

Planning Permit Application



Submitted on	30 September 2024, 2:25PM
Receipt number	6
Related form version	4

VicSmart

Does your application meet VicSmart requirements? No

If yes, please specify which clause/s apply:

Pre-Application Meeting

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

Who did you talk to? Tim Wild (General Advice in written form)

When? 10/04/2024

The Land

Does the land have a street address? Yes

Property Number

Unit No

Street Address 185 Peacock Track

Township Lillicur

Business Name

Postcode 3371

Formal Land Description

Option A - Lot No:

No:	
Option B - Crown Allotment No:	26
Section No:	W
Parish/Township Name:	Parish of Lillicur
*Does this application relate to more than one address?	No

*Additional Formal Land Description

Option A - Lot No:	
No:	
Option B - Crown Allotment No:	
Section No:	
Parish/Township Name:	
**Does this application relate to another address?	

**Additional Formal Land Description

Option A - Lot No:	
No:	
Option B - Crown Allotment No:	
Section No:	
Parish/Township Name:	

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?	Not applicable (no such encumbrance applies)
Provide a full, current copy of the title for each individual parcel of land forming the subject site.	Title_White SC.pdf

The Proposal

Please provide a description of the proposal below:	Proposing a single storey residential dwelling
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Provide additional information about the proposal, including:	White SC Planning Report.pdf
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Estimated cost of development for which the permit is required:	Cost \$475260
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Existing Conditions

Describe how the land is used and developed now:	Has existing sheds and an existing tank.
--	--

Provide a plan of the existing conditions. Photos are helpful.	White S.C.PD.5.pdf
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Applicant and Owner Details

Title	
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First Name	Rishil
------------	--------

Surname	Soni
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Organisation or Business Name	Swanbuild Pty Ltd
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Unit No	
---------	--

Street No and Name	45 Fairview Road
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Town	Kangaroo Flat
------	---------------

Postcode	3555
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State	VIC
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Business phone	
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Mobile	0350360018
--------	------------

Email	rishil@swanbuild.com.au
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Is the preferred contact person for the application different from the applicant?	No, same as applicant
---	-----------------------

Contact person's details

Title	
-------	--

First Name	
------------	--

Surname	
---------	--

Organisation or Business Name

Unit No

Street No and Name

Town

Postcode

State

Business phone

Mobile

Email

Owner

Is the owner different from the applicant? Yes

Owner details

Title

First Name

Owner's signature

Date

Declaration

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.

Rushul Sone

[Link to signature](#)

Date 30/09/2024

Checklist

Provided all the necessary supporting information and documents?

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

A plan of existing conditions

Plans showing the layout and details of the proposal

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

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



6th August 2024

Central Goldfields Shire Council
22 Nolan Street,
Maryborough, Victoria, 3465

Attention: Planning Department – Planning Permit Application for a single storey residential dwelling

Proposed Dwelling

185 PEACOCK TRACK LILLICUR 3371
Crown Allotment 26 Section W Parish of
Lillicur.

The following documents are submitted with the application:

- Certificate of Title & Title Plan
- Architectural Plans & Elevations
- Written Summary of the Proposal
- Bushfire Management Statement and Plan
- Land Capability Assessment

Site description

The site located at Lot 26, 185 Peacock Track, Lillicur is a large 14.50 hectare, irregular shaped lot. The site currently has existing sheds and an existing tank. Access to the site is via existing crossover and driveway from Peacock Track.

Planning Information

The site at 185 Peacock Street, Lillicur falls within a Rural Living Zone (RLZ) and is affected by Bushfire Management Overlay (BMO) and Salinity Management Overlay (SMO).

Description of Proposal

The proposal is for a single storey dwelling that is located at the south-east corner of the lot.

The application is for a Planning Permit to construct a building or carry out works and I look forward to working with the council to progress this application. Please contact me if you require any further information.

Yours sincerely,

Rishil Soni



PLANNING REPORT

Client: Simon & Cathy White

Site Address: 185 Peacock Track, Lillicur VIC 3371

Swanbuild Pty Ltd

ABN: 32 159 730 748

1800 008 024

45, Fairview Road, Kangaroo Flat VIC
3555

swanbuild.com.au

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Disclaimer

This planning report has been prepared by Swanbuild homes for the land and building owner and should be read in conjunction with any preliminary drawings supplied.

Site Details

Project: Proposed New Dwelling
Client: [REDACTED]
Address: 185 Peacock Track, Lillicur VIC 3371
Title Description: Crown Allotment 26 Section W Parish of Lillicur
Local Government: Central Goldfields
Development type: Residential

Zone

RURAL LIVING ZONE (RLZ)
SCHEDULE TO THE RURAL LIVING ZONE (RLZ)

Planning Overlays

BUSHFIRE MANAGEMENT OVERLAY (BMO)
SALINITY MANAGEMENT OVERLAY (SMO)
SALINITY MANAGEMENT OVERLAY – SCHEDULE (SMO)

Applicant & Owner

Applicant: Swanbuild Pty Ltd – Rishil Soni
Address: 45 Fairview Road, Kangaroo Flat VIC 3555
Ph: 1800 008 024
Email: rishil@swanbuild.com.au
Project: Proposed New Dwelling

The Proposal Brief

This report contains the following

Zone Planning Response

- Rural Living Zone Decision Guidelines

Planning Overlay Response

- Response to any overlay.

Further Documentation

- Proposed Drawings
 - o Cover Sheet
 - o Existing Site Plan
 - o Proposed Site Plan
 - o Site Enlargement
 - o Floor Plan
 - o Elevations North & South
 - o Elevations East & West
 - o Perspective Views

Description of existing site, features and surrounds

The site located at Lot 26, 185 Peacock Track, Lillicur is a large 14.50 hectare, irregular shaped lot. The site currently has existing sheds and an existing tank.

Given the size of the surrounding properties, there is ample open space between each property. The proposed would also fit in with the surrounding properties with the existing shed, and proposed dwelling.

Access to the site is via existing crossover and driveway from Peacock Track.



Current aerial view of the site located at Peacock Track



Entrance Driveway



Current site photo at Peacock Track, Lillicur

Proposal and Design Response

The proposed single storey dwelling consists of three bedrooms, one bathroom, kitchen, meals and a living area.

The proposed dwelling is to be cladded with James Hardie Linea cladding on the exterior of the house and colourbond sheeting on the roof of the dwelling.

The proposed is to have ceiling height of 2.7m with an overall building height of 6.307m The dwelling will be elevated by 650mm, with the below space enclosed using baseboards making this an unusable space.

The proposed is to have a living total of 144.0m² and the outdoor area of 28.7m². The total area of the proposed dwelling is to be 172.7m².

The setback of the proposed dwelling from the southern boundary is to be 32.4m and 35.45m respectively. The setback from the eastern boundary is 75.09m. The dwelling is sited closer to the existing shed which is towards the south-eastern side of the lot.

Electricity proposed is to be off-grid power. Water supply would be through tank.

Access to the site is via the already existing crossover and driveway through Peacock Track.

Relevant Planning Provisions

RURAL LIVING ZONE

Response to the decision Guidelines

General Issues

The proposed use of land can be accommodated easily. The nearby lots also contain similar developments within the rural streetscape around the area. The proposed use of land can be accommodated easily.

Agricultural Issues and Impacts from Non-Agricultural Use

The proposal will not have an adverse effect on the agricultural use of the land as the house is a transportable dwelling and will have very minimal impact on the soil condition of the site as well as have no to minimal effect on the vegetation in the area to abide by environmental constraints, codes, and restrictions.

Dwelling Issues

The development will not have any negative environmental affects due to the location and site layout. The proposed is located towards south eastern side of the lot near existing shed, leaving ample space on the lot. The proposed dwelling will cause minimal ground disturbance with the installation of steel adjustable pier footings.

Environmental Issues

The proposed site will have no trees removed. The site has no cut or fill; therefore, the soil condition and vegetation condition will have minimal impact on the environment. As the house is transportable there will be minimum ground disturbance due to installation of adjustable pier footings.

Design and Sitting Issues

The proposal is all located in one area of the lot. The design is of a country style weatherboard look. The dwelling will contribute to the existing streetscape whilst respecting the spread-out existing character.

Bushfire Management Overlay

A bushfire management statement and plan has been prepared by Bendigo Planning Services has been submitted with this application.

Salinity Management Overlay

There would not be any native vegetation removal and Land Capability Assessment prepared by Geocentral Engineering has been submitted along with this application.

Conclusion

The application meets and respects the Local and State Planning Policies. The proposed development responds and acknowledges the Rural Living Zone, Bushfire Management Overlay and the Salinity Management Overlay. The development will also follow all building regulations and standards, therefore should be considered in a favourable light towards consideration.

Regards,

Rishil Soni

BUILDERS NOTES:

FLOOR LEVEL

PROPOSED FLOOR LEVEL IS NOMINATED ON PROPOSED SITE PLAN

FOOTING DESIGN

A SOIL TEST IS TO BE CARRIED OUT BY OWNER OR BUILDER. SHOULD THERE BE ANY EVIDENCE OF FILL DURING EXCAVATION NOTIFY ENGINEER. REFER TO FOOTING OR SLAB DESIGN BY ENGINEER FOR DETAILS OF CONCRETE FLOORS & FOOTINGS.

JOINERY

DETAILS OF JOINERY ARE TO BE PROVIDED BY CLIENT AT AN APPROPRIATE BUILDING STAGE. REFER TO DETAILS BY JOINERY FABRICATOR.

CARPENTRY

GENERALLY ALL DOORS SHALL BE 820 x 2040 UNLESS NOTED OTHER WISE ON PLANS. WC DOORS SHALL BE 720 x 2040. C.S DENOTES A CAVITY SLIDING DOOR. ALL TIMBER FRAMING, TIE DOWNS & BRACING SHALL COMPLY WITH AS 1684.

SANITARY COMPARTMENTS (WC'S & ENSUITES) SHALL COMPLY WITH THE B.C.A. WHICH STATES ALL SANITARY COMPARTMENTS MUST HAVE A MINIMUM DIMENSION OF 1200 mm FROM THE CLOSEST POINT OF THE TOILET TO THE NEAREST PART OF THE DOOR. IF THIS IS NOT THE CASE THEN THE DOOR MUST A. OPEN OUTWARDS. OR B. SLIDE. OR C. THE DOOR SHALL BE READILY REMOVED FROM THE OUTSIDE BY REMOVABLE HINGES.

SKIRTING, ARCHITRAVE'S & CORNICES

REFER TO BUILDER SPECIFICATIONS FOR TYPE AND SIZES.

WINDOWS

WINDOW SIZES NOMINATED ARE NOMINAL ONLY. ACTUAL SIZE MAY VARY ACCORDING TO SELECTED MANUFACTURER. A 18 15 WINDOW NOMINATED ON THE FLOOR PLAN REPRESENTS A WINDOW 1800 HIGH x 1500 WIDE. A SLIDING DOOR NOMINATED AS A 2118SGD REPRESENTS A 2100 HIGH x 1800 WIDE SLIDING GLASS DOOR. A WINDOW NOMINATED ON THE FLOOR PLAN WITH 'OBS' REPRESENTS AN OBSCURED GLAZED WINDOW. A WINDOW NOMINATED WITH 'F' REPRESENTS A FIXED WINDOW. A WINDOW NOMINATED 'DG' REPRESENTS A DOUBLE GLAZED WINDOW. A WINDOW NOMINATED 'DH' REPRESENTS A DOUBLE HUNG WINDOW. A WINDOW NOMINATED 'A' REPRESENTS A AWNING WINDOW. A WINDOW NOMINATED 'C' REPERSENTS A CASEMENT WINDOW. SAFETY GLAZING TO AREAS REQUIRED. ALL GLAZING IS TO BE SELECTED AND INSTALLED IN ACCORDANCE WITH A.S 1288 & A.S 2047.

DRAINS & TRENCHING

TRENCHES THAT CONTAIN PLUMBING ETC. SHOULD RUN PARALLEL TO THE MAIN FOOTING OF THE RESIDENCE. THESE TRENCHES SHOULD BE LOCATED SO THAT THE HORIZONTAL DISTANCE FROM THE FOOTING IS GREATER OR EQUAL TO THE TRENCHES DEPTH.

SMOKE DETECTORS

SMOKE DETECTORS SHALL BE INSTALLED TO AS 3786. ALL SMOKE DETECTORS TO BE INTERCONNECTED & HARDWIRED TO MAINS POWER AND LOCATED BETWEEN LIVING & SLEEPING AREAS REFER TO THE FLOOR PLAN FOR NUMBER AND LOCATION.

