over 1400m2. |
Figure A. Location of nearby farm dams, drainage lines and waterways.

Table B. Results of the Land Capability Assessment – Soil Conditions.

<table>
<thead>
<tr>
<th>Soil Description / Horizon</th>
<th>A Horizon Topsoil – 0-20cm</th>
<th>A2 Horizon Subsoil – 20-70cm.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Texture (EPA 891.4).</td>
<td>Sandy Loam.</td>
<td>Sandy Loam.</td>
</tr>
<tr>
<td>Soil Category (EPA 891.4).</td>
<td>2a</td>
<td>2b</td>
</tr>
<tr>
<td>Soil Structure</td>
<td>Weak</td>
<td>Weak to massive</td>
</tr>
<tr>
<td>Indicative Permeability (K Sat) (m/day)</td>
<td>&gt;3.0 metres/day.</td>
<td>1.4-3.0 metres/day.</td>
</tr>
<tr>
<td>Design Loading Rate (DLR) for ETA Absorption Beds &amp; Trenches (mm/day).</td>
<td>25mm/day (secondary treated wastewater only).</td>
<td>30mm/day (secondary treated wastewater only).</td>
</tr>
<tr>
<td>Design Loading Rate (DLR) for a Low Pressure Effluent Distribution (LPED) Trenches &amp; Beds (mm/day).</td>
<td>N/A in Category 1, 2a and 6 soils.</td>
<td>4 mm/day.</td>
</tr>
<tr>
<td>Design Irrigation Rate (DIR) for Subsurface Drip Irrigation or Surface Spray Irrigation (mm/day).</td>
<td>5 mm/day.</td>
<td>5 mm/day.</td>
</tr>
</tbody>
</table>
Updated Report.

<table>
<thead>
<tr>
<th>Soil pH (water) (SESW Test Results)</th>
<th>5.1. Strongly acidic.</th>
<th>6.0. Moderately acidic.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrical Conductivity Sat. Ext (ECE) (SESW Test Results).</td>
<td>&lt;2.0 dS/m. Low.</td>
<td>&lt;2.0 dS/m. Low.</td>
</tr>
<tr>
<td>Surface Drainage &amp; Profile Drainage</td>
<td>Rapid</td>
<td>Good to moderate</td>
</tr>
<tr>
<td>Presence of Fill Material</td>
<td>Not observed.</td>
<td>Not observed.</td>
</tr>
</tbody>
</table>

Table C. Results of the Land Capability Assessment – Recommended Setback Distances (Table 5 EPA 891.4). Note: WW = Wastewater, D/S = Downslope, U/S = Upslope.

<table>
<thead>
<tr>
<th>Setback Feature</th>
<th>Minimum Distance (metres)</th>
<th>Requirements &amp; Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buildings</td>
<td>Secondary treated WW: 3m D/S, 1.5m U/S. Adv Secondary treated WW: 3m D/S, 1.5m U/S.</td>
<td>WW field can be positioned at least 3.0m away from buildings.</td>
</tr>
<tr>
<td>Property Boundaries</td>
<td>Secondary treated WW: 3m D/S, 1.5m U/S. Adv Secondary treated WW: 1m D/S, 0.5m U/S.</td>
<td>WW field can be positioned at least 3.0m away from boundaries.</td>
</tr>
<tr>
<td>Adjacent Allotments</td>
<td>Secondary treated WW: 3m D/S, 1.5m U/S. Adv Secondary treated WW: 1m D/S, 0.5m U/S.</td>
<td>WW field can be positioned at least 3.0m away from an adjacent allotment.</td>
</tr>
<tr>
<td>Services, including Water Pipes, Gas Pipes &amp; Electricity</td>
<td>Not assessed as part of this commission.</td>
<td>To be confirmed by landowner, developer and relevant tradesman.</td>
</tr>
<tr>
<td>Waterways (and Ephemeral Water Courses) (non-potable)</td>
<td>Secondary treated WW: 30 metres. Adv Secondary treated WW: 30 metres.</td>
<td>Nearest waterway is over 75 metres from the site. Site can be positioned approximately 30m away from ephemeral drainage lines.</td>
</tr>
<tr>
<td>Surface Waters, including Dams</td>
<td>Secondary treated WW: 30 metres. Adv Secondary treated WW: 30 metres.</td>
<td>Wastewater field can be positioned at least 30 metres west of the dam on the eastern neighbour property. All other dams are more than 30 metres away from the proposed wastewater field.</td>
</tr>
<tr>
<td>Groundwater Bores</td>
<td>Category 2a Soils: Secondary Treated WW: 50 metres Adv Secondary Treated WW: 20 metres</td>
<td>No groundwater bores were observed on the property. According to VVG, the nearest groundwater bore is approx. 300m south of the site.</td>
</tr>
<tr>
<td>Recreational Areas</td>
<td>Children’s grassed areas: Primary Treated WW: 6 metres. Secondary Treated WW: 3 metres Adv Secondary Treated WW: 2 metres In-ground swimming pool Primary Treated WW: 6 metres. Secondary Treated WW: 3 metres Adv Secondary Treated WW: 2 metres</td>
<td>N/A for this site.</td>
</tr>
</tbody>
</table>
Recommendations for Treatment & Land Application of Domestic Wastewater:

Treatment system:

- **Secondary treatment** is recommended for this site based on the zoning, allotment size and potential position of the wastewater field to site boundaries. Secondary treatment is also specified given that:
  - The site has an ESO2 and ESO3 overlay, a Significant Landscape Overlay and Vegetation protection Overlay that exist on the land.
  - Subsurface drip irrigation is the preferred method for land application. To employ this method of land application, secondary treated wastewater is the minimum requirement.

- **Advanced secondary treatment** is also suitable for the site. The DIR / DLR does not change should advanced secondary treatment be used for this site.

Land application options and soil management requirements:

1. For subsurface drip irrigation and effluent treated to a secondary standard, the DIR is 5.0 mm/day to meet the requirements of Category 2b soil, reflecting the most restrictive material within the top 0.55 metres of the soil profile.

2. The minimum land area for wastewater application is 280m² to achieve a zero water balance, using 90th percentile rainfall. Other notes:
   - In accordance with AS1547:2012, the minimum depth of topsoil must be 150mm. The minimum depth recorded was 500mm. The site meets this minimum requirement.

3. Any topsoil from this site scraped from the house site should be placed on the wastewater field area to increase the minimum depth of sandy loam to greater than 0.6 metres.

4. Maintenance of a vigorous pasture to ensure excess soil water is utilised.

Soil Treatment and Amelioration:

- All disturbed topsoils which are acidic (pH water < 6.5) will require treatment with 0.5% w/v of Ag Lime to increase soil pH and improve pasture growing conditions.

Surface Drainage:

- Surface drainage must be installed around the wastewater field to ensure that there is no ingress of surface water into the disposal area.

Setback Distances: In accordance with Table C listed above.
Conclusion: The site is suitable for disposal of on-site domestic wastewater in accordance with the Code. Care is required to ensure the wastewater field is positioned in accordance with the setback distances listed in this report. Secondary treatment of wastewater is the minimum standard. Subsurface Drip Irrigation is the recommended method of land application.

Using 90th percentile rainfall, the minimum land area required for subsurface drip irrigation is 280m².

Monitoring of soil for Electrical Conductivity (EC - salinity), Exchangeable Sodium Percentage (ESP) and the Sodium Absorption Ration (SAR) of wastewater should be undertaken every 2-3 years to ensure the soils do not become dispersive or nutrient levels or other measured parameters including soil pH do not undergo major change.

A surface drainage system is recommended for installation around the wastewater field to divert overland flow from higher elevation around the wastewater field.

Water saving fixtures can be specified, should council or the landowner wish to reduce wastewater generation and the size of the wastewater field.

The author is available to oversee and support the client with development of an onsite wastewater management system on this property.

The findings of this investigation should be discussed with the Colac Otway Shire Council to ensure that any preferences of the local council are met in the approval process for disposal of domestic wastewater. If there are any queries relating to the findings of this investigation, please do not hesitate to call me on 0439 341 265.

Kind regards,

Christian Bannan.
Ba Ag (Hons), Adv. Dip. Ag.
Director, Soil Scientist
South East Soil & Water.
Certified Professional Soil Scientist No. S01479 with Soil Science Australia.
1. INTRODUCTION


This report provides the results of a Land Capability Assessment (LCA) for On-Site Domestic Wastewater Management at Lot 76, 85 Bushby’s Road, Barongarook, Victoria. This LCA was prepared by Christian Bannan of South East Soil & Water (SESW) for Hamlan Homes. This LCA is required to support the construction of a new home. The site is not serviced by town sewerage. The site lies within the Colac Otway Shire Council (COSC) region. The site also lies within a potable water supply catchment of the Barwon River.