GENERAL NOTES

THE BUILDER SHALL TAKE ALL STEPS NECESSARY TO ENSURE THE STABILITY AND GENERAL WATER TIGHTNESS OF ALL NEW AND OR EXISTING STRUCTURES DURING BUILDING WORKS. THE BUILDER AND SUBCONTRACTORS SHALL CHECK AND VERIFY ALL DIMENSIONS, LEVELS AND SPECIFICATIONS AND ANY OTHER RELEVANT DOCUMENTATION PRIOR TO THE COMMENCEMENT OF ANY WORKS.

REPORT ALL DISCREPANCIES TO SWANBUILD FOR CLARIFICATION.

THE BUILDER AND SUBCONTRACTORS SHALL ENSURE THAT ALL STORM WATER DRAINS, SEWER PIPES AND THE LIKE ARE LOCATED AT A SUFFICIENT DISTANCE FROM ANY FOOTINGS ETC. SO AS TO PREVENT GENERAL MOISTURE PENETRATION, DAMPNESS, WEAKENING AND UNDERMINING OF ANY BUILDING WORKS.

PLANNING DRAWINGS SET

SHEET NO.	DWG TITLE
01	COVER SHEET
01 B	BAL REQUIREMENT NOTES
02	EXISTING SITE PLAN
03	PROPOSED SITE PLAN
04	SITE ENLARGEMENT
05	FLOOR PLAN
06	ELEVATIONS NORTH & SOUTH
07	ELEVATIONS EAST & WEST
08	PERSPECTIVE VIEWS

WORKING DRAWINGS SET

SHEET NO.	DWG TITLE	R
01	COVER SHEET	B
01 B	BAL REQUIREMENT NOTES	
02	EXISTING SITE PLAN	
03	PROPOSED SITE PLAN	
04	SITE ENLARGEMENT	
05	FLOOR PLAN	B
06	ELEVATIONS NORTH & SOUTH	
07	ELEVATIONS EAST & WEST	
08	PERSPECTIVE VIEWS	
09	SECTION A-A	B
10	VERANDAH DETAILS	
11	3.0m SKILLION VERANDAH DETAILS	
12	ROOFING PLAN	
13	CHASSIS PLAN	
14	FOOTING PLAN	
15	PLUMBING LAYOUT	
16	WET AREA DETAILS	
17	WET AREA DETAILS	
18	FOLD UP DECK DETAILS	
19	FOLD DOWN VERANDAH DETAILS	
20	RAFTERS, JOIST & PLATE CUT DETAILS	
21	FOOTING & CHASSIS DETAILS	
22	BALUSTRADING DETAILS	
23	TRANSPORT SHEET	



Swanbuild
H O M E S

Head Office & Factory: 212-214 Karinie Street, Swan Hill VIC 3585
Phone 03 5036 0000 or 1800 008 024

Project Title PROPOSED NEW RESIDENCE

Client

Address

LILLICUR, VIC 3371

Client Approval

COUNTRY LIVING SERIES

Project No.

B1188

Revision

Current Revision: B

DESCRIPTION

DATE	ISSUED
09/05/24	M S
18/06/24	N A

WORKING DRAWINGS (PRELIMINARY)

30/09/2024 10:59:49 AM

(B) a perforated area no greater than 20% of the shutter. If bushfire shutters are fitted to all external doors then at least one of those shutters shall be operable from the inside to facilitate safe egress from the building. Note 2: Where fitted, screens for windows and doors shall have a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion-resistant steel, bronze or aluminium. Gaps between the perimeter of the screen assembly and the building element to which it is fitted shall not exceed 3 mm. The frame supporting the mesh or perforated sheet shall be made from metal or a timber species as specified at the end of this document. Note 3: Where double glazed units are used the above requirements apply to the external face of the window assembly only.

ROOFS (INCLUDING VERANDA AND ATTACHED CARPORT ROOFS, PENETRATIONS, EAVES, FASCIAS, GABLES, GUTTERS AND DOWNPIPES)

1. General
The following apply to all types of roofs and roofing systems:
(a) roof tiles, roof sheets and roof-covering accessories are to be non-combustible.
(b) the roof/wall junction is to be sealed to prevent openings greater than 3 mm, either by the use of fascia and eaves linings or by sealing between the top of the wall and the underside of the roof and between the rafters at the line of the wall.
(c) roof ventilation openings, such as gable and roof vents, are to be fitted with ember guards made of non-combustible material or a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion-resistant steel, bronze or aluminium.
(d) a pipe or conduit that penetrates the roof covering shall be non-combustible.
2. Tiled roofs.
Tiled roofs shall be fully sarked. The sarking shall—
(a) be located on top of the roof framing, except that the roof battens may be fixed above the sarking;
(b) cover the entire roof area including ridges and hips; and
(c) extend into gutters and valleys.
3. Sheet roofs
Sheet roofs shall—
(a) be fully sarked, except that foil-backed insulation blankets may be installed over the battens; and
(b) have any gaps greater than 3 mm (such as under corrugations or ribs of sheet roofing and between roof components) sealed at the fascia or wall line and at valleys, hips and ridges by—
(i) a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion-resistant steel, bronze or aluminium; or
(ii) mineral wool; or
(iii) other non-combustible material; or
(iv) a combination of any of Items (i), (ii) or (iii) above.
Note: Sarking is used as a secondary form of ember protection for the roof space to account for minor gaps that may develop in sheet roofing.
4. Verandah, carport and awning roofs
The following apply to veranda, carport and awning roofs:
(a) A veranda, carport or awning roof forming part of the main roof space shall meet all the requirements for the main roof.
(b) A veranda, carport or awning roof separated from the main roof space by a wall that complies with the specification above for an external wall shall have a non-combustible roof covering and the support structure shall be—

- (i) of non-combustible material; or
(ii) bushfire-resisting timber (refer to the table at the end of this document); or
(iii) timber rafters lined on the underside with fibre-cement sheeting a minimum of 6 mm in thickness, or with material complying with AS 1530.8.1; or
(iv) a combination of any of Items (i), (ii) or (iii) above.
5. Roof penetrations
The following apply to roof penetrations:
(a) Roof penetrations, including roof lights, roof ventilators, roof-mounted evaporative cooling units, aerials, vent pipes and supports for solar collectors, shall be adequately sealed at the roof to prevent gaps greater than 3 mm. The material used to seal the penetration shall be non-combustible.
(b) Openings in vented roof lights, roof ventilators or vent pipes shall be fitted with ember guards made from a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion-resistant steel, bronze or aluminium. This requirement does not apply to the exhaust flues of heating or cooking devices with closed combustion chambers. In the case of gas appliance flues, ember guards shall not be fitted.
NOTE: Gasfitters are required to provide a metal flue pipe above the roof and terminate with a certified gas flue cowl complying with AS 4566. Advice may be obtained from State gas technical regulators.
(c) All overhead glazing shall be Grade A safety glass complying with AS 1288.
(d) Glazed elements in roof lights and skylights may be of polymer provided a Grade A safety glass diffuser, complying with AS 1288, is installed under the glazing. Where glazing is an insulating glazing unit (IGU), Grade A toughened safety glass minimum 4 mm thickness, shall be used in the outer pane of the IGU.
(e) Flashing elements of tubular skylights may be of a fire-retardant material, provided the roof integrity is maintained by an under-flashing of a material having a flammability index no greater than 5.
(f) Evaporative cooling units shall be fitted with non-combustible butterfly closers as close as practicable to the roof level or the unit shall be fitted with non-combustible covers with a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion-resistant steel, bronze or aluminium.
6. Eaves linings, fascias and gables
The following apply to eaves linings, fascias and gables:
(a) Gables shall comply with the requirements for an external wall.
(b) Fascias and bargeboards shall—
(i) where timber is used, be made from bushfire-resisting timber (refer to the table at the end of this document); or
(ii) where made from metal, be fixed at 450 mm centres; or
(iii) be a combination of Items (i) and (ii) above.
(c) Eaves linings shall be—
(i) fibre-cement sheet, a minimum 4.5 mm in thickness; or
(ii) bushfire-resisting timber (refer to the table at the end of this document); or
(iii) a combination of Items (i) and (ii) above.
(d) Eaves penetrations shall be protected the same as for roof penetrations.
(e) Eaves ventilation openings greater than 3 mm shall be fitted with ember guards made of non-combustible material or a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion-resistant steel, bronze or aluminium.
(f) Joints in eaves linings, fascias and gables may be sealed with plastic joining strips or timber storm moulds.
7. Gutters and downpipes
The Standard does not provide material requirements for downpipes. If installed, gutter and valley leaf guards shall be non-combustible. With the exception of box gutters, gutters shall be metal or PVC-U. Box gutters shall be non-combustible and flashed at the junction with the roof with noncombustible material.

VERANDAHS, DECKS, STEPS, RAMPS AND LANDINGS

- 1) General
Decking may be spaced.
There is no requirement to enclose the subfloor spaces of verandas, decks, steps, ramps or landings.
- 2) Enclosed subfloor spaces of verandas, decks, steps, ramps and landings
a) Materials to enclose a subfloor space
The subfloor spaces of verandas, decks, steps, ramps and landings are considered to be ‘enclosed’ when —
i) the material used to enclose the subfloor space complies with the standards for external walls above; and
ii) all openings greater than 3 mm are screened with a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion-resistant steel, bronze or aluminium.
b) Supports
The Standard does not provide construction requirements for support posts, columns, stumps, stringers, piers and poles.
c) Framing
The Standard does not provide construction requirements for the framing of verandas, decks, ramps or landings (i.e., bearers and joists).
d) Decking, stair treads and the trafficable surfaces of ramps and landings
e) Decking, stair treads and the trafficable surfaces of ramps and landings shall be—
i) of non-combustible material; or
ii) of bushfire-resisting timber (refer to the table at the end of this document); or
iii)a combination of Items (i) and (ii) above.
- 3) Unenclosed subfloor spaces of verandas, decks, steps, ramps and landings
a) Supports
Support posts, columns, stumps, stringers, piers and poles shall be—
i) of non-combustible material; or
ii) of bushfire-resisting timber (refer to the table at the end of this document); or
iii) a combination of Items (i) and (ii) above.
b) Framing
Framing of verandas, decks, ramps or landings (i.e., bearers and joists) shall be—
i) of non-combustible material; or
ii) of bushfire-resisting timber (refer to the table at the end of this document);or
iii) a combination of Items (i) and (ii) above.
c) Decking, stair treads and the trafficable surfaces of ramps and landings
Decking, stair treads and the trafficable surfaces of ramps and landings shall be—
i) of non-combustible material; or
ii) of bushfire-resisting timber (refer to the table at the end of this document);or
iii) a combination of Items (i) and (ii) above.
- 4) Balustrades, handrails or other barriers
Those parts of the handrails and balustrades less than 125 mm from any glazing or any combustible wall shall be—
i) of non-combustible material; or
ii) of bushfire-resisting timber (refer to the table at the end of this document);or
iii) a combination of Items (i) and (ii) above.
Those parts of the handrails and balustrades that are 125 mm or more from the building have no requirements.


WATER AND GAS SUPPLY PIPES

Above-ground, exposed water and gas supply pipes are to be metal.

BUSH FIRE RESISTING SPECIES

The following species have been tested and meet the requirements for a bush fire resisting timber species:

Standard trade name	Botanical name
Ash silvertop	Eucalyptus sieberi
Blackbutt	Eucalyptus pilularis
Gum, red, river	Eucalyptus camaldulensis
Gum, spotted	Corymbia maculata
	Corymbia henryi
	Corymbia citriodora
Ironbark, red	Eucalyptus sideroxylon
Kwila (Merbau)	Intsia bijuga
Turpentine	Syncarpia glomulifera

<div></div>	Head Office & Factory: 212-214 Karinie Street, Swan Hill VIC 3585 Phone 03 5036 0000 or 1800 008 024 Lic: Vic DB-U3234, N.S.W. 8932C ABN: 64 753 985 826 © Swanbuild	© C O P Y R I G H T These drawings are subject to copyright. Reproduction in whole or part is forbidden without written consent from Swanbuild All works finished as per contract & variation documents Figured dimensions take precedence over scaled dimensions <u>DO NOT SCALE OFF DRAWING</u>	<table><tr><th>DESCRIPTION</th><th>DATE</th><th>ISSUED</th></tr><tr><td colspan="3"></td></tr></table>	DESCRIPTION	DATE	ISSUED				Project: PROPOSED NEW RESIDENCE		Drawing: BAL REQUIREME	
	DESCRIPTION	DATE	ISSUED										
	Series: COUNTRY LIVING SERIES		Client:		Address: 185 PEACOCK TRACK, LILLICUR, VIC 3371								
	Scale:	Client Manager:		Revision:		30/09/2024 10:59:49 AM							
	Drawn MHS	Project Manager:											
	Checked By: Checker		Project No.		Sheet No. 01 B OF 08								
Approved By: Approver													

CLIENT TO HAVE BUILDING PAD LEVELLED
PRIOR TO HOME BEING DELIVERED

BAL 29 REQUIREMENTS
REFERS TO BAL
REQUIREMENT NOTES
ALL TREES TO BE RETAINED

SOLOMANO LANE

PEACOCK TRACK

LOT 26
14.50 hectare

EXISTING SITE PLAN

1 : 2000

NORTH



Head Office & Factory:
212-214 Karinie Street,
Swan Hill VIC 3585
Phone
03 5036 0000 or
1800 008 024
Lic:
Vic DB-U3234, N.S.W. 8932C
ABN:
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Figured dimensions take
precedence over scaled
dimensions
DO NOT SCALE OFF DRAWING

DESCRIPTION	DATE	ISSUED

Project: PROPOSED NEW RESIDENCE		Drawing: EXISTING SITE PLAN	
Series: COUNTRY LIVING SERIES		Client: <div></div>	
Scale: 1 : 2000	Client Manager:	Address: 185 PEACOCK TRACK, LILLICUR, VIC 3371	
Drawn MHS	Project Manager:		
Checked By: -		Revision:	30/09/2024 10:59:50 AM
Approved By: -		Project No. B1188	Sheet No. 02 OF 08

STORMWATER
90 mm Ø CLASS 6 UPVC STORM WATER LINE LAID TO A MINIMUM OF 1:100 AND CONNECTED TO THE LEGAL POINT OF DISCHARGE TO LOCAL AUTHORITIES REQUIREMENTS. PROVIDE INSPECTION OPENINGS AT 9000mm CTS AND AT EACH CHANGE OF DIRECTION. THE COVER TO UNDER GROUND STORMWATER DRAINS SHALL BE NOT LESS THAN:

- 100mm UNDER SOIL
- 50mm UNDER PAVED OR CONCRETE AREAS
- 100mm UNDER UNREINFORCED CONCRETE OR PAVED DRIVEWAYS
- 75mm UNDER REINFORCED CONCRETE DRIVEWAYS

STORMWATER DRAINAGE TO COMPLY WITH AS/NZS 3500.3. LAYOUT SHOWN IS DIAGRAMATIC ONLY. BUILDER OR PLUMBER TO MODIFY LAYOUT PROVIDING DRAINAGE COMPLIES WITH AUSTRALIAN STANDARDS AND LOCAL AUTHORITIES REQUIREMENTS.

ENERGY RATING REQUIREMENTS:

UNLESS PERMITTED OTHERWISE, CLASS ONE BUILDINGS SHALL REACH A 6 STAR ENERGY RATING. 6 STAR RATED DESIGNS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE STAMPED APPROVED PLANS AS PROVIDED BY THE ACCREDITED ENERGY RATER WITHOUT ALTERATION.

IN ORDER TO ACHIEVE A 6 STAR RATING, BUILDER IS TO:

- PROVIDE R2.0 INSULATION TO EXTERNAL WALLS.
- PROVIDE R4.0 INSULATION TO CEILINGS.
- WEATHERSTRIP EXTERNAL DOORS.
- SEAL GAPS & CRACKS
- EXHAUST FANS TO BE FITTED WITH "DRAFT STOPPA" OR APPROVED SIMILAR SEALING DEVICE.
- WINDOW SIZE, OPERATION, GLAZING TYPE AND MANUFACTURER (IF SPECIFIED) TO BE AS PER WINDOW SCHEDULE. ALL WINDOWS TO BE FITTED WITH WEATHER SEALS TO OPENABLE WINDOW SASHES.
- A MINIMUM 2000 LITRE RAINWATER TANK FILLED FROM A ROOF AREA NO LESS THAN 50m² CONNECTED TO WC'S FOR FLUSHING **OR** AN APPROVED SOLAR OR HEAT PUMP HOT WATER SERVICE TO BE PROVIDED AT A COST TO THE CLIENT.

GAPS & CRACKS:

BUILDER TO PROVIDE A CONTINUOUS IMPERMEABLE BARRIER WITH THE DOUBLE SIDED SISALATION FOIL. PAY PARTICULAR ATTENTION TO:

- 1) TAPING JOINS AND AROUND PENETRATIONS (SUCH AS PLUMBING SERVICES).
- 2) ENSURE THAT THE MATERIAL COVERS THE GAP BETWEEN STUDS AND DOOR AND WINDOW FRAMES. IF FLASHING ATTACHES TO WINDOW FRAMES, FLASHING SHOULD BE TAPED OVER SISALATION FOIL.

SETOUT NOTE:

BUILDER TO ENSURE AT SETOUT STAGE THAT ALL DIMENSIONS (SPECIFICALLY SETBACKS FROM BOUNDARIES) ARE CORRECT PRIOR TO EXCAVATION AND ORDERING OF MATERIALS. REPORT ANY DISCREPENCIES TO SWANBUILD IMMEDIATELY

PROPOSED SITE PLAN

1 : 2000

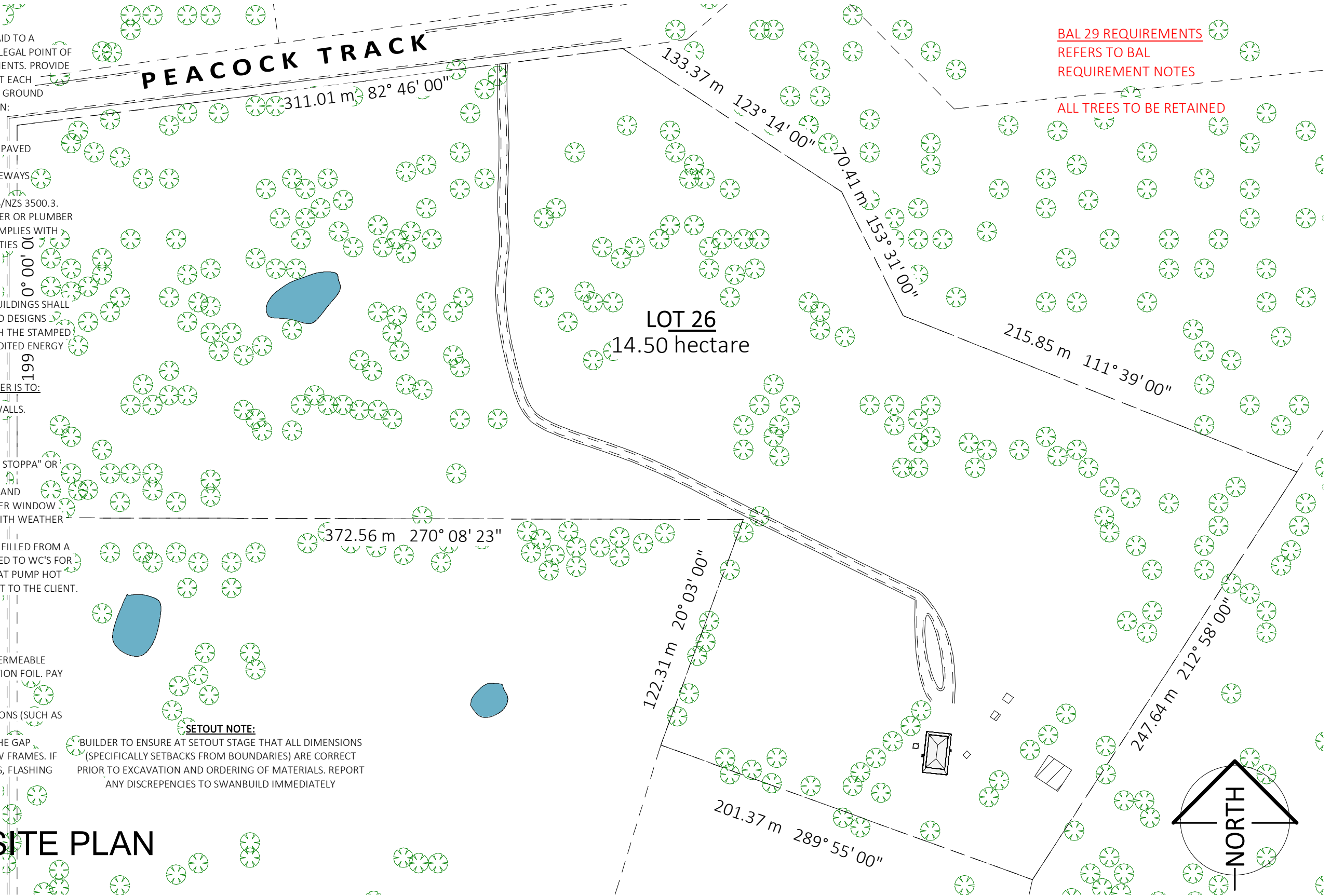


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Project: PROPOSED NEW RESIDENCE		Drawing: PROPOSED SITE PLAN	
Series: COUNTRY LIVING SERIES		Client: <div></div>	
Scale: 1 : 2000	Client Manager:	Address: 185 PEACOCK TRACK, LILLICUR, VIC 3371	
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Approved By: -		Project No. B1188	Sheet No. 03 OF 08



WORKING DRAWINGS (PRELIMINARY)

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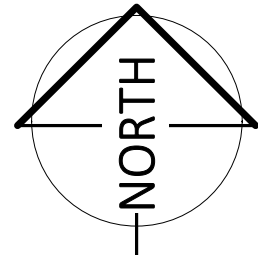
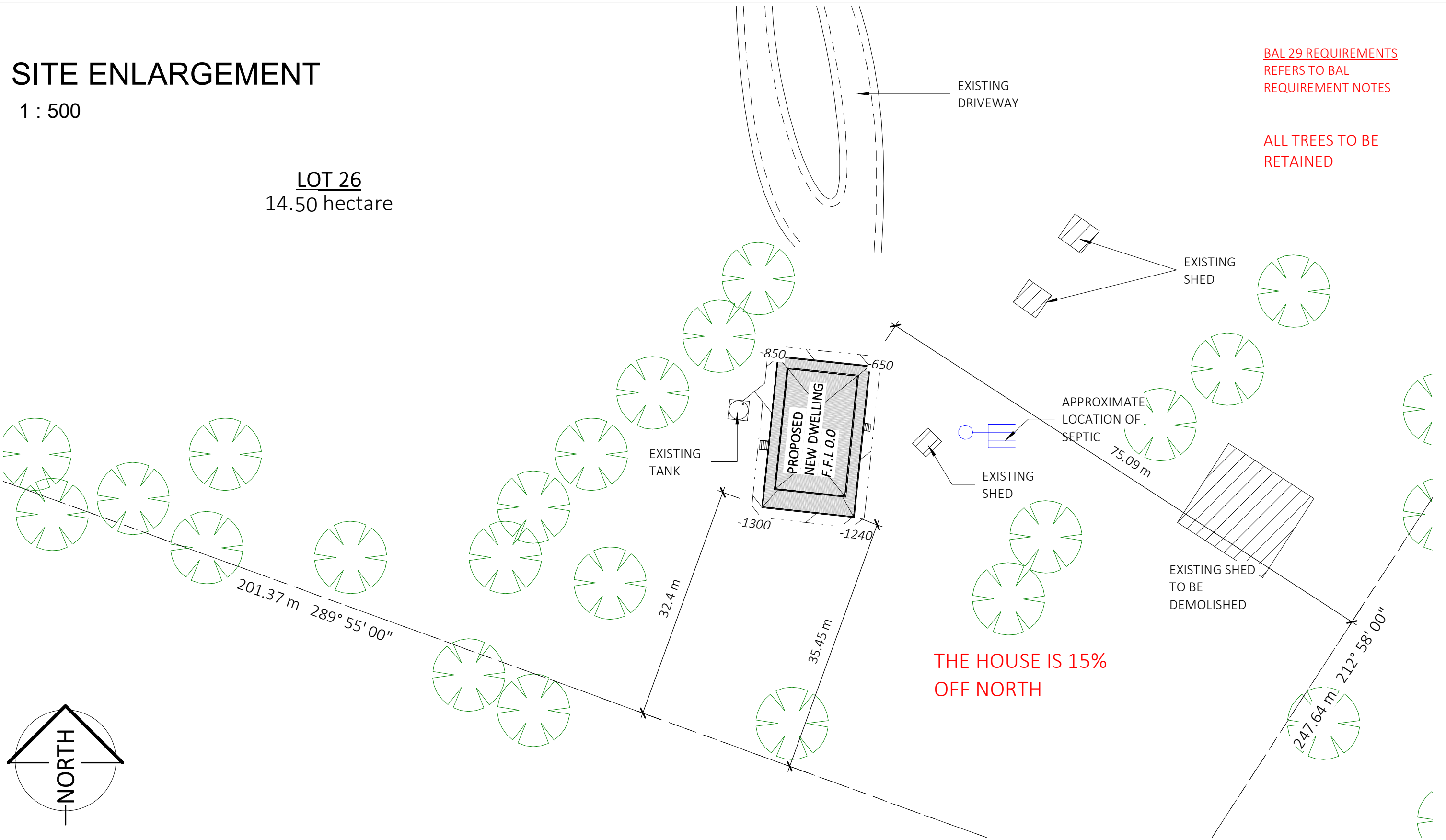
SITE ENLARGEMENT