To meet the requirements of Colac Otway Shire Council for site development, the site must capable to support the disposal of domestic wastewater in accordance with EPA Victoria Publication 891.4 ‘Code of Practice Onsite Wastewater Management’ (‘the Code’) and the Australian/ New Zealand Standard 1547:2012 ‘On-Site Domestic Wastewater Management’, where appropriate. The Colac Otway Shire Domestic Wastewater Management Plan (DWMP) has also been used for the development of this report.

In November 2018 a ‘standard’ LCA was prepared for the site. On the 13th of February 2019 the COSC responded via email requesting further information. The COSC response was based on a ‘moderate’ land sensitivity rating in accordance with COSC Domestic Wastewater Management Plan, whereby a comprehensive LCA was required (Whitehead and Associates, November 2015). This classification has now changed to 2.1, deemed ‘low’, requiring only a standard LCA. It is understood that this application was caught in a changeover period. These details have not been updated on the COSC website.

The author has visited the site on the 23rd of May 2019 and provided clarity around the presence of waterways, dams, drainage lines and their interaction in the area. During this visit the author also discussed all components of this email with Mr. Michael Shelly to confirm the minimum requirements were able to be met. Additional boreholes were inspected to confirm subsurface conditions.

The COSC require LCA’s to be prepared using 75th percentile rainfall based on local council requirements. To remain conservative, the author has adopted 90th percentile rainfall for preparing a zero water balance.

1.2. Site Location.

The site located at Lot 76, 85 Bushby’s Road, Barongarook, Victoria. The location of site with respect to Barongarook is provided in Figure 1. The location of inspection boreholes is shown in Figure 2.
Updated Report.

Figure 1. Location of the property with respect to Barongarook (Google, 2019).

Figure 2. Location of boreholes on the property.

Land Capability Assessment for On-Site Management of Domestic Wastewater. Lot 76, 85 Bushbys Road, Barongarook, Victoria. 3249.
1.3. **Description of the Development.**

1.3.1. **Client Details.**

Client details:
- Hamlan Homes.
- Lot 76, 85 Bushbys Road, Barongarook, Victoria

1.3.2. **Local Council Area.**

Colac Otway Shire Council.

1.3.3. **Zoning.**

The property is zoned “RLZ”, or an abbreviation for Residential Living Zone (Victorian Government Planning Maps Online, 2019).

1.3.4. **Allotment Size.**

The property is approximately 2.97 hectares.

1.3.5. **Domestic Water Supply.**

Water will be supplied for domestic use from on-site rooftop rainwater collected from buildings and sheds. To our understanding town water is not supplied to the site.

1.3.6. **Anticipated Wastewater Load.**

The design wastewater load for a 3-bedroom home based on the EPA Victoria Code of Practice for the ‘number of bedrooms plus one’ to suit the ‘potential occupancy’. The total wastewater generation is 180 L/person/day or 720L/day for a total of 4 bedrooms.

1.3.7. **Availability of Sewer.**

No sewer is available at the site.

1.3.8. **Overlays.**

In accordance with Planning Maps Online (2018), overlays include:

- ESO2. Environmental Significance Overlay Schedule 2.
- ESO3. Environmental Significance Overlay Schedule 3.
- VPO1. Vegetation Protection Overlay Schedule 1.
- BMO. Bushfire Management Overlay.
- EMO. Erosion Management Overlay.

The site also lies within a potable water supply catchment of the Barwon River.

Overlays on the land place weighting on the need for the following measures:

1. Use of secondary or advanced secondary treatment of wastewater.
2. Applying a zero water balance using the VCLAF spreadsheet, with a conservative 90\textsuperscript{th} percentile rainfall applied. The minimum rainfall scenario to be applied is 75\textsuperscript{th} percentile as required by the COSC. A zero water balance also minimises risk of runoff from the wastewater field.

3. Consideration of any significant vegetation.

4. Consideration of the erosion potential of the site.

Appendix A is a copy of the DELWP property report zoning and overlays provided.

1.3.9. Access.
Access is gained from an entrance on Bushby’s road.

1.4. Key Site Features, Surrounding Land Use & Vegetation.
The property is a semi-rural allotment used previously as a lifestyle property and for grazing. Based on satellite imagery, the property has been managed by slashing grass. Based on satellite imagery from 2005, there appears to be woody regrowth or an irregular growth pattern covering the proposed house site. The property does not appear to have been used for significant agricultural uses. Surrounding land includes developed allotments with homes located on the west and to the south-west.

![Figure 3. Photograph taken looking to the north covering the proposed wastewater field.](image-url)
A ridge separates the front of the property (north end) from the south end, with drainage from these two zones not connected. A photograph showing a timbered section on this ridge is provided in Figure 4.

Figure 4. Part of the tree line on a ridge approximately 50 metres of the development area and proposed wastewater field. Surface drainage falls to away either side of this ridge.

Land is sloping with several small gully dams located in areas of drainage depressions, all displayed in Figure 5. Those on this property and bordering the site are not on declared waterways as indicated by VVG (2019) or Geovic (2019), indicating that their catchments are not greater than 60 hectares. The closest of these lies on neighbouring land just over the eastern boundary. The wastewater field on this property will need to be located outside of the minimum setback distance of 30 metres for secondary treated wastewater.

The position of each dam with respect to drainage lines and the proposed wastewater field are listed below:

- **Dam 1** – Located approximately 120 metres south of the proposed wastewater field on this property, on the south side of a ridge (area where a belt of native trees and disused laneway pass through the property). There is no connection between surface water and runoff from the north and south sides of this ridge. This dam lies on a natural drainage line and is not positioned on a waterway. A picture of this dam is shown in Figure 6.

- **Dam 2** – Eastern neighbour. This dam is closest to the proposed development. The dam is located upslope of this site. Overflow from this dam passes to the north-east towards Bushy’s Road. Water impounded has no connection with surface water runoff from this development site. A picture of this dam is shown in Figure 7.
Updated Report.

- Dam 3 – Western neighbour. This property has one dam, located on the south side of the ridge. This dam is on the same drainage line as Dam 1. Water impounded has no connection with surface water runoff from this development site. A picture of this dam is shown in Figure 8.

- Dam 4 – Far western neighbour. This property has one dam, located on the south side of the ridge on the same drainage line as Dams 1 and 3. Water impounded has no connection with surface water runoff from this development site. A picture of this dam is shown in Figure 9.

- Dam 5 – North dam located approximately 130 metres north of the development site on a waterway. This dam is outside of the minimum setback distance of 30 metres from a waterway (secondary treated wastewater). Risk of runoff from the development site is minimised if the wastewater field is designed in accordance with the Code, with a conservative zero water balance using 90th percentile rainfall as well as a perimeter drain around the wastewater field allowing stormwater to pass around the wastewater field. A picture of this dam is shown in Figure 10.

- Dam 6 – Approximately 220 metres north-west of the proposed wastewater field site. Water impounded has no connection with surface water runoff from this development site. No photograph was collected of this dam.

Note that all dams in the nearby area are outside of the minimum setback distance of 30 metres from a non-potable dam (secondary treated wastewater).

Figure 5. Location of dams on and close to this site, drainage lines and a waterway to the north.
Figure 6. Dam 1 located on this property, south of the ridge. Surface runoff and water within this dam have no connection with drainage water north of the ridge.

Figure 7. Eastern neighbour dam, closest to the proposed wastewater field. This dam is upslope. A 30-metre setback will be required from this dam for secondary treated wastewater.
Figure 8. Far western neighbour dam, approximately 240 metres south-west of the site. There is no connection between this dam and runoff from the proposed wastewater field.

Figure 9. Photograph of Dam 5 in the background of the photograph, taken from Bushby’s road. The dam is located on a waterway approximately 120 metres north of the proposed wastewater field.
All drains and drainage lines were recorded during the field visit. The location of drains and drainage lines were provided to Hamlan Homes to plot on a site plan. These are displayed in Figure 10 marked in blue.

A set of house plans for a new dwelling provided by Hamlan Homes are displayed in Figure 11. Plans confirm that the home contains three bedrooms.

The proposed wastewater field is to be located to the north and east of the proposed house site. The available area for the wastewater field is restricted based on a 30 metre setback distance required from a non-potable dam.
Figure 10. Drainage lines on the property marked in blue. Dams located on the site and close to the site are also marked.
Figure 11. Floor plan for the new dwelling.

Land Capability Assessment for On-Site Management of Domestic Wastewater.
Lot 76, 85 Bushys Road, Barongarook, Victoria. 3249.
2. BACKGROUND INFORMATION.

2.1. Personnel Undertaking this Assessment.

Christian Bannan. Soil Scientist.
B. Ag. (Hons), Adv. Dip. Ag, SSA, CPSS.

Personnel undertaking this investigation have more than 10 years of experience with site investigation and land capability assessment for domestic, environmental and agricultural land use in south eastern Australia. This is regularly updated through permanent and contracted commissions with commercial agencies, water authorities, shires, mining companies and developers.

The author is a Certified Professional Soil Scientist with Soil Science Australia, accreditation number S01479.

2.2. Referenced Documentation.


3. METHODOLOGY FOR INVESTIGATION.

3.1. Background Desktop Soil Investigations.
A review of site geology, waterway and groundwater data from Victorian government planning maps has been reviewed prior to preparing this report. These details are included in Section 4.

A review of average annual and monthly rainfall and evaporation is provided in Section 5. Data is required for input into the VCLAF spreadsheet for calculating the required land area for domestic wastewater disposal, using a zero water balance. The results of calculations are provided in Appendix C.

3.2. Inspection Boreholes.
Inspection 1: Boreholes were installed by Mr. Simon Christie of Soil Industries in November 2018 at four locations on the property shown in Figure 2. Logs reflecting the results of drilling are provided in Appendix B “Soil Industries – Bore Logs”. In general, the bore holes were installed to the east of the proposed house site.

Inspection 2: Two hand-augured holes were installed by Christian Bannan of SESW in May 2019 to confirm subsurface conditions. The results of texturing are provided in Section 6.3.

3.3. Soil Physical Analysis.
Soil physical properties for representative bore logs were assessed for each soil horizon identified by the driller in accordance with the ‘Australian Soil & Land Survey Handbook’ (McDonald et al, 1990). The following parameters were recorded at each site:
  • Depth to a major horizon change (cm)
  • Texture (Northcote, 1979)
  • Level of plasticity
  • Visual colour.
  • Soil structure (Weatherby, 1992)
  • Drainage characteristics (McDonald et al. 1990)
  • Presence of organic matter and plant roots
  • Presence of a water table.

Soil profile logs are included in the Soil Industries logs provided as Appendix B.

3.4. Inferring Infiltration & Soil Permeability.
Soil infiltration and permeability rates were determined using the Australian Standard guideline using the ‘Site-and-soil evaluation procedures’ outlined in AS/NZS 1547:2012, part 5.2. This method provides an estimate of soil permeability of the limiting soil layer (B horizon), as outlined in the Code of Practice (EPA 891.4, section 3.6.1).

3.5. Testing for Agronomics.
Agronomic testing of samples was conducted on samples to assist with identification of soil properties listed in Table 1. Details of the tests performed, test methods and the purpose of
each test is outlined in Table 1. Tests are performed because the sustainable disposal of wastewater is dependent on the ability of the client to grow pasture, trees or a crop from the wastewater applied. Uptake of wastewater generated ensures there is minimal risk of a potential accession to groundwater or surface runoff.

Table 1. Parameters tested, test method and outcomes from each test performed.

<table>
<thead>
<tr>
<th>Test Performed</th>
<th>Test Method</th>
<th>Purpose of the Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrical conductivity</td>
<td>Rayment and Higginson, 1992.</td>
<td>Soil salinity criteria, changes in soil salt with depth, match plant root growth and depth of soil utilised by the crop with subsoil salinity.</td>
</tr>
<tr>
<td>Soil pH (water)</td>
<td>Rayment and Higginson, 1992.</td>
<td>Soil pH, acidity and/or alkalinity, nutrient availability, growing conditions and likely impact on soil biology.</td>
</tr>
<tr>
<td>Slaking class</td>
<td>Australian Standards, 1980</td>
<td>Assess soil behaviour when wet by rainfall, aggregate stability, identify if the soil has sufficient organic matter to limit breakdown of aggregates and deterioration of soil structure.</td>
</tr>
</tbody>
</table>

Soil samples were collected from two depths within Boreholes 1 and 4, and then for all horizons of SESW hand-augured holes 1 and 2. The total number of samples collected was 12. The results of testing are provided in Table 3.


Access was not limited and investigations were confined to the areas determined with the landowners as most likely for positioning a wastewater disposal area.


All calculations provided for soil hydraulic performance, wastewater generation, water balance and nutrient balances are consistent with the Code of Practice outlined in EPA Publication 891.4 and AS/NZS 1547. Where appropriate, personal experience with soils in the region has been drawn upon.
4. GEOLOGY & WATERWAYS.

4.1. Geology.
Surface geology by listed by Douglas and Ferguson (1988) and Geovic (2019) as “-Pdw”, and abbreviation for Dilwyn Group. Material of this type consists of shallow marine, coastal barrier and back beach lagoonal deposits. This includes dark brown, carbonaceous sandy clay and silt, interbedded with fine- to medium-grained, clean to clayey sand, with minor coarse sand and gravel. Materials are known to be of Tertiary origin, up to 2.5 million years old. An extract of a geology map from Geovic (2019) is included as Figure 12.

![Geology Map](image)

**Figure 12.** Geology map covering the area of the property (Geovic, 2019). This figure also shows the location of local waterways.

4.2. Waterways.
No waterways pass through the site. Waterways and other water sources including small farm dams exist on surrounding land. Several of these remain unmarked on planning maps. Mapping provided by Geovic (2019) is provided in Figure 12 showing waterways. Figure 13 is a copy of mapping by VVG (2019) also showing the occurrence of waterways in the area. This figure also confirms that there are no waterways on the site.
4.3. **Groundwater.**

Figure 13 is an extract of a groundwater bore map of the area from VVG (2019), also showing surrounding groundwater bores. There is one groundwater bore located approximately 300 metres south-west of the proposed wastewater field, number 48009. There are no groundwater details available.

VVG (2019) indicates the following groundwater conditions in this area:

- **Groundwater depth:** Approximately 10 metres.
- **Groundwater salinity:** Approximately 1000-3500 mg/l TDS.

![Figure 13](image)

**Figure 13.** Extract of mapping by VVG (2019) showing the presence of bores, dams and waterways in the area. The only groundwater bore close to the site can be viewed approximately 300 metres south-west of the proposed wastewater field site.
5. RAINFALL & EVAPORATION.
Rainfall and evaporation data for Barongarook has been accessed from the Bureau of Meteorology (BOM) website weather station number is 60147 at Colac Post Office, located approximately 8 kilometres north of the site. Data ranges from 1898-2019. Data has been used to calculate average monthly and annual rainfall. Evaporation data is obtained from the BOM records for this region.

Figure 14 is a graph of average monthly evaporation and rainfall. Average annual rainfall for the site is 728 mm/year.

![Average Monthly Rainfall & Evaporation for Barongarook, Victoria.](image)

**Figure 14.** Average monthly rainfall and evaporation for the site, along with average monthly 90th percentile rainfall.

By observation of Figure 14, rainfall exceeds evaporation from May to September in an average rainfall year. During winter, wet conditions are expected with runoff or deep percolation of rainfall expected.

Treated wastewater can be used to irrigate pastures during the period from October to April. A well-managed pasture or trees will use water during the winter period and reduce the likelihood of surface runoff or groundwater accession. Pastures and trees are likely to dewater soil profiles leading into winter, providing increased stored soil moisture capacity.
6. RESULTS OF FIELD INVESTIGATIONS.

6.1. Land Levels & Slopes.
Land levels at the proposed wastewater field lie at approximately 247-256 metres AHD according to Google Earth. The site has an average slope of 5% towards the north, or 1 in 20 metres falling north.

6.2. Average Soil Profile Description: Field Investigation 1 - Soil Industries.
Soil profile descriptions are listed in Appendix B. A summary of the four boreholes is provided in Tables 2 and 3.

Table 2. Average soil profile description – Borehole 1. Sandy loam to 0.6 metres overlying medium clay. The maximum soil category in the upper 0.55m is 2a, reflecting sandy loam texture.

<table>
<thead>
<tr>
<th>Depth (mm)</th>
<th>Material Description</th>
<th>Fill</th>
<th>Ground Water</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-500</td>
<td>SANDY LOAM moist (2a) dark grey moist medium dense/loose Becoming moist</td>
<td></td>
<td></td>
</tr>
<tr>
<td>500</td>
<td>MEDIUM CLAY moderate structure (6b) orange/brown moist stiff/firm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1000</td>
<td>End of bore (Drilling rig)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 3. Average soil profile description – Borehole 4. Sandy loam to 0.7 metres overlying medium clay.