1 : 500

LOT 26
14.50 hectare

BAL 29 REQUIREMENTS
REFERS TO BAL
REQUIREMENT NOTES

ALL TREES TO BE
RETAINED



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			Approved By: -		Project No. B1188	Sheet No. 04 OF 08

WORKING DRAWINGS (PRELIMINARY)

BIM 360://White S & C/White S & C.rvt

SMARTROBE SYSTEM		
TYPE	STUD OPENING	WIDTH
3/ 620	1865	1860
3/ 620	1865	1860
4/870	3520	3460

KEYNOTE LEGEND	
FGS	FIXED GLASS SCREEN
HP	HOT PLATE
LN	LINEN
OHC	OVERHEAD CUPBOARD
OV	OVEN
REF	REFRIGERATOR
SNK	SINK
SU	SHELVING UNIT
T	TROUGH
V900	900mm WIDE VANITY UNIT
WM	WASHING MACHINE

STAIRS TO COMPLY WITH NCC 2022 HP PART 11.2

- a) RISERS (R) TO BE BETWEEN 115mm & 190mm
b) GOINGS (G) TO BE BETWEEN 240mm & 355mm
c) R2 + G BETWEEN 550mm & 700mm
d) NO OPENING ARE TO PERMIT A SPHERE WITH A MAXIMUM DIAMETER OF 125mm TO PASS THROUGH
e) A CONTINUOUS, UNOBSTRUCTED HANDRAIL LOCATED ALONG AT LEAST ONE SIDE OF ALL STAIRS THAT PROVIDE A CHANGE IN FLOOR LEVEL OF AT LEAST 1m, AT A HEIGHT OF AT LEAST 865mm ABOVE THE STAIR NOSINGS
f) STAIRS SHOULD HAVE A SLIP RESISTANCE CLASSIFICATION AS BELOW

APPLICATION	SITE CONDITION	
	DRY	WET
TREAD OR LANDING SURFACE	P3 OR R10P4 OR R11	
NOSING OR LANDING EDGE STRIP	P3	P4

PRODUCT TO APPLY FOR SLIP RESISTANCE
INTERGRAIN ULTRADECK TIMBER OIL – 2 COATS
APPLIED TO MANUFACTURERS SPECIFICATIONS

DRAWINGS TO BE READ IN
CONJUNCTION WITH SOIL REPORT BY
GEOTECHNICAL TESTING SERVICES
REF: 24C 0340

REFER TO ENGINEERS SPECIFICATIONS
LAKER GROUP REF: 24-SBH-1086-A

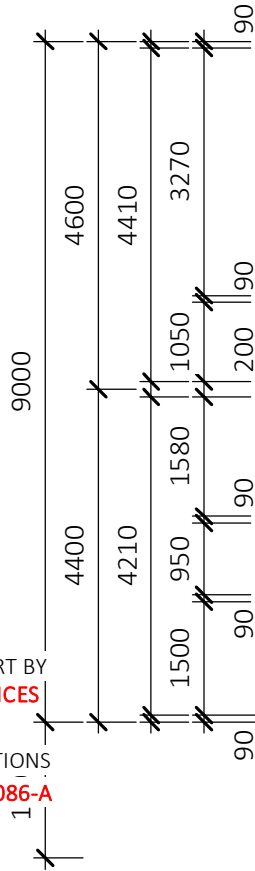
VENTILATION
EXHAUST FROM WET AREAS TO BE VENTED DIRECTLY TO
ATMOSPHERE VIA DUCTING TO THE UNDERSIDE OF EAVES.
EXHAUST SYSTEM TO HAVE A FLOW RATE OF NO LESS THAN 25L/S
FOR BATHROOMS & WC AND 40L/S FOR KITCHEN & LAUNDRY

AREA	m ²	SQ'S	LOCATION
LIVING AREA	144.0 m ²	15.5	LIVING
LIVING TOTAL	144.0 m ²	15.5	
VERANDAH AREA	27.0 m ²	2.9	OUTDOOR
LANDING DECK AREA	1.7 m ²	0.2	OUTDOOR
OUTDOOR	28.7 m ²	3.1	
TOTAL	172.7 m ²	18.6	

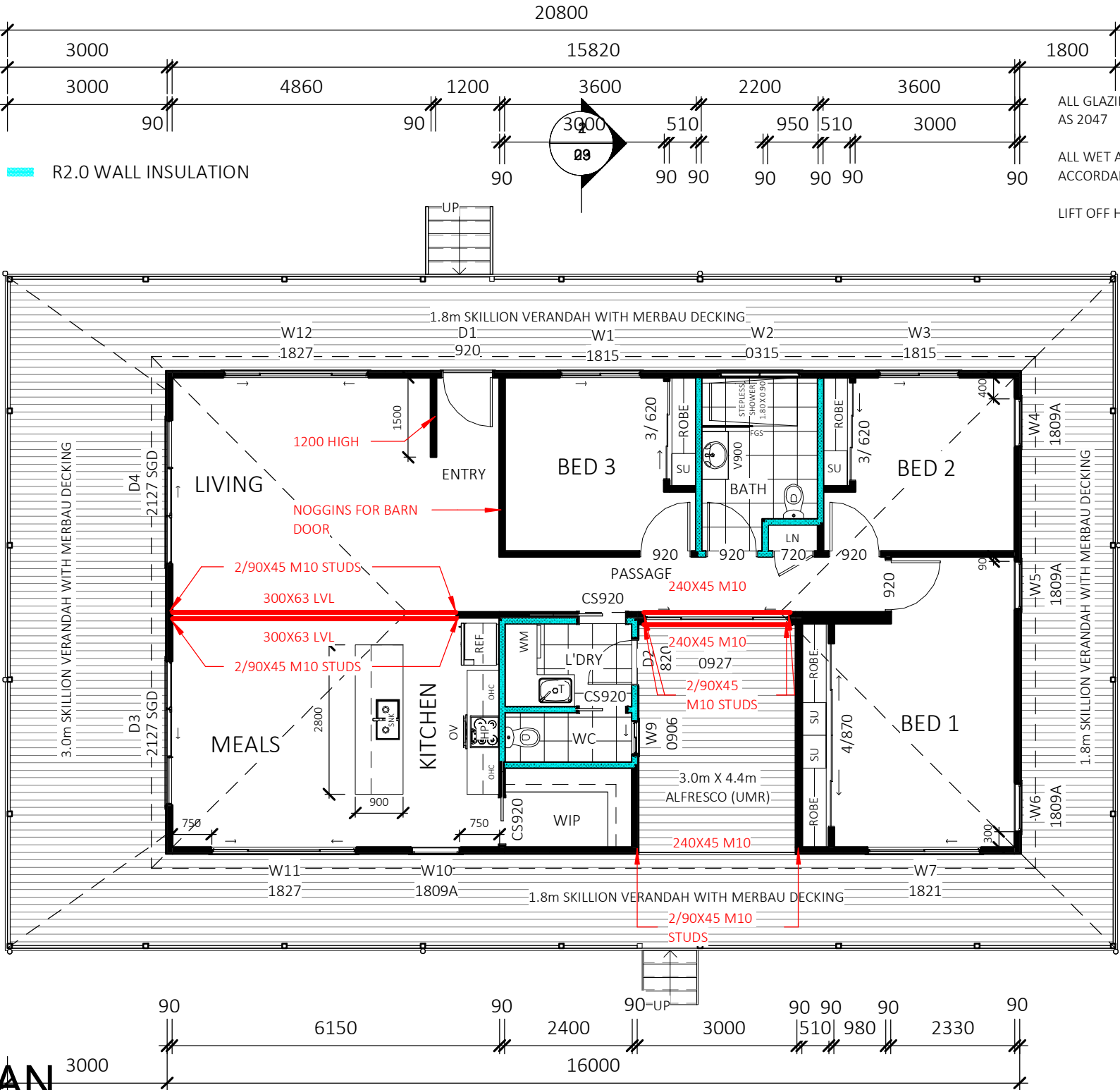
- Ⓢ SMOKE DETECTORS TO BE LOCATED BETWEEN
LIVING & SLEEPING AREAS.
SMOKE DETECTORS TO BE INTERCONNECTED &
HARD WIRED TO MAINS POWER.
\INSTALLATION TO COMPLY WITH AS 3786

ALL STRUCTURAL FRAMING AND
FLOORING IS CONSTRUCTED WITH
TERMITE TREATED MATERIAL TO
COMPLY WITH AS 3660.1 - 2014

**BAL 29 REQUIREMENTS
REFERS TO BAL
REQUIREMENT NOTES**



FLOOR PLAN
1 : 100



ALL GLAZING TO COMPLY WITH AS 1288 AND
AS 2047
ALL WET AREAS TO BE WATERPROOFED IN
ACCORDANCE WITH AS 3740
LIFT OFF HINGES TO WC DOOR



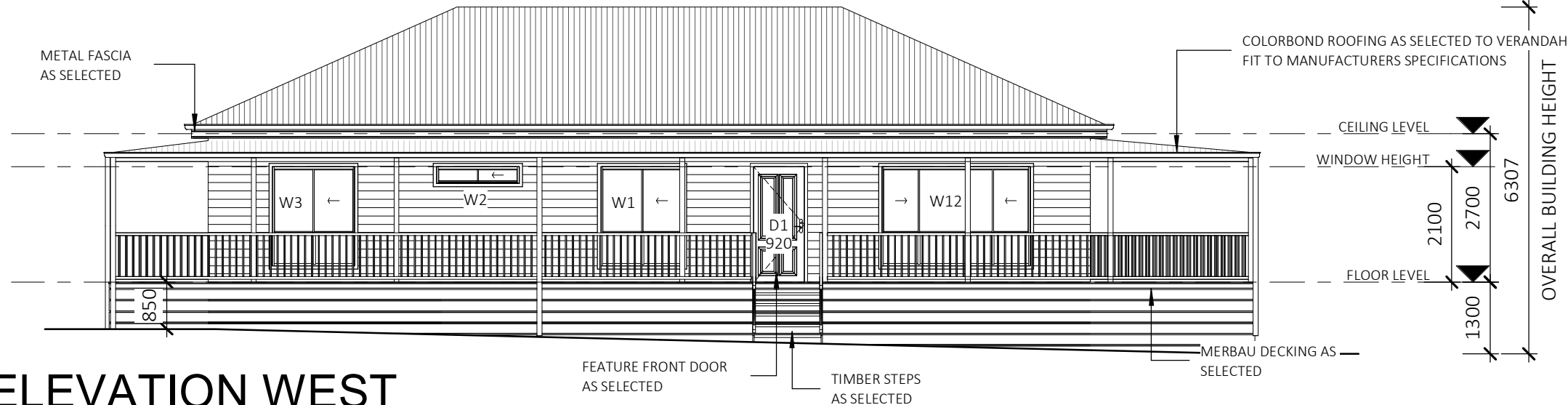
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	DESCRIPTION	DATE	ISSUED
A	ENERGY REPORT	09/05/24	M S
B	ENGINEERING	18/06/24	N A

Project: PROPOSED NEW RESIDENCE	
Series: COUNTRY LIVING SERIES	
Scale: 1 : 100	Client Manager:
Drawn MHS	Project Manager:
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Drawing: FLOOR PLAN	
Client: [REDACTED]	
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Project No. B1188	Sheet No. 05 OF 08

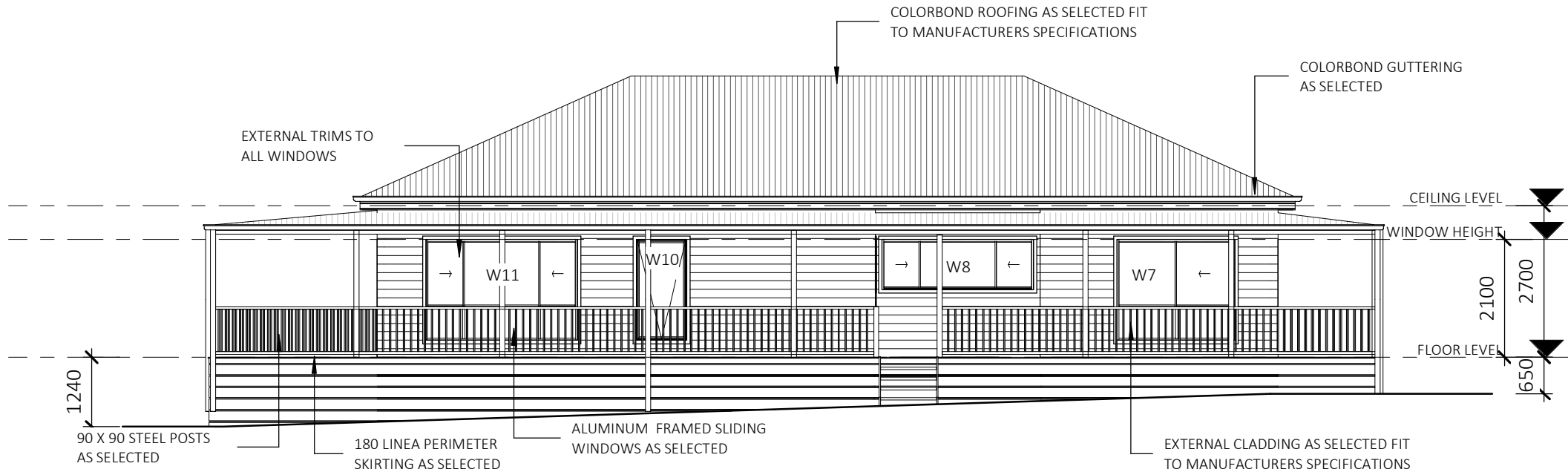


ELEVATION WEST

1 : 100

BAL 29 REQUIREMENTS
REFERS TO BAL
REQUIREMENT NOTES

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ELEVATION EAST

1 : 100

NOTE:
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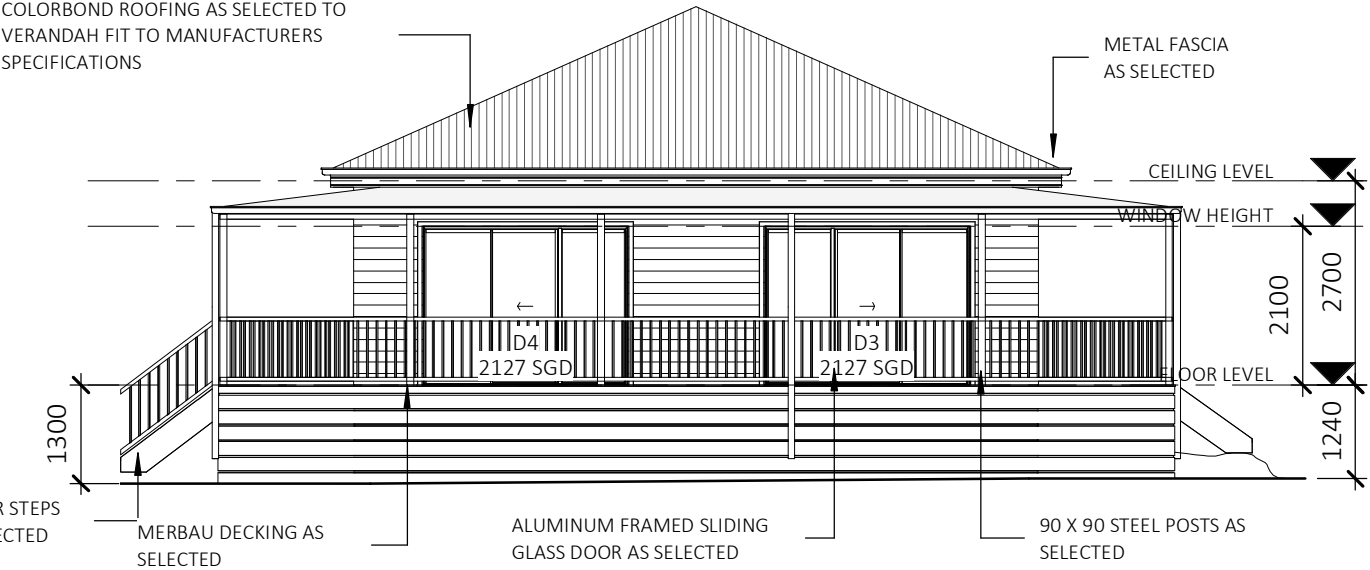
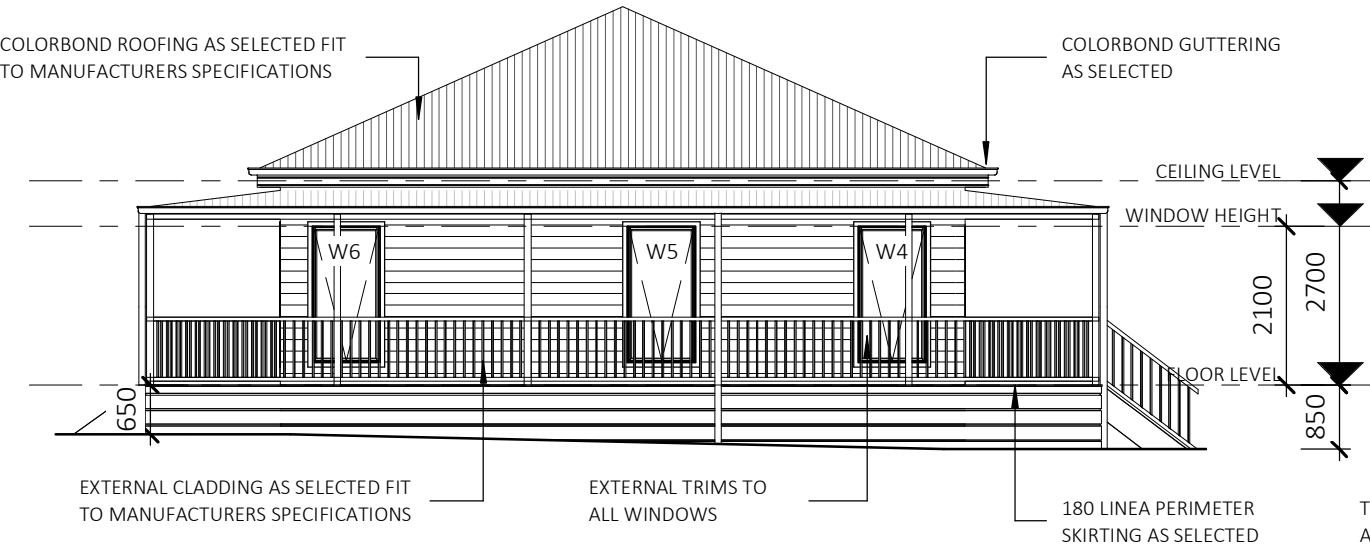


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DESCRIPTION	DATE	ISSUED

Project: PROPOSED NEW RESIDENCE		Drawing: ELEVATIONS NORTH & SOUTH	
Series: COUNTRY LIVING SERIES		Client: <div></div>	
Scale: 1 : 100	Client Manager:	Address: 185 PEACOCK TRACK, LILLICUR, VIC 3371	
Drawn MHS	Project Manager:		
Checked By: -		Revision:	30/09/2024 10:59:52 AM
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ELEVATION NORTH

1 : 100

BAL 29 REQUIREMENTS
REFERS TO BAL
REQUIREMENT NOTES

ELEVATION SOUTH


1 : 100

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WINDOW SIZES NOMINATED ARE NOMINAL ONLY. ACTUAL
SIZE MAY VARY ACCORDING TO MANUFACTURER.
WINDOWS TO BE FLASHED ALL AROUND.
REFER TO FLOOR PLAN & ELEVATIONS FOR OPENING
DIRECTION. ARROW DETONATES WHICH WAY THE DOOR
OR WINDOW OPENS

WINDOW & EXTERNAL DOORS SCHEDULE									
MARK	TYPE	DESCRIPTION	HEAD HEIGHT	HEIGHT	WIDTH	GLAZING	LOCATION	COMMENTS	AREA
W1	1815	ALUMINIUM SLIDING WINDOW	2100	1800	1500	DOUBLE CLEAR	BED 3	LOW - E	2.7 m ²
W2	0315	ALUMINIUM SLIDING WINDOW	2100	300	1500	DOUBLE CLEAR	BATH	LOW - E	0.5 m ²
W3	1815	ALUMINIUM SLIDING WINDOW	2100	1800	1500	DOUBLE CLEAR	BED 2	LOW - E	2.7 m ²
W4	1809A	ALUMINIUM AWNING WINDOW	2100	1800	900	DOUBLE CLEAR	BED 2	LOW - E	1.6 m ²
W5	1809A	ALUMINIUM AWNING WINDOW	2100	1800	900	DOUBLE CLEAR	BED 1	LOW - E	1.6 m ²
W6	1809A	ALUMINIUM AWNING WINDOW	2100	1800	900	DOUBLE CLEAR	BED 1	LOW - E	1.6 m ²
W7	1821	ALUMINIUM SLIDING WINDOW	2100	1800	2100	DOUBLE CLEAR	BED 1	LOW - E	3.8 m ²
W8	0927	ALUMINIUM SLIDING WINDOW	2100	900	2700	DOUBLE CLEAR	PASSAGE	LOW - E	2.4 m ²
W9	0906	ALUMINIUM SLIDING WINDOW	2100	900	600	DOUBLE CLEAR	WC	LOW - E	0.5 m ²
W10	1809A	ALUMINIUM AWNING WINDOW	2100	1800	900	DOUBLE CLEAR	KITCHEN	LOW - E	1.6 m ²
W11	1827	ALUMINIUM SLIDING WINDOW	2100	1800	2700	DOUBLE CLEAR	MEALS	LOW - E	4.9 m ²
W12	1827	ALUMINIUM SLIDING WINDOW	2100	1800	2700	DOUBLE CLEAR	LIVING	LOW - E	4.9 m ²
									28.8 m ²
D1	920	TIMBER HINGED ENTRY DOOR	2100	2100	920		ENTRY		1.9 m ²
D2	820	TIMBER HINGED SINGLE DOOR	2065	2065	820		L'DRY		1.7 m ²
D3	2127 SGD	ALUMINIUM SLIDING GLASS DOOR	2100	2100	2700	DOUBLE CLEAR	MEALS		5.7 m ²
D4	2127 SGD	ALUMINIUM SLIDING GLASS DOOR	2100	2100	2700	DOUBLE CLEAR	LIVING		5.7 m ²
EXTERIOR: 4									15.0 m ²

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Project: [Redacted]		
[Redacted] COUNTRY LIVING SERIES		
[Redacted] [Redacted] [Redacted]		
[Redacted] MHS [Redacted]		
[Redacted] -		
[Redacted] -		

Drawing: [Redacted]

Client: [Redacted]