<table>
<thead>
<tr>
<th>Depth (mm)</th>
<th>Material Description</th>
<th>Fill</th>
<th>Ground Water</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-500</td>
<td>SANDY LOAM moist (2a) dark grey moist medium dense/loose Becoming moist</td>
<td></td>
<td></td>
</tr>
<tr>
<td>500</td>
<td>MEDIUM CLAY moderate structure (6b) orange/brown moist stiff/firm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1000</td>
<td>End of bore (Drilling rig)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

By observation of Tables 2 and 3, there are no restrictive horizons in the upper 55cm of the soil profile. Consequently a soil Category 2a is applied based on the logs.
6.3. **Average Soil Profile Description: Field Investigation 2 - SESW.**

### 6.3.1. **Hand Auger Hole 1.**
Hand auger hole 1 was located in accordance with Figure 15. Field notes are recorded within Figure 15 showing materials yielded from hand auguring. Figure 16 shows the depth of the restrictive horizon.

![Figure 15. Photograph of material collected from auguring at SESW hand auger hole 1. Materials are described in the photograph.](image)

![Figure 16. Tape measure showing the depth of restrictive material at 0.8 metres. The entire depth of material within this range was sandy loam.](image)
6.3.2. **Hand Auger Hole 2.**

Hand auger hole 2 was located in accordance with Figure 17. Field notes are recorded within Figure 17 show the materials yielded from hand auguring.

![Hand auger hole 2](Image)

**Figure 17.** Photograph of materials obtained from SESW hand auger hole 2.
6.4. Results of Testing.

6.4.1. Table of Results.

Table 4 lists the results of soil testing from sampled sites. Table 5 is a soil salinity interpretation. Table 6 is a soil slaking interpretation. Table 7 is a Dispersion Class interpretation.

Table 4. Results of testing from sampled sites and depths.

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Sample Name</th>
<th>EC 1:5 Soil/Water (µS/cm)</th>
<th>EC 1:5 Soil/Water (dS/m)</th>
<th>Texture Factor</th>
<th>EC 1:5 Soil/Water (dS/m) Saturated Ext.</th>
<th>Soil pH (H₂O)</th>
<th>Slaking Class</th>
<th>Emerson Dispersion Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>BH1.0.1</td>
<td>130</td>
<td>0.13</td>
<td>11</td>
<td>1.43</td>
<td>5.12</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>BH1.0.7</td>
<td>34.6</td>
<td>0.034</td>
<td>7</td>
<td>0.23</td>
<td>6.02</td>
<td>2</td>
<td>2 (2)</td>
</tr>
<tr>
<td>3</td>
<td>BH4.0.1</td>
<td>19.1</td>
<td>0.019</td>
<td>11</td>
<td>0.21</td>
<td>5.16</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>4</td>
<td>BH4.0.7</td>
<td>34.4</td>
<td>0.034</td>
<td>7</td>
<td>0.23</td>
<td>5.99</td>
<td>2</td>
<td>2 (1)</td>
</tr>
<tr>
<td>5</td>
<td>SESW 1.0-20cm</td>
<td>27.2</td>
<td>0.027</td>
<td>11</td>
<td>0.29</td>
<td>5.23</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>SESW 1.20-50cm</td>
<td>46.8</td>
<td>0.046</td>
<td>11</td>
<td>0.50</td>
<td>5.49</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>7</td>
<td>SESW 1.50-80cm</td>
<td>92.1</td>
<td>0.092</td>
<td>11</td>
<td>1.01</td>
<td>5.87</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>8</td>
<td>SESW 1.80-90cm</td>
<td>120.6</td>
<td>0.120</td>
<td>7</td>
<td>0.84</td>
<td>6.03</td>
<td>2</td>
<td>2 (1)</td>
</tr>
<tr>
<td>9</td>
<td>SESW 2.0-22cm</td>
<td>18.3</td>
<td>0.018</td>
<td>11</td>
<td>0.19</td>
<td>5.41</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>10</td>
<td>SESW 2.22-45cm</td>
<td>55.2</td>
<td>0.055</td>
<td>11</td>
<td>0.60</td>
<td>5.68</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>11</td>
<td>SESW 2.45-75cm</td>
<td>84.6</td>
<td>0.084</td>
<td>11</td>
<td>0.92</td>
<td>5.79</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>12</td>
<td>SESW 2.75-85cm</td>
<td>117.5</td>
<td>0.117</td>
<td>7</td>
<td>0.82</td>
<td>6.12</td>
<td>2</td>
<td>2 (1)</td>
</tr>
</tbody>
</table>

Table 5. Soil salinity interpretation.

**INTERPRETATION.**

<table>
<thead>
<tr>
<th>Soil Salinity - EC₅Saturation Extract.</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;1.0 dS/m. Low level of soil salinity.</td>
</tr>
<tr>
<td>1.0-2.0 dS/m. Low level of soil salinity.</td>
</tr>
<tr>
<td>2.0-4.0 dS/m. Moderate EC. Sensitive species will be effected.</td>
</tr>
<tr>
<td>4.0-6.0 dS/m. Moderate - high EC. Salt tolerant species suited only.</td>
</tr>
<tr>
<td>6.0-10.0 dS/m. High EC.</td>
</tr>
<tr>
<td>&gt;10 dS/m. Very high EC.</td>
</tr>
</tbody>
</table>

Table 6. Soil slaking interpretation.

<table>
<thead>
<tr>
<th>Slaking Class</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No change</td>
</tr>
<tr>
<td>1</td>
<td>Aggregate breaks open but remains intact</td>
</tr>
<tr>
<td>2</td>
<td>Aggregate breaks down into smaller aggregates</td>
</tr>
<tr>
<td>3</td>
<td>Aggregate breaks down completely into sand grains</td>
</tr>
</tbody>
</table>

6.4.2. **Soil Electrical Conductivity.**
All soil samples recorded low to moderate results. Based on these tests there is no salinity issue on the site and salinity can be managed.

6.4.3. **Soil pH.**
Soil pH (water) test results for samples collected range from 5.16-6.12, moderate to strongly acid. It is likely over time that the soils receiving wastewater will become more alkaline over time with the application of salts, including sodium and potassium. Soils are also likely to respond to an increase in soil pH from application of Agricultural Lime.

6.4.4. **Slaking.**
Soil slaking results reveal that all soil samples slaked upon wetting. Slaking is the process where aggregates break down from larger to smaller aggregates or particles due to chemical instability and a lack of organic matter. Slaking indicates that a soil layer has insufficient organic matter to maintain a stable condition. Soil structural improvement results from the accumulation of organic matter.

Figures 18 is a photograph of slaking and dispersion testing of samples from Boreholes 1 and 4. Slaking Class 2 was recorded indicating that soils either swelled, or broke down into smaller aggregates upon wetting.

6.4.5. **Dispersion.**
Soil dispersion was recorded in the deeper subsoil samples, below the minimum depth of 0.55 metres for defining a restrictive layer. Soil within the surface 0.55 metres is non-dispersive and suitable for wastewater application.

The results confirm that liming responses are likely to maintain a control on dispersive soils. The SAR of wastewater and ESP of soil will require monitoring over time to ensure the soils in the wastewater field do not become dispersive.
Figure 18. Slaking and dispersion testing of samples from Boreholes 1 and 4.
7. **ESTIMATED SOIL PERMEABILITY.**
Observations from bore logs and testing of samples has allowed soil permeability to be estimated in accordance with the AS/NZS 1547:2012 and Table 9 of the Code of Practice. Estimations are as follows:

**Current Conditions: Restrictive Layers within 0.55 metres:**

- Soil category: 2b
- Soil texture: Sandy Loam.
- Depth: 0-0.6 metres (0-60cm).
- Structure: Weak to massive.
- Indicative permeability (K sat): 1.4-3.0 metres/day.

8. **DAILY WASTEWATER GENERATION.**
Calculations for daily wastewater generation for a typical household with five bedrooms are provided below using:

**Standard Water Fixtures.**

\[
\text{litres per person per day} = (\text{No. of bedrooms} + 1) \times \text{litres per person per day} \\
= (3 + 1) \times 180 \text{ litres per person per day} \\
= 720 \text{ litres per day.}
\]

Based on the above calculations, wastewater generation volume is estimated at 720 litres per day, or 262,800 litres per year. This is an equivalent of 263 m$^3$. 
9. WATER QUALITY PARAMETRES, DESIGN LOADING RATES, DESIGN IRRIGATION RATES & SOIL AMELIORATION.

9.1. Target Water Quality Parameters.

**Secondary Treatment:** Secondary treatment is the minimum recommended treatment standard. Target water quality parameters for domestic wastewater treated to Secondary effluent standard are:

- Biochemical oxygen demand (BOD): <20 mg/l
- Total suspended solids (TSS): <30 mg/l.
- E. Coli: <10 mg/l.

**Advanced Secondary Treatment:** Advanced secondary treatment is also an available option for this site. Target water quality parameters for domestic wastewater treated to an Advanced Secondary level of treatment are:

- Biochemical oxygen demand (BOD): <10 mg/l
- Total suspended solids (TSS): <10 mg/l.
- E. Coli: <10 mg/l.

**Minimum Requirements for this Site:** Effluent treated to a secondary standard is the minimum requirement for this site. Secondary treatment is recommended for land application using subsurface drip irrigation.

9.2. Design Irrigation Rate & Irrigation Area – Subsurface Drip Irrigation.

For subsurface drip irrigation on this site, the Design Irrigation Rate that the author recommends adopting for effluent treated to a secondary standard is **5 mm/day, with conditions.** AZ/NZ 1547:2012 states that ‘For category 1, 2 and 6 soils, the drip irrigation system has a depth of 100-150mm in good quality topsoil. This site meets the requirements for topsoil depth.

Calculations for land application area using the VCLAF are provided in Appendix E. The minimum land area required for subsurface drip irrigation is 280m².


To ensure the conditions of the soils are made suitable for domestic wastewater, amelioration techniques are recommended for soil within any wastewater field. Soil amelioration techniques recommended include:

1. Strip topsoil from the house site, then spread over the wastewater field to increase topsoil depth. The site already meets the minimum requirement of 0.55m of topsoil depth. Further topsoil will enhance soil characteristics for subsurface drip irrigation.

2. All soil material imported and the original topsoil are treated with standard Agricultural Lime at 1% w/v. This is not a minimum requirement, but it will enhance permeability and the growing conditions.
3. Site drainage installed around the site to avoid water entering or discharging from the site.

4. Maintenance of a vigorous pasture to ensure excess soil water is utilised.
10. SPECIFICATION FOR SUBSURFACE DRIP IRRIGATION.

If subsurface drip irrigation is preferred the manufacturer’s specifications will need to be checked for suitability. Based on the code of practice the and the AS/NZ 1547:2012 standard, the Design Irrigation Rate (DIL) for this site is 5.0 mm/day. Drip irrigation lines must be distributed on 1.0 metre spacings across the wastewater field, providing 0.5m of wetting on either side of the tape.

The minimum land area in accordance with the VCLAF is 280 m².

10.2. Depth of Tape.
As per guidelines within EPA publication 891.4 and the AZ/NZS 1547:2012 standard, notes state that ‘For category 1, 2 and 6 soils, the drip irrigation system has a depth of 100-150mm in good quality topsoil.

This site complies with this guideline.

Soil from the house site may be used to increase the depth of topsoil across the effluent disposal area where subsurface drip irrigation is to be installed, should the house site require topsoil stripping.

10.3. Other Requirements for Subsurface Drip Irrigation & Configuration.
Other requirements for this type of system:
• Filters
• Pumps
• Flush valves
• Monitoring
• Pressure compensating valves (if specified by the designer).

We recommend utilising one of the major septic tank manufacturers and the manufacturers guidelines for installation of a system suitable for your requirements.

The configuration of each system is not provided given that the author has no understanding of the proposed subdivision. This is the subject of an independent LCA for each dwelling on each allotment.

Figure 19 is an example of a typical subsurface drip arrangement based in accordance with AS/NZ 1547:2012.
Figure 19. Example subsurface drip irrigation design in accordance with AS/NZ 1547:2012.
Updated Report.

11. NUTRIENT BALANCE CALCULATIONS.
In accordance with the VCLAF, the minimum land application area to apply domestic wastewater generated from this facility is 239m². This calculation is based upon a typical nitrogen content of 25 mg/l for domestic wastewater and crop nitrogen uptake of 220 kg/Ha.

The minimum land area based on hydraulic loading for a zero-water balance is 280m². This exceeds the minimum requirement based on nutrient loading.

A copy of the VCLAF calculator is provided in Table 8.

Table 8. VCLAF calculator with the minimal land area required for nitrogen application.

<table>
<thead>
<tr>
<th>Nitrogen Balance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Site Address:</strong> Lot 76, 85 Bushys Road, Barongarook, Vic. SUBSURFACE DRIP.</td>
</tr>
<tr>
<td><strong>SUMMARY - LAND APPLICATION AREA REQUIRED BASED NITROGEN BALANCE</strong></td>
</tr>
<tr>
<td><strong>INPUT DATA</strong></td>
</tr>
<tr>
<td>Hydraulic Load</td>
</tr>
<tr>
<td>Effluent N Concentration</td>
</tr>
<tr>
<td>% N Lost to Soil Processes (Gass &amp; Gardner 1998)</td>
</tr>
<tr>
<td>Total N Lost to Soil</td>
</tr>
<tr>
<td>Remaining N Load after soil loss</td>
</tr>
<tr>
<td><strong>NITROGEN BALANCE BASED ON ANNUAL CROP UPTAKE RATES</strong></td>
</tr>
<tr>
<td>Minimum Area required with zero buffer</td>
</tr>
<tr>
<td><strong>DETERMINATION OF BUFFER ZONE SIZE FOR A NOMINATED LAND APPLICATION AREA (LAA)</strong></td>
</tr>
<tr>
<td>Nitrogen</td>
</tr>
<tr>
<td>Determined LAA Size</td>
</tr>
<tr>
<td>Predicted N Export from LAA</td>
</tr>
<tr>
<td>Maximum Buffer Required for excess nutrient</td>
</tr>
</tbody>
</table>

**CELLS**
- 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

**NOTES**
1 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
12. SUMMARY OF LCA FEATURES INCLUDING MINIMUM SETBACK DISTANCES.

Tables 9-11 are summaries of key site features according to Table 3 in the Model LCA, with additional information provided. Setback distances, notes and recommendations are listed.

Table 9. Results of the Land Capability Assessment – Desktop Review & Site Inspection.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description &amp; Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land Sensitivity Rating (Colac Otway Shire Council)</td>
<td>Rating is ‘2.1’, deemed low. This rating is based on personal communication from Mr. Michael Shelly, Environmental Health Officer at the COSC. This rating differs from the rating of moderate, as listed by Whitehead and Associates (November 2015). As discussed with Mr. Michael Shelly, changes to the sensitivity rating occurred between November 2018 and March 2019.</td>
</tr>
<tr>
<td>Overlays</td>
<td>To the understanding of the author, the zoning and overlays provide basis for detailed Land Capability Assessment. With special management measures, on-site management of domestic wastewater management can occur on land where these overlays exist. A zero water balance using the VCLAF spreadsheet with 90th percentile rainfall has been adopted to reduce risk of off-site discharge. There are no Cultural Heritage overlay issues identified.</td>
</tr>
<tr>
<td>Land Parcel Size (m2)</td>
<td>Total property size approximately 2.97 Hectares. The area for development and wastewater field concerns the northern section of the site (north of government road) is approximately 0.9 hectares (9000m2).</td>
</tr>
<tr>
<td>Number of Bedrooms</td>
<td>A floor plan was provided by Hamlan Homes showing the number of bedrooms. The home will have 3 bedrooms, with no other rooms that can be shut off to form a bedroom. In accordance with the Code, the total bedrooms is the number of bedrooms plus 1, totalling 4 bedrooms.</td>
</tr>
<tr>
<td>Daily Wastewater Generation</td>
<td>180 litres/person/day, total of 720 litres/day.</td>
</tr>
<tr>
<td>Proposed Water Supply</td>
<td>Rooftop rainfall generation.</td>
</tr>
<tr>
<td>Landform &amp; Geology (Geovic, 2019)</td>
<td>‘-Pwd’, an abbreviation for Dilwyn Group (Geovic 2019). Material of this type consists of shallow marine, coastal barrier and back beach lagoonal deposits. This includes dark brown, carbonaceous sandy clay and silt, interbedded with fine- to medium-grained, clean to clayey sand, with minor coarse sand and gravel.</td>
</tr>
<tr>
<td>Climate</td>
<td>Climate is Mediterranean with cold wet winters and warm dry summers. Rainfall is winter and spring dominant with falls averaging up to 105mm in August. Evaporation exceeds rainfall in the months of October to April.</td>
</tr>
<tr>
<td>Vegetation &amp; Exposure</td>
<td>Trees were extensive on the eastern and western boundaries of the norther section of the site. The northern section also contains a large belt of trees that appear within a disused easement / government road. The northern side of the site is exposed to Bushby’s road and northerly winds. The site has full pasture or vegetation cover.</td>
</tr>
<tr>
<td>Slope</td>
<td>Approximately 1:20 grade to the north.</td>
</tr>
<tr>
<td>Rocks, Rock Outcrops or Coarse Fragments</td>
<td>No rock was encountered.</td>
</tr>
<tr>
<td>Surface Water, including Dams</td>
<td>Surface water including dams on the property and neighbouring land are listed as follows (See Figure 20):</td>
</tr>
</tbody>
</table>
• Dam 1 – Located approximately 120 metres south of the proposed wastewater field on this property, on the south side of a ridge (area where a belt of native trees and disused laneway pass through the property). There is no connection between surface water and runoff from the north and south sides of this ridge. This dam lies on a natural drainage line and is not positioned on a waterway.