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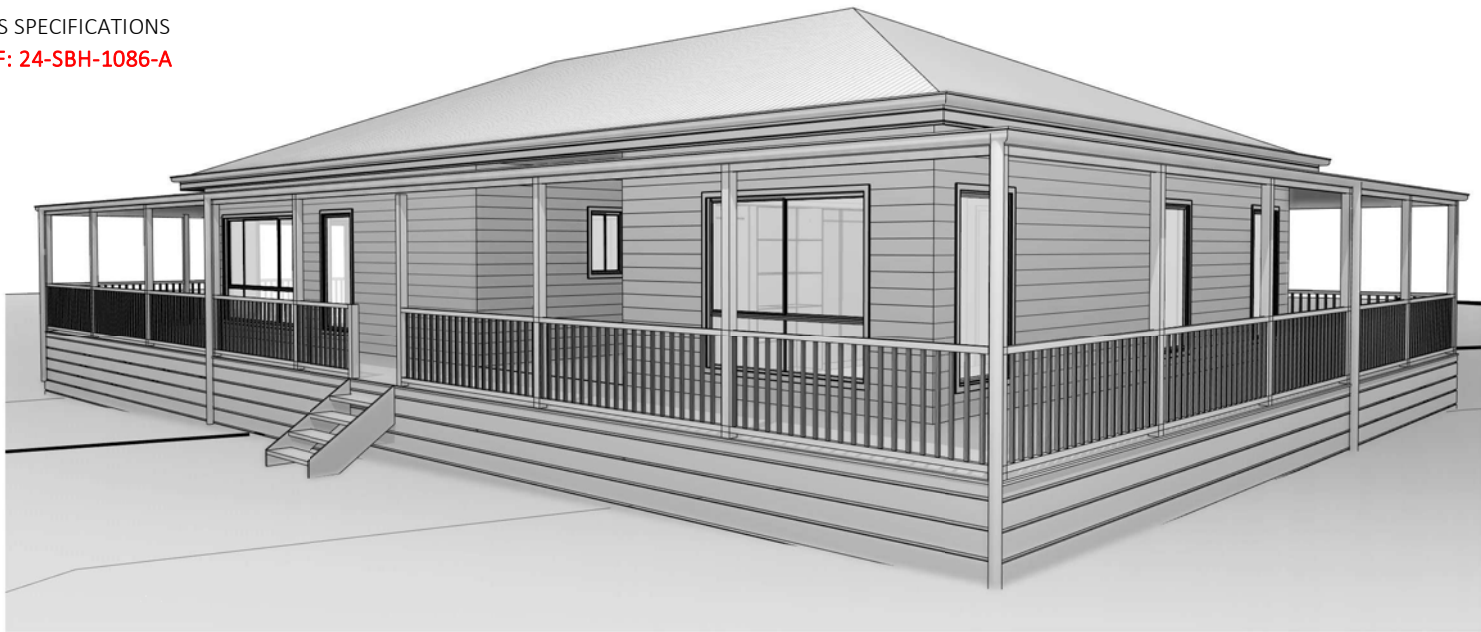
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Project No. [Redacted] [Redacted] 07 08

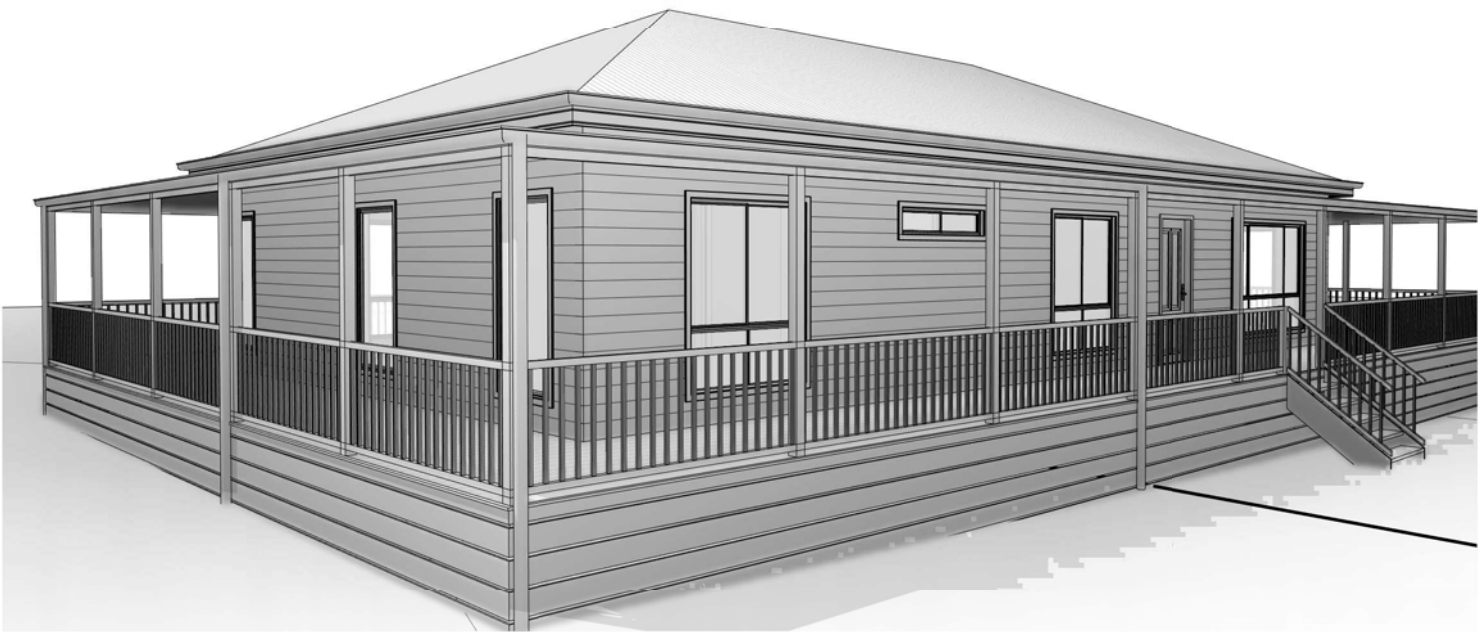
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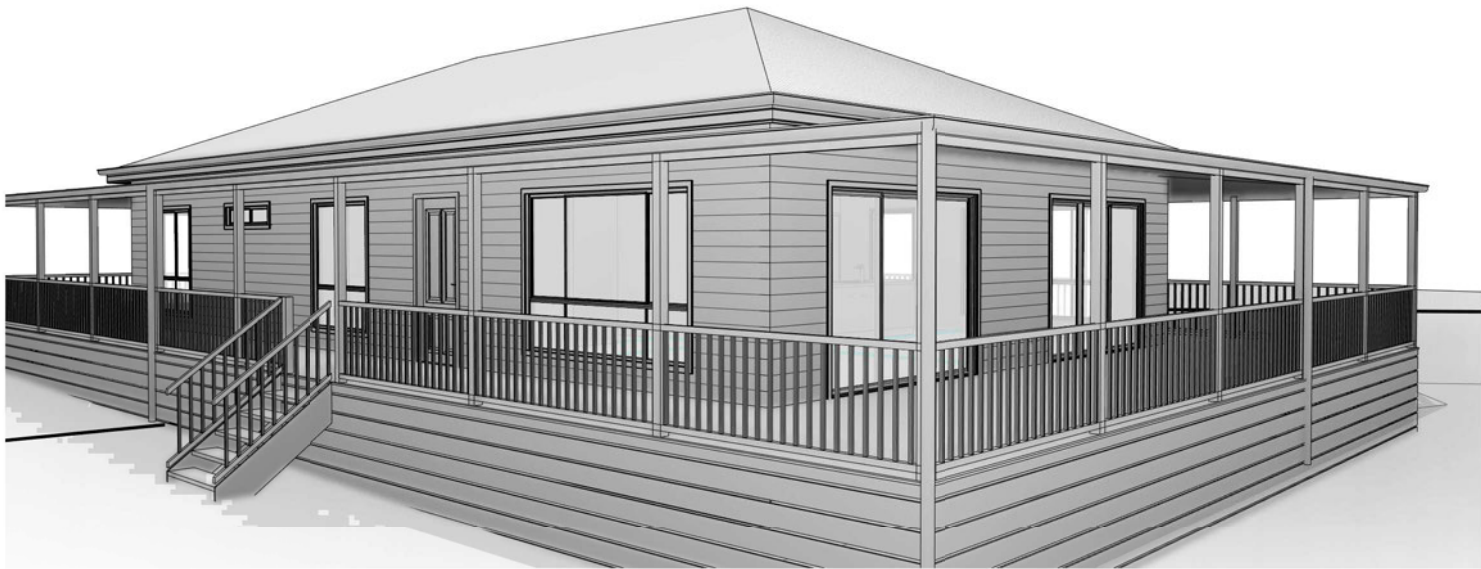
3D VIEW 1




3D VIEW 2



3D VIEW 3



3D VIEW 4



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Series: COUNTRY LIVING SERIES		
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Drawn MHS	Project Manager:	
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Approved By: Approver	Project No. B1188	
		Sheet No. 08 OF 08

Drawing: PERSPECTIVE VIEWS

Client: [REDACTED]

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REGISTER SEARCH STATEMENT (Title Search) Transfer of Land Act 1958

Page 1 of 1

VOLUME 09386 FOLIO 231

Security no : 124118484753D
Produced 23/09/2024 04:13 PM

LAND DESCRIPTION

Crown Allotment 26 Section W Parish of Lillicur.
PARENT TITLE Volume 09039 Folio 688
Created by instrument H774986 23/11/1979

REGISTERED PROPRIETOR

Estate Fee Simple

AL395447F 01/10/2014

ENCUMBRANCES, CAVEATS AND NOTICES

For details of any other encumbrances see the plan or imaged folio set out under DIAGRAM LOCATION below.

DIAGRAM LOCATION

SEE TP261559W 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: 185 PEACOCK TRACK LILLICUR VIC 3371

DOCUMENT END

Imaged Document Cover Sheet

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Document Type	Plan
Document Identification	TP261559W
Number of Pages (excluding this cover sheet)	1
Document Assembled	06/08/2024 10:33

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TITLE PLAN		EDITION 1	TP 261559W
<div>Location of Land</div> <div>Parish: LILICUR</div> <div>Township:</div> <div>Section: W</div> <div>Crown Allotment: 26</div> <div>Crown Portion:</div> <div>Last Plan Reference:</div> <div>Derived From: VOL 9386 FOL 231</div> <div>Depth Limitation: 15.24 m</div>		<div>Notations</div> <div>ANY REFERENCE TO MAP IN THE TEXT MEANS THE DIAGRAM SHOWN ON THIS TITLE PLAN</div>	
Description of Land / Easement Information		<div>THIS PLAN HAS BEEN PREPARED FOR THE LAND REGISTRY, LAND VICTORIA, FOR TITLE DIAGRAM PURPOSES AS PART OF THE LAND TITLES AUTOMATION PROJECT</div> <div>COMPILED: 06-01-2000</div> <div>VERIFIED: A.D.</div>	
<div></div>			
LENGTHS ARE IN METRES		Metres = 0.3048 x Feet Metres = 0.201168 x Links	Sheet 1 of 1 sheets

BUSHFIRE MANAGEMENT PLAN



LEGEND

BAL 29

DEFENDABLE SPACE (ACCOMMODATION BUILDING) = FOREST (NORTH AND WEST) - UPSLOPE/FLAT = 25.0 METRES; FOREST (SOUTH AND EAST) - DOWNSLOPE >0-5° = 32.0 METRES. THE MINIMUM CONSTRUCTION STANDARD IS BAL 29. TABLE 2 DEFENDABLE SPACE AND CONSTRUCTION, CLAUSE 53.02.



WATER TANK AND OUTLET DIRECTION

WATER SUPPLY

- UNLESS OTHERWISE AGREED IN WRITING BY THE RELEVANT FIRE AUTHORITY, THE WATER SUPPLY MUST:
- BE STORED IN AN ABOVE GROUND WATER TANK CONSTRUCTED OF CONCRETE OR METAL.
 - HAVE ALL FIXED ABOVE GROUND WATER PIPES AND FITTINGS REQUIRED FOR FIREFIGHTING PURPOSES MADE OF CORROSIVE RESISTANT METAL.
 - INCLUDE A SEPARATE OUTLET FOR OCCUPANT USE.

WHERE A 10,000 LITRE WATER SUPPLY IS REQUIRED, FIRE AUTHORITY FITTINGS AND ACCESS MUST BE PROVIDED AS FOLLOWS:

- BE READILY IDENTIFIABLE FROM THE BUILDING OR APPROPRIATE IDENTIFICATION SIGNS TO THE SATISFACTION OF THE RELEVANT FIRE AUTHORITY.
- BE LOCATED WITHIN 60 METRES OF THE OUTER EDGE OF THE APPROVED BUILDING.
- THE OUTLET/S OF THE WATER TANK MUST BE WITHIN 4 METRES OF THE ACCESSWAY AND UNOBSTRUCTED.
- INCORPORATE A SEPARATE BALL OR GATE VALVE (BRITISH STANDARD PIPE (BSP 65 MILLIMETRE) AND COUPLING (64 MILLIMETRE CFA 3 THREAD PER INCH MALE FITTING).
- ANY PIPEWORK AND FITTINGS MUST BE A MINIMUM OF 65 MILLIMETRES (EXCLUDING THE CFA COUPLING).

ACCESS

SHOW ACCESS FOR FIREFIGHTING PURPOSES WHICH MEETS THE FOLLOWING REQUIREMENTS:

- ALL-WEATHER CONSTRUCTION
- A LOAD LIMIT OF LEAST 15 TONNES
- PROVIDE A MINIMUM TRAFFICABLE WIDTH OF 3.5 METRES.
- BE CLEAR OF ENCROACHMENTS FOR AT LEAST 0.5 METRES ON EACH SIDE AND AT LEAST 4 METRES VERTICALLY.
- CURVES MUST HAVE A MINIMUM INNER RADIUS OF 10m.
- THE AVERAGE GRADE MUST BE NO MORE THAN 1 IN 7 (14.4%) (8.1') WITH A MAXIMUM GRADE OF NO MORE THAN 1 IN 5 (20%) (11.3') FOR NO MORE THAN 50 METRES.
- DIPS MUST HAVE NO MORE THAN A 1 IN 8 (12.5%) (7.1') ENTRY AND EXIT ANGLE.
- PASSING BAYS MUST BE PROVIDED AT LEAST EVERY 200 METRES.
- PASSING BAYS MUST BE A MINIMUM OF 20 METRES LONG WITH A MINIMUM TRAFFICABLE WIDTH OF 6 METRES.

- A TURNING AREA WILL BE PROVIDED FOR FIRE FIGHTING VEHICLES CLOSE TO THE BUILDING BY ONE OF THE FOLLOWING:
- A TURNING CIRCLE WITH A MINIMUM RADIUS OF EIGHT METRES.
 - A DRIVEWAY ENCIRCLING THE DWELLING.
 - THE PROVISION OF OTHER VEHICLE TURNING HEADS (SUCH AS A T OR Y HEAD) WHICH MEET THE SPECIFICATION OF AUSTRROAD DESIGN FOR AN 8.8 METRE SERVICE VEHICLE.

- DEFENDABLE SPACE NOTES**
- DEFENDABLE SPACE IS TO BE PROVIDED FOR DISTANCE OF 32.0 METRES TO ALL SIDES OF THE BUILDING 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 METRES OF A BUILDING, FLAMMABLE OBJECTS MUST NOT BE LOCATED CLOSE TO THE VULNERABLE PARTS OF THE BUILDING.
 - PLANTS GREATER THAN 10 CENTIMETRES 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 5 SQ. METRES IN AREA AND MUST BE SEPARATED BY AT LEAST 5 METRES.
 - TREES MUST NOT OVERHANG OR TOUCH ANY ELEMENTS OF THE BUILDING.
 - THE CANOPY OF TREES MUST BE SEPARATED BY AT LEAST 5 METRES.
 - THERE MUST BE A CLEARANCE OF AT LEAST 2 METRES BETWEEN THE LOWEST TREE BRANCHES AND GROUND LEVEL.

CONSTRUCTION STANDARDS
NOMINATE A MINIMUM BUSHFIRE ATTACK LEVEL OF BAL 29 THAT THE FUTURE BUILDINGS WILL BE DESIGNED AND CONSTRUCTED TO.

BENDIGO PLANNING SERVICES

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CLIENT:



PROJECT:

BUSHFIRE MANAGEMENT PLAN,
185 PEACOCK TRACK (CA26,
SECTION W), LILLICUR, VICTORIA.

REVISIONS:

REV #	DATE	DRAWN	DESCRIPTION
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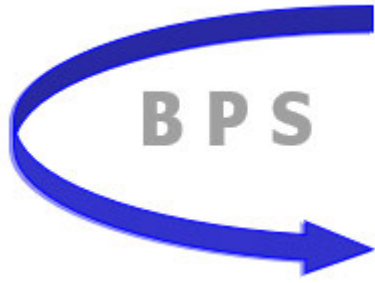
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DWG No.

2405004-BMS

SHEET.

2 of 3



BENDIGO
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Bushfire Management Statement

Central Goldfields Shire Council

Proposal: Rural residential use and development.



Address: 185 Peacock Track (CA26, Section W), Lillicur,
Victoria.

Report No: BMS/2405004
Date: 30/09/2024 amended

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Rev	Date	Details
A	27/05/2024	Initial draft
B	12/06/2024	Submission draft
C	30/09/2024	Amended clerical error
D		



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1.0 Introduction.

Proposal: Rural residential use and development.

Property address: 185 Peacock Track, Lillicur, Victoria.

Land parcel: CA26, Section W, Parish of Lillicur

Property number: 35080.0185

Existing and/or previous land use: Residential and land management practices with associated development present.

This Bushfire Management Statement has been prepared in accordance with Clause 44.06 - Bushfire Management Overlay, Clause 53.02 – Planning for bushfire and Clause 52.12 – Bushfire protection: Exemptions of the Central Goldfields Planning Scheme. The statement contains the following three components:

- A site and locality description that addresses the existing site and locality conditions in accordance with the application requirements of Clause 44.06-3, and
- A section indicating how the application meets the relevant objectives and decision guidelines of the applicable Local and State policies and the applicable land planning controls.

185 Peacock Track is an irregular shaped, residential developed slightly undulating land parcels of ~14.50 hectares in size that is on the Southern side of the roadway, at the intersection with Solomano lane and some 220.0 metres South/East of the intersection with Quartz Lane. The site currently holds numerous outbuildings of various sizes, formalised entry/exit point connected to an all-weather internal accessway, water storage dam, sections of grass coverage along with mixed vegetation coverage across the Northern section (East/West axis). It has a varied topography fall mainly from a high point in the middle of the site to the South-South/East, the Mia-Mia Creek traversing through the Southern section of the site, with rural style post and wire fencing delineating the site. The Western section directly abuts land with residential development, the Northern, Southern and Eastern boundaries all adjoin vegetated and un-developed land. The surrounding environment contains the following built and natural features that may impact on the bushfire hazard associated with the site.

The site has been assessed as follows:

- Topography – Varying predominantly 0-5°.
- Vegetation – Density and linkages to adjoining properties.
- Orientation – North/South predominantly (development area)
- Access provisions – Currently one nominated access point.
- Water provisions – No reticulated service.
- Adjoining properties – Density of vegetation cover and residential development.

The bushfire protection measures are as follows:

- FDI = 100
- Radiant heat flux; $q = \text{kW/m}^2$
- Vegetation classification = Forest
- Building siting from classifiable vegetation = 70.0 - 200.0 metres
- Slope = Upslope/Flat (North and West) and Downslope >0-5° (South and East)
- Defendable space (accommodation building) = Forest (North and West) - Upslope/Flat = 25.0 metres: Forest (South and East) – Downslope >0-5° = 32.0 metres. The minimum construction standard is BAL 29. Table 2 Defendable space and construction, Clause 53.02.

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Note. The Forest – Downslope >0-5° – BAL 29 defendable space distance of 32.0 metres is to be adopted to all sides of the proposed dwelling in accordance with the CFA - Applying the Bushfire Hazard Landscape Assessment in a Bushfire Management Overlay and the DELWP - Planning Permit Applications Bushfire Management Overlay Technical Guide, September 2017 documents’.

Using the Bushfire Attack Level, Method 1 of AS3959-2009 and Clause 53.02 of the Central Goldfields Planning Scheme it is determined that the site is suitable for a BAL 29 rating. Construction requirements would be as per Construction for Bushfire Attack Level 29 (BAL 29).

Siting justification.

Consideration was given to current outbuilding sitings, existing servicing infrastructure, winter month moisture retention areas, the vegetation density and coverage, topography of the site, existing access provisions as well as the areas set aside for the domestic wastewater treatment and existing overland water flow paths.

Given the directives to reduce the impacts upon the landscape elements from new use and development the overall proposal would produce less impacts upon the site environmental elements and would not present an unreasonable risk to the future occupants.

- Forest (all directions) – predominantly a Forest type landscape due to a more enclosed and dense canopy, mid story and ground cover coverage % with minor residential development present within cleared sections along the main roadways.

2.0 Application summary.

The proposal incorporates the following:

- It is proposed to use the site for rural residential purposes only.
- It is proposed to develop a new ~172.70m² dwelling on-site. The dwelling would contain:
 - 3 bedrooms
 - Passage
 - Laundry
 - Water closet
 - Walk in pantry
 - Kitchen/meals/living area
 - Bathroom
 - Alfresco
 - External verandah to all sides of the dwelling
 - Colourbond roofing and fascia material
 - Sliding windows
 - Sliding and hinged doors
 - Selected external cladding
- The dwelling would be sited ~32.0 – 35.02 metres from the Southern boundary, ~72.61 metres from the Eastern boundary and >10.0 metres West of the main existing outbuilding. The siting

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offers a slight topography fall and can utilise this for the natural fall to the indicated wastewater fields.

- It is proposed to utilise the existing entry/exit point from the Peacock Track frontage to service the overall proposal.
- It is proposed to re-develop the existing all-weather internal accessway to service the overall proposal.
- It is proposed to install water storage tanks for a potable water supply.
- Native vegetation removal has not been indicated as part of the proposal to establish the internal accessway, the installation of the service provisions and the required defensible space provisions.
- It is not proposed to undertake an agricultural activity based on either stock keeping and/or produce growing on-site as the size of the land is not supportive of a viable productive model. Any intensive agricultural use upon the site would be to the detriment of the existing small scale agricultural and rural residential landholders within the immediate area.

The accommodation building would each be supported by suitably constructed water storage tank/s with a minimum 10,000 litres capacity for unhindered emergency supplies only with CFA fittings and access requirements. It is considered that the developed residential property would be in accordance with the relevant Authority stipulations. Any variation away from such information may impact on the Bushfire Management Statement assessment and subsequently the contents of this report.

3.0 Site and locality details.

185 Peacock Track is an irregular shaped, residential developed slightly undulating land parcels of ~14.50 hectares in size that is on the Southern side of the roadway, at the intersection with Solomano lane and some 220.0 metres South/East of the intersection with Quartz Lane. The site currently holds numerous outbuildings of various sizes, formalised entry/exit point connected to an all-weather internal accessway, water storage dam, sections of grass coverage along with mixed vegetation coverage across the Northern section (East/West axis). It has a varied topography fall mainly from a high point in the middle of the site to the South-South/East, the Mia-Mia Creek traversing through the Southern section of the site, with rural style post and wire fencing delineating the site.

The Western section directly abuts land with residential development, the Northern, Southern and Eastern boundaries all adjoin vegetated and un-developed land. It has direct connection with Peacock Track, the Talbot Nature Conservation Reserve and the Bung Bong-Lillicur State Forest basically surround the site, with the site not historically been utilised for high volume agricultural return.

The immediate and adjoining properties generally hold a dwelling and associated outbuilding (s), mixed native vegetation (grass, mid story and upper story), water storage tanks and dams, with no distinct agriculture activities undertaken. The extent of the existing and newly approved dwelling shows cause as to low agricultural value of the land and the actual contributory value of the residential use and development as a suitable alternative.

The area directly to the North on an East/West arc contains rural residential land holdings, scattered small environmental land, larger conservation land (Talbot Nature Conservation Reserve and the Bung Bong-Lillicur State Forest) as well as some agricultural land holdings along Lillicur Road corridor. The area to the South on an East/West arc having a very similar makeup as to the North, with the township of Talbot is located ~6.0 kilometres directly East of the site, There are some existing agricultural based productive land holdings within the local area used for a variety of things, such as stock keeping, cropping, with associated residency attached. Such properties have a buffer to the site (environmental land, rural based development etc) in question so impacts upon the proposal from the agricultural activities undertaken would be deemed minimal, and vise versa.

Rainfall, temperature and wind note.

- Rainfall data obtained from the Bureau of Meteorology, Maryborough Station, indicates that a mean rainfall of 525.90mm has been recorded for the region.
- Wind speed and direction data obtained from the Bureau of Meteorology, Maryborough Station, indicates that the area has a mean wind speed of 11.8 km/h with the higher % from the South, South/West.
- Temperature data obtained from the Bureau of Meteorology, Maryborough Station indicates that the area has a mean maximum temperature of 20.5 degrees with a mean minimum temperature of 8.1 degrees.

Photographs of classifiable vegetation.

View North. Forest – Upslope/Flat.



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View East. Forest – Downslope >0-5°.



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View South. Forest – Downslope >0-5°.



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View West. Forest – Upslope/Flat.