• Dam 2 – Eastern neighbour. This dam is closest to the proposed development. The dam is located upslope of this site. Overflow from this dam passes to the north-east towards Bushy’s Road. Water impounded has no connection with surface water runoff from this development site.

• Dam 3 – Western neighbour. This property has one dam, located on the south side of the ridge. This dam is on the same drainage line as Dam 1. Water impounded has no connection with surface water runoff from this development site.

• Dam 4 – Far western neighbour. This property has one dam, located on the south side of the ridge on the same drainage line as Dams 1 and 3. Water impounded has no connection with surface water runoff from this development site.

• Dam 5 – North dam located approximately 130 metres north of the development site on a waterway. This dam is outside of the minimum setback distance of 30 metres from a waterway (secondary treated wastewater). Risk of runoff from the development site is minimised if the wastewater field is designed in accordance with the Code, with a conservative zero water balance using 90th percentile rainfall as well as a perimeter drain around the wastewater field allowing stormwater to pass around the wastewater field.

• Dam 6 – Approximately 220 metres north-west of the proposed wastewater field site. Water impounded has no connection with surface water runoff from this development site.

Note that all dams in the nearby area are outside of the minimum setback distance of 30 metres from a non-potable dam (secondary treated wastewater).

### Presence of Waterways or Ephemeral Drainage Lines:

<table>
<thead>
<tr>
<th>Presence of Waterways or Ephemeral Drainage Lines</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>There are no declared waterways on the property (VVG, 2019; Geovic, 2019). The nearest waterway starts approximately 40 metres north of the northern boundary of this property. The northern part of the site contains an ephemeral drainage line and man-made drain alongside the entry driveway. These pass into a waterway approximately 75 metres north of the property. The southern part of the site has an ephemeral drainage line connecting Dam 4, Dam 3 and Dam 1. These are not on a marked waterway (VVG, 2019).</td>
<td></td>
</tr>
</tbody>
</table>

### Flood Potential

<table>
<thead>
<tr>
<th>Flood Potential</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>There are no flood overlays.</td>
<td></td>
</tr>
</tbody>
</table>

### Stormwater run-on and upslope seepage

<table>
<thead>
<tr>
<th>Stormwater run-on and upslope seepage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moderate. Care will be required to ensure drainage is installed around the wastewater field. High rainfall in winter will create stormwater runoff.</td>
<td></td>
</tr>
</tbody>
</table>

### Erosion Potential

<table>
<thead>
<tr>
<th>Erosion Potential</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low to moderate with actively growing pastures and maintenance of trees. Moderate with poor pastures, an absence of vegetation or overgrazing.</td>
<td></td>
</tr>
</tbody>
</table>

### Groundwater (VVG, 2019)

<table>
<thead>
<tr>
<th>Groundwater (VVG, 2019)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not observed in any boreholes. No groundwater bores within 350 metres of the site. VGG (2019) note the groundwater conditions as:</td>
<td></td>
</tr>
<tr>
<td>Salinity: Approximately 500 mg/kg TDS</td>
<td></td>
</tr>
<tr>
<td>Depth: Approximately 10 metres of depth.</td>
<td></td>
</tr>
</tbody>
</table>

### Available Land Application Area

<table>
<thead>
<tr>
<th>Available Land Application Area</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Over 1400m2.</td>
<td></td>
</tr>
</tbody>
</table>
Figure 20. Location of nearby farm dams, drainage lines and waterways.

Table 10. Results of the Land Capability Assessment – Soil Conditions.

<table>
<thead>
<tr>
<th>Soil Description / Horizon</th>
<th>A Horizon Topsoil – 0-20cm</th>
<th>A2 Horizon Subsoil – 20-70cm.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Texture (EPA 891.4).</td>
<td>Sandy Loam.</td>
<td>Sandy Loam.</td>
</tr>
<tr>
<td>Soil Category (EPA 891.4).</td>
<td>2a</td>
<td>2b</td>
</tr>
<tr>
<td>Soil Structure</td>
<td>Weak</td>
<td>Weak to massive</td>
</tr>
<tr>
<td>Indicative Permeability (K Sat) (m/day)</td>
<td>&gt;3.0 metres/day.</td>
<td>1.4-3.0 metres/day.</td>
</tr>
<tr>
<td>Design Loading Rate (DLR) for ETA Absorption Beds &amp; Trenches (mm/day).</td>
<td>25mm/day (secondary treated wastewater only).</td>
<td>30mm/day (secondary treated wastewater only).</td>
</tr>
<tr>
<td>Design Loading Rate (DLR) for a Low Pressure Effluent Distribution (LPED) Trenches &amp; Beds (mm/day).</td>
<td>N/A in Category 1, 2a and 6 soils.</td>
<td>4 mm/day.</td>
</tr>
<tr>
<td>Design Irrigation Rate (DIR) for Subsurface Drip Irrigation or Surface Spray Irrigation (mm/day).</td>
<td>5 mm/day.</td>
<td>5 mm/day.</td>
</tr>
</tbody>
</table>
### Table 11. Results of the Land Capability Assessment – Recommended Setback Distances (Table 5 EPA 891.4)

<table>
<thead>
<tr>
<th>Setback Feature</th>
<th>Minimum Distance (metres)</th>
<th>Requirements &amp; Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buildings</td>
<td>Secondary treated WW: 3m D/S, 1.5m U/S.</td>
<td>WW field can be positioned at least 3.0m away from buildings.</td>
</tr>
<tr>
<td></td>
<td>Adv Secondary treated WW: 3m D/S, 1.5m U/S.</td>
<td></td>
</tr>
<tr>
<td>Property Boundaries</td>
<td>Secondary treated WW: 3m D/S, 1.5m U/S.</td>
<td>WW field can be positioned at least 3.0m away from boundaries.</td>
</tr>
<tr>
<td>U/S – Upslope</td>
<td>Adv Secondary treated WW: 1m D/S, 0.5m U/S.</td>
<td></td>
</tr>
<tr>
<td>D/S – Downslope</td>
<td>Secondary treated WW: 3m D/S, 1.5m U/S.</td>
<td>WW field can be positioned at least 3.0m away from an adjacent allotment.</td>
</tr>
<tr>
<td>Adjacent Allotments</td>
<td>Secondary treated WW: 3m D/S, 1.5m U/S.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Adv Secondary treated WW: 1m D/S, 0.5m U/S.</td>
<td></td>
</tr>
<tr>
<td>Services, including Water Pipes, Gas Pipes &amp; Electricity</td>
<td>Not assessed as part of this commission.</td>
<td>To be confirmed by landowner, developer and relevant tradesman.</td>
</tr>
<tr>
<td>Waterways (and Ephemeral Water Courses) (non-potable)</td>
<td>Secondary treated WW: 30 metres.</td>
<td>Nearest waterway is over 75 metres from the site. Site can be positioned approximately 30m away from ephemeral drainage lines.</td>
</tr>
<tr>
<td></td>
<td>Adv Secondary treated WW: 30 metres.</td>
<td></td>
</tr>
<tr>
<td>Surface Waters, including Dams</td>
<td>Secondary treated WW: 30 metres.</td>
<td>Wastewater field can be positioned at least 30 metres west of the dam on the eastern neighbour property. All other dams are more than 30 metres away from the proposed wastewater field.</td>
</tr>
<tr>
<td></td>
<td>Adv Secondary treated WW: 30 metres.</td>
<td></td>
</tr>
<tr>
<td>Groundwater Bores</td>
<td>Category 2a Soils:</td>
<td>No groundwater bores were observed on the property. According to VVG, the nearest groundwater bore is approx. 300m south of the site.</td>
</tr>
<tr>
<td></td>
<td>• Secondary Treated WW: 50 metres</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Adv Secondary Treated WW: 20 metres</td>
<td></td>
</tr>
<tr>
<td>Recreational Areas</td>
<td>Children’s grassed areas:</td>
<td>N/A for this site.</td>
</tr>
<tr>
<td></td>
<td>• Primary Treated WW: 6 metres.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Secondary Treated WW: 3 metres</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Adv Secondary Treated WW: 2 metres</td>
<td></td>
</tr>
<tr>
<td></td>
<td>In-ground swimming pool</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Primary Treated WW: 6 metres.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Secondary Treated WW: 3 metres</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Adv Secondary Treated WW: 2 metres</td>
<td></td>
</tr>
</tbody>
</table>
13. LCA MATRIX.
An LCA Matrix is prepared in accordance guidelines within the Model Land Capability Assessment Report (MAV, 2006) and EPA Publication 746.1. Results are presented in Table 12.