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Figure 1 - Site aerial view. (development section only)

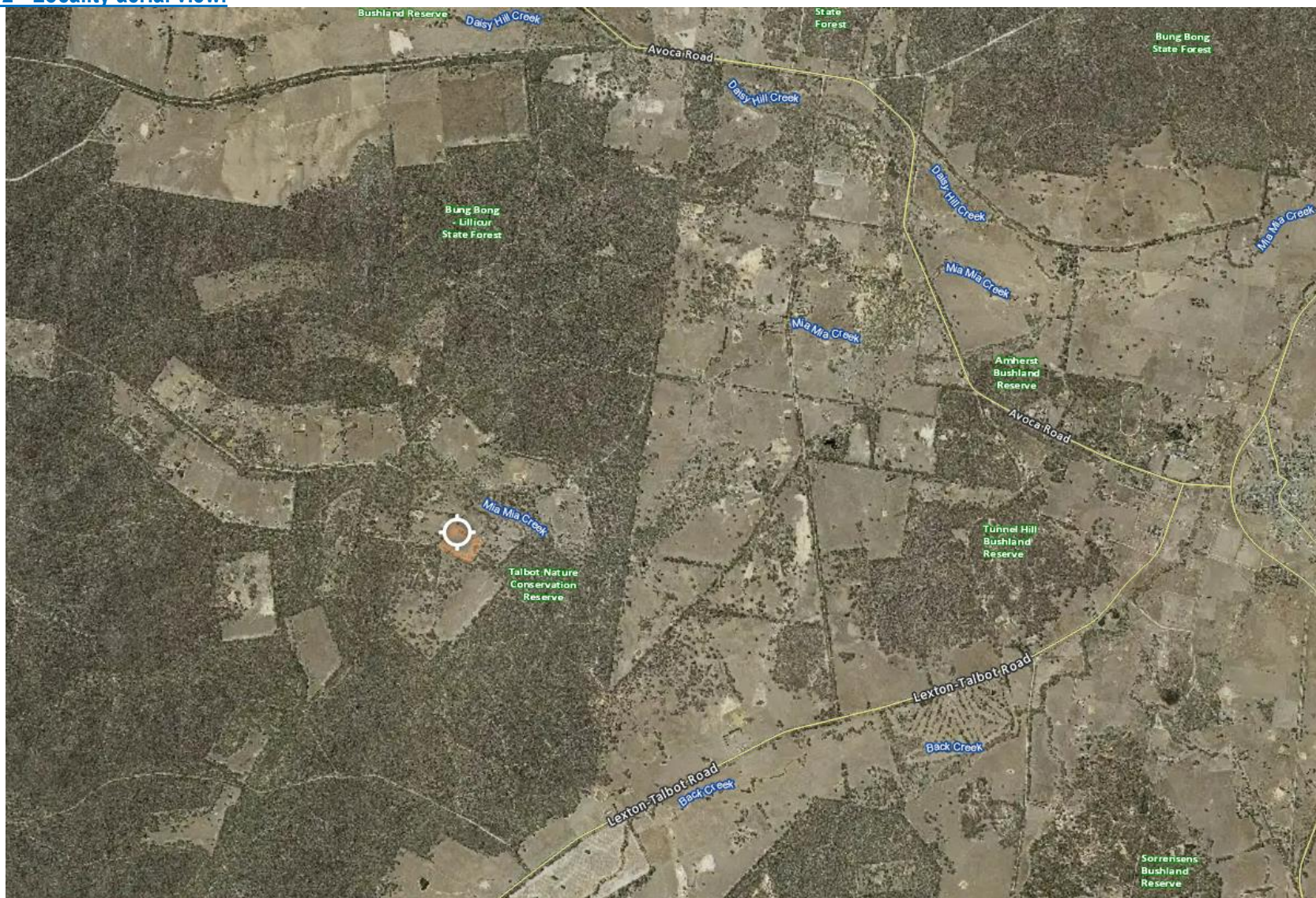


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Figure 2 - Locality aerial view.



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4.0 Central Goldfields Planning Scheme.

Clause 44.06 – Bushfire Management Overlay.

The purpose of the overlay is as follows:

- 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.

The decision guidelines of the Overlay are as follows:

- The Municipal Planning Strategy and the Planning Policy Framework.
 - The provisions of the policies have been considered, and it is deemed that the proposed development is compatible and complements the strategic direction and policies of the Central Goldfields Planning Scheme.
- Any other matters specified in a schedule to this overlay.
 - The site is not within a Schedule to the Bushfire Management Overlay of the Central Goldfields Planning Scheme.

52.12 – Bushfire protection exemptions.

52.12-5 - Exemption to create defensible space for a dwelling approved under Clause 44.06 of this planning scheme.

Any requirement of a planning permit, including any condition, which has the effect of prohibiting the removal, destruction or lopping of vegetation, or any requirement of this planning scheme to obtain a planning permit, or any provision of this planning scheme that prohibits the removal, destruction or lopping of vegetation or requires the removal, destruction or lopping of vegetation to be carried out in a particular manner, does not apply to the removal, destruction or lopping of vegetation to construct a dwelling and create its defensible space if all of the following requirements are met:

- Land is in the Bushfire Management Overlay.
- Land is in the General Residential Zone, Residential Growth Zone, Neighbourhood Residential Zone, Urban Growth Zone, Low Density Residential Zone, Township Zone, Rural Living Zone, Farming Zone or Rural Activity Zone.
- The removal, destruction or lopping of vegetation:

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- Does not exceed the distance specified in Table 1 to Clause 53.02-3 of this planning scheme, based on the bushfire attack level determined by a relevant building surveyor in deciding an application for a building permit under the Building Act 1993 for a dwelling or alteration or extension to the dwelling; or
- Is required to be undertaken by a condition in a planning permit issued after 31 July 2014 under Clause 44.06 of this scheme for a dwelling or an alteration or extension to the dwelling.

Response.

As the proposal is for residential development that falls within Clause 35.03 – Rural Living Zone (RLZ) and Clause 44.06 – Bushfire Management Overlay (BMO) then the listed exemption provisions apply to the application due to the Zone controls.

53.02 – Bushfire planning.

The purpose of Clause 53.02 is as follows:

- 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 ensure that the location, design and construction of development appropriately responds to the bushfire hazard.
- To ensure development is only permitted where the risk to life, property and community infrastructure from bushfire can be reduced to an acceptable level.
- To specify location, design and construction measures for a single dwelling that reduces the bushfire risk to life and property to an acceptable level.

Response.

As the proposal triggers planning approval due to being located within the Overlay control area, consideration was given to the importance of adopting suitable protection measures on-site to ensure a safe and functional environment is created.

Note.

As the proposal is for residential use and development within Clause 35.03 – Rural Living Zone (RLZ) and Clause 44.06 – Bushfire Management Overlay (BMO) that is deemed as to meet the Approved Measures under 53.02-4 (as listed under 53.02), then these provisions apply to the application, Pathway 2.

53.02-4 - Bushfire protection objectives.

53.02-4.1 - 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.

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Approved Measures.

Measure	Requirements
AM 2.1	The bushfire risk to the development from the landscape beyond the site can be mitigated to an acceptable level.
AM 2.2	<p>A building is sited to ensure the site best achieves the following:</p> <ul style="list-style-type: none"> • The maximum separation distance between the building and the bushfire hazard. • The building is in close proximity to a public road. • Access can be provided to the building for emergency service vehicles.
AM 2.3	A building is designed to be responsive to the landscape risk and reduce the impact of bushfire on the building.

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.

Approved Measures.

Measure	Requirements
AM 3.1	<p>A building used for a dwelling (including an extension or alteration to a dwelling), small second dwelling, industry, office or retail premises is provided with defendable space in accordance with:</p> <ul style="list-style-type: none"> • 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. <p>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.</p>

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.

Approved measures.

Measure	Requirement
AM 4.1	<p>A building used for a dwelling (including an extension or alteration to a dwelling), a dependant person's unit, industry, office or retail premises is provided with:</p> <ul style="list-style-type: none"> • A static water supply for fire fighting and property protection purposes specified in Table 4 to Clause 53.02-5.

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	<ul style="list-style-type: none"> Vehicle access that is designed and constructed as specified in Table 5 to Clause 53.02-5. <p>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.</p>
--	--

53.02-4.5 Decision guidelines.

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

- The Municipal Planning Strategy and the Planning Policy Framework.
- The bushfire hazard landscape assessment, the bushfire hazard site assessment and the bushfire management statement submitted with the application.
- The impact of any State, regional or local bushfire management and prevention actions occurring around the site and in the wider area on the bushfire hazard and the level of risk to the proposed development.
- Whether the proposed development meets the objectives of Clause 52.47-2 regardless of other measures which may be available, including private bushfire shelters, community shelters and the presence of places of last resort.
- Whether the proposed measures can be practically implemented and maintained in conjunction with the ongoing use of the land.
- Whether the use of an alternative measure meets the relevant objective having regard to the bushfire hazard and the nature of any constraint that prevents the applicable approved measure from being implemented.
- If one or more of the objectives in Clause 53.02-4 will not be achieved in the completed development, whether the development will, taking all relevant factors into account, reduce the bushfire risk to a level that warrants it proceeding.
- Whether the risk arising from the broader landscape can be mitigated to an acceptable level or warrants the development not proceeding.

Response.

AM 2.1 – The risk to the development from the surrounding hazard can be managed with the inclusion of the indicated Forest – Downslope >0-5° – BAL 29 defendable space distance of 32.0 metres to all sides of the accommodation building (dwelling). The future developed site would require ongoing maintenance as to provide a safe environment, while the internal accessway would have regular maintenance to provide a safe transport facility. It is considered that the existing adjoining and surrounding vegetated rural residential developed land holdings would receive ongoing maintenance as part of the existing safe functioning residency, but due to the density of the existing environmental land, this is not factored in.

- The DELWP, Loddon Mallee Bushfire Management Strategy 2020 identifies fuel and landscape management strategies which takes into account planned environmental burns as well as the adoption of the Bushfire Moderation Zone (BMZ) and Landscape Managements Zone (LMZ) particular to the area.
- The Central Goldfields Shire Council Neighbourhood safer places plan, September 2019 in conjunction with the Northern Victorian Integrated Municipal Emergency Management

Plan: Central Goldfields Shire, September 2020 outlines fire risk strategies, potential risk and impact severity from typical fires for the overall region and suitable response activities.

- The local Talbot Fire Brigade (CFA unit) can be contacted on a 24-hour period for emergencies.
- Utilising the CFA 'Neighbourhood Safer Places system and the Central Goldfields Shire Council Neighbourhood safer places plan, September 2019, there appears to be a local designated fire protection or safe zone listed at Pioneer Park Talbot.
- Using the Technical Guide to Planning Permit Applications within the Bushfire Management Overlay (DELWP 2017) the landscape maybe determined as a Type Three (The site is located in an area that is not managed in a minimum fuel condition).
- Forest Fire Management Victoria indicates that the area around the site has a low to intermediate risk of bushfire (<https://bushfireplanning.ffm.vic.gov.au/loddon-mallee-central/>) and is under the Landscape Management Zone (LMZ) strategy

AM 2.2 - The accommodation building (dwelling) is to be located within an area of the site less prone to water saturation during the wetter months, allows for greater solar access and energy rating provisions, provides a greater separation to the determined landscape and fire risk areas, as well as requiring less earthworks as to establish. The siting will utilise a formed access point to Peacock Track and the internal access provisions suitable for emergency vehicles, with the siting requiring infrastructure installation and vegetation removal to establish.

AM 2.3 – The proposed accommodation building employs a simple rectangular design that presents minimal roof catchment points and roof line eaves as well as being orientated to give clear provisions to the accessway and roadway. The design and siting provide for the required energy rating and solar access.

AM 3.1 –The BAL 29 Forest – Downslope >0-5° defensible space distance of 32.0 metres is to be provided to all sides of the proposed accommodation building, with the development having a minimum construction standard of a BAL 29 to be adopted.

AM 4.1 - The proposed dwelling would be provided with a minimum of 10,000 litres of static water in a non-combustible tank with CFA compatible fittings, signage and access requirements.

Bushfire site assessment.

	North	South	East	West
Vegetation type	Forest	Forest	Forest	Forest
	Woodland	Woodland	Woodland	Woodland
	Shrubland	Shrubland	Shrubland	Shrubland
	Scrub	Scrub	Scrub	Scrub
	Mallee/Mulga	Mallee/Mulga	Mallee/Mulga	Mallee/Mulga
	Rainforest	Rainforest	Rainforest	Rainforest
	Grassland	Grassland	Grassland	Grassland
	Excludable	Excludable	Excludable	Excludable
	Low threat	Low threat	Low threat	Low threat
	Modified	Modified	Modified	Modified
Distance to classifiable vegetation	100.0 meters	90.0 meters	70.0 meters	200.0 meters

	North	South	East	West
Approximate Slope				
Upslope/Flat	Upslope/Flat	Downslope	Downslope	Upslope/Flat
Downslope	>0-5°	>0-5°	>0-5°	>0-5°
	>5-10°	>5-10°	>5-10°	>5-10°
	>10-15°	>10-15°	>10-15°	>10-15°
	>15-20°	>15-20°	>15-20°	>15-20°

The site has been assessed as follows:

- Topography – Varying predominantly 0-5°.
- Vegetation – Density and linkages to adjoining properties.
- Orientation – North/South predominantly