Table 12. LCA Matrix.

<table>
<thead>
<tr>
<th>LAND CAPABILITY ASSESSMENT - ONSITE DOMESTIC WASTEWATER MANAGEMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>LCA ASSESSMENT MATRIX.</td>
</tr>
<tr>
<td>PREPARED BY SOIL INDUSTRIES &amp; SESW</td>
</tr>
</tbody>
</table>

**RATING**

<table>
<thead>
<tr>
<th>Description</th>
<th>Very Good</th>
<th>Good</th>
<th>Fair</th>
<th>Poor</th>
<th>Very Poor</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

**SITE CHARACTERISTICS:**

<table>
<thead>
<tr>
<th>Site</th>
<th>Drainage</th>
<th>Runoff</th>
<th>Flood levels (recurrence interval)</th>
<th>Proximity to Watercourses (m)</th>
<th>Slope %</th>
<th>Land Use Potential</th>
<th>Groundwater - Seasonal Water Table Depth (m)</th>
<th>Rock Outcrop (% of land surface containing rock &gt;2mm)</th>
<th>Erosion Potential</th>
<th>Exposure</th>
<th>Landform</th>
<th>Vegetation Type</th>
<th>Average Rainfall (mm/year)</th>
<th>Pan Evaporation (mm/year)</th>
<th>Fill</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site</td>
<td>No visible dampness</td>
<td>Low</td>
<td>Never</td>
<td>&gt;60 metres</td>
<td>0.2</td>
<td>No erosion potential</td>
<td>&lt;1500</td>
<td>&lt;1500</td>
<td>No Fill</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Site</td>
<td>Moist, but no standing water</td>
<td>Moderate</td>
<td>&lt;1 in 100</td>
<td>20 metres</td>
<td>2.0</td>
<td>Low potential for failure</td>
<td>1500-1599</td>
<td>1500-1599</td>
<td>All Fill</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Site</td>
<td>Very slight dampness at times</td>
<td>High</td>
<td>1 in 100 to 20</td>
<td>&lt;90 metres</td>
<td>5.12</td>
<td>High potential for failure</td>
<td>750-1000mm</td>
<td>750-1000mm</td>
<td>All Fill</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Site</td>
<td>Visible signs of dampness</td>
<td>Very high</td>
<td>1 in 20</td>
<td>&lt;90 metres</td>
<td>12.20</td>
<td>Prevent or part failure</td>
<td>&gt;1000mm</td>
<td>&gt;1000mm</td>
<td>All Fill</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Site</td>
<td>Water percolating on surface</td>
<td>Very high diversions not present</td>
<td>&lt;1 in 20</td>
<td>&lt;90 metres</td>
<td>3.20</td>
<td>Any surface potential</td>
<td>&gt;1000mm</td>
<td>&gt;1000mm</td>
<td>All Fill</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**SHEET PROFILE CHARACTERISTICS - Reticular Horizon within 0.15m of Surface:**

<table>
<thead>
<tr>
<th>Soil Permeability Category</th>
<th>1 or 2</th>
<th>3</th>
<th>5</th>
<th>1 or 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Profile Depth (m)</td>
<td>&gt;1.0</td>
<td>1.2-2.0</td>
<td>1.0-1.5</td>
<td>0.3-1.0</td>
</tr>
<tr>
<td>Presence of Metling</td>
<td>None</td>
<td>Some</td>
<td>Extensive</td>
<td></td>
</tr>
<tr>
<td>Coarse Fragments (%)</td>
<td>&lt;10</td>
<td>20-20</td>
<td>20-30</td>
<td>30-40</td>
</tr>
<tr>
<td>pH Water</td>
<td>6.5-7.0</td>
<td>6.0-6.5</td>
<td>5.5-6.5</td>
<td>4.5-4.0</td>
</tr>
<tr>
<td>Emissivity Class</td>
<td>4.6</td>
<td>7</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Electrical Conductivity (dS/m)</td>
<td>0.3-0.8</td>
<td>0.1-1.0</td>
<td>2.0-4.0</td>
<td>&gt;4.0</td>
</tr>
<tr>
<td>Soil ESP % (Est. from Dispersion Test)</td>
<td>&lt;1.0</td>
<td>&lt;4.0</td>
<td>&lt;4.0</td>
<td>&lt;4.0</td>
</tr>
</tbody>
</table>
14. CONCLUSION.
The site is suitable for disposal of on-site domestic wastewater in accordance with the Code. Care is required to ensure the wastewater field is positioned in accordance with the setback distances listed in this report. Secondary treatment of wastewater is the minimum standard. Subsurface Drip Irrigation is the recommended method of land application.

Using 90th percentile rainfall, the minimum land area required for subsurface drip irrigation is 280m².

Monitoring of soil for Electrical Conductivity (EC - salinity), Exchangeable Sodium Percentage (ESP) and the Sodium Absorption Ration (SAR) of wastewater should be undertaken every 2-3 years to ensure the soils do not become dispersive or nutrient levels or other measured parameters including soil pH do not undergo major change.

A surface drainage system is recommended for installation around the wastewater field to divert overland flow from higher elevation around the wastewater field.

Water saving fixtures can be specified, should council or the landowner wish to reduce wastewater generation and the size of the wastewater field.

The author is available to oversee and support the client with development of an onsite wastewater management system on this property.

The findings of this investigation should be discussed with the Colac Otway Shire Council to ensure that any preferences of the local council are met in the approval process for disposal of domestic wastewater. If there are any queries relating to the findings of this investigation, please do not hesitate to call me on 0439 341 265.

Kind regards,

Christian Bannan.
Ba Ag (Hons), Adv. Dip. Ag.
Director, Soil Scientist
South East Soil & Water.
Certified Professional Soil Scientist No. S01479 with Soil Science Australia.
17. REFERENCES.


Updated Report.

APPENDIX A. PROPERTY REPORT.

PLANNING PROPERTY REPORT

From: www.colacotway.vic.gov.au on 11 June 2019 12:02 PM

PROPERTY DETAILS
Address: 85 BUSHBYS ROAD BARONGAROOK 3249
Lot and Plan Number: Lot 76 LP/25792
Standard Parcel Identifier (SPI): 76/LP/25792
Local Government Area (Council): COLAC OTWAY
Council Property Number: 9340
Planning Scheme: Colac Otway
Directory Reference: VicRoads 92 BB
This property has 2 parcels. For full parcel details get the free Basic Property report at Property Reports

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

STATE ELECTORATES
Legislative Council: WESTERN VICTORIA
Legislative Assembly: POLWARTH

Planning Zones

RURAL LIVING ZONE (RLZ)

SCHEDULE TO THE RURAL LIVING ZONE (RLZ)

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

Copyright © - State Government of Victoria
Land Capability Assessment for On-Site Management of Domestic Wastewater.
Lot 76, 85 Bushbys Road, Barongarook, Victoria. 3249.
Updated Report.

Land Capability Assessment for On-Site Management of Domestic Wastewater.
Lot 76, 85 Bushbys Road, Barongarook, Victoria. 3249.
Land Capability Assessment for On-Site Management of Domestic Wastewater.
Lot 76, 85 Bushbys Road, Barongarook, Victoria. 3249.
Designated Bushfire Prone Area

This property is in a designated bushfire prone area. Special bushfire construction requirements apply. Planning provisions may apply.

Designated bushfire prone areas as determined by the Minister for Planning are in effect from 8 September 2011 and amended from time to time.

The Building Regulations 2018 through application of the Building Code of Australia, apply bushfire protection standards for building works in designated bushfire prone areas.

Designated bushfire prone area maps can be viewed on VicPlan at http://mapshop.mapspvic.gov.au/vicplan or at the relevant local council.

Note: prior to 8 September 2011, the whole of Victoria was designated as bushfire prone area for the purposes of the building control system.

Further information about the building control system and building in bushfire prone areas can be found on the Victorian Building Authority website www.vba.vic.gov.au

Copies of the Building Act and Building Regulations are available from www.legislation.vic.gov.au

For Planning Scheme Provisions in bushfire areas visit https://www.planning.vic.gov.au

---

Land Capability Assessment for On-Site Management of Domestic Wastewater.
Lot 76, 85 Bushbys Road, Barongarook, Victoria. 3249.
## APPENDIX B. SOIL INDUSTRIES BORE LOGS.

<table>
<thead>
<tr>
<th>Depth (mm)</th>
<th>Material Description</th>
<th>Fill</th>
<th>Ground Water</th>
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</thead>
<tbody>
<tr>
<td>0 - 500</td>
<td>SANDY LOAM massive (2a) dark grey moist medium dense/loose Becoming moist</td>
<td></td>
<td></td>
</tr>
<tr>
<td>600</td>
<td>MEDIUM CLAY moderate structure (8b) orange/brown moist stiff/firm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1800</td>
<td>End of bore (Drilling rig)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
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<th>Depth (mm)</th>
<th>Material Description</th>
<th>Fill</th>
<th>Ground Water</th>
</tr>
</thead>
<tbody>
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<td>0 - 500</td>
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<td></td>
</tr>
<tr>
<td>700</td>
<td>MEDIUM CLAY moderate structure (8b) orange/brown moist stiff/firm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1800</td>
<td>End of bore (Drilling rig)</td>
<td></td>
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<td>700</td>
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<td></td>
</tr>
<tr>
<td>1800</td>
<td>End of bore (Drilling rig)</td>
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<td></td>
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</tbody>
</table>
**APPENDIX C. LAND CAPABILITY ASSESSMENT FRAMEWORK SPREADSHEET – SUBSURFACE DRIP IRRIGATION.**

Irrigation area sizing using Nominated Area Water Balance for Zero Storage

**Site Address:** Lot 76, 85 Bushbys Road, Barongarook, Vic. SUBSURFACE DRIP.

**Date:** 17th November 2018

**Assessor:** Christian Brennan. South East Soil & Water.

**INPUT DATA**

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<td>Days in month</td>
<td>D</td>
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<td>31</td>
<td>31</td>
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<td>Rainfall</td>
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<td>mm/month</td>
<td>mm/mm/month</td>
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<tr>
<td>Evaporation</td>
<td>E</td>
<td>mm/month</td>
<td>mm/month</td>
<td>-0.0</td>
<td>-0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
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<tr>
<td>Crop Factor</td>
<td>C</td>
<td>0.5-0.6</td>
<td>unless</td>
<td>estimates evapotranspiration as a fraction of pan evaporation, varies with season and crop type</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<td>Irrigation Rate</td>
<td>IR</td>
<td>mm/day</td>
<td>mm/day</td>
<td>5.0</td>
<td>5.0</td>
<td>5.0</td>
<td>5.0</td>
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<tr>
<td>Nominated Land Application Area</td>
<td>L</td>
<td>m²</td>
<td>600</td>
<td>600</td>
<td>600</td>
<td>600</td>
<td>600</td>
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<td>600</td>
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<tr>
<td>Root Runoff Factor</td>
<td>RF</td>
<td>1.0</td>
<td>unless</td>
<td>proportion of rainfall that remains onsite and infiltrates, allowing for any runoff</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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**OUTPUTS**

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<th>Mar</th>
<th>Apr</th>
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<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
<th>Total</th>
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</thead>
<tbody>
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<td>E(T)</td>
<td>mm/month</td>
<td>114</td>
<td>128</td>
<td>91</td>
<td>109</td>
<td>113</td>
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<td>Penetration</td>
<td>E(T-R)</td>
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<td>268</td>
<td>240</td>
<td>186</td>
<td>184</td>
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<td>179</td>
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<tr>
<td>Outputs</td>
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<td>184</td>
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**INPUTS**

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<th>Apr</th>
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<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rainfall</td>
<td>R(RF)</td>
<td>mm/month</td>
<td>55.0</td>
<td>55.2</td>
<td>60.3</td>
<td>77.2</td>
<td>67.2</td>
<td>54.1</td>
<td>58.6</td>
<td>105.2</td>
<td>82.2</td>
<td>80.0</td>
<td>73.2</td>
<td>50.0</td>
<td>922</td>
</tr>
<tr>
<td>Applied Efficient Irrigation</td>
<td>N(RF)</td>
<td>mm/month</td>
<td>44.0</td>
<td>43.3</td>
<td>44.0</td>
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**STORAGE CALCULATION**

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<th>Mar</th>
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<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
<th>Total</th>
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<tbody>
<tr>
<td>Storage remaining from previous month</td>
<td>S(R-F)</td>
<td>mm/month</td>
<td>0.0</td>
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</tr>
<tr>
<td>Storage for the month</td>
<td>S(T-E)</td>
<td>mm/month</td>
<td>-0.6</td>
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<td>-0.4</td>
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<td>-0.6</td>
<td>-0.7</td>
<td>-0.0</td>
<td>-0.3</td>
<td>-0.4</td>
<td>-0.0</td>
<td>-0.3</td>
<td>-0.0</td>
</tr>
<tr>
<td>Maximum Storage Per Nominated Area</td>
<td>M</td>
<td>mm</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
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<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Minimum Required Storage</td>
<td>S</td>
<td>mm</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
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<td>0.0</td>
</tr>
</tbody>
</table>

**LAND AREA REQUIRED FOR ZERO STORAGE:**

| Minimum Area Required for Zero Storage | m² | 280.0 |

**NOTES**

1. *This value should be the largest of the following: land application area required based on the most limiting nutrient balance or minimum area required for zero storage*

2. *Values selected are suitable for pasture grass in Victoria*

Land Capability Assessment for On-Site Management of Domestic Wastewater. Lot 76, 85 Bushbys Road, Barongarook, Victoria. 3249. 43
Lot 76, 85 Bushbys Road, Barongarook

Mr R. & Mrs K. Bayliss

1.2 Schedules

Barrabool 212 - Classic

Date | Amendments |
--- | --- |
12/08/18 | Preliminary Check |
13/08/18 | Preliminary Check |
28/08/18 | Engineering check |
14/11/18 | Contract Plans Issued |
08/01/19 | Contract Plans 2 Issued |

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TANK CONNECTED TO ENTIRE HOUSE NOTE:
- SEALED SYSTEM DIRECTED TO RAIN WATER TANK.
- OVERFLOW TO DISCHARGE INTO SOAKAGE PIT.

Legend

↑ denotes 1:20 fall away from building
↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓→

Drainage Line

Roadside Drain

Driveway drain - 60 metre setback distance from dam

Min. depression (not defined)

10m setback from minor depression

Proposed Wastewater Field over 500m² available

Dam on eastern neighbour

Lot 76, 85 Bushys Road, Barongarook

Saddle - rising land. Drainage has no connection between the front and back of this block

Western neighbour dam

Drainage Line

TANK CONNECTED TO ENTIRE HOUSE NOTE:
- SEALED SYSTEM DIRECTED TO RAIN WATER TANK.
- OVERFLOW TO DISCHARGE INTO SOAKAGE PIT.
SEPTIC SYSTEM
SEPTIC SYSTEM - INCLUDING PERMITS, POWER SUPPLY, INSTALLATION, CONNECTION, IRRIGATION SYSTEM, INSPECTIONS AND COMMISSIONING

SOAKAGE PIT LOCATION (5m min. away from boundary fence)

SEWER SYSTEM CONNECTED TO SEPTIC SYSTEM IN EFFLUENT AREA BY GEELONG HOMES. POSITION AS PER LCA REPORT

LOT 76
PROPOSED RESIDENCE
"Barrabool 212"
CUT RL: 243.9
FL: 244.275

LPG GAS TANK
POSITION bottles supplied by owner

DECK to be built by owner after handover

CUT
FILL

2 x Crushed Rock Rainwater Pad 6.5m x 4.5m by Geelong Homes

FOR: Mr R. & Mrs K. Bayliss
West Elevation
1 : 100

North Elevation
1 : 100

COLOUR SCHEDULE:

Roof Colour: Colorbond Basalt
Gutter: Colorbond Basalt
Fascia: Colorbond Basalt
Windows: Ultra Silver
Front Entry Door: Colorbond Surf mist
Garage Door: Colorbond Basalt
Bricks: Praline
Cladding: Newport weatherboards (Colorbond Basalt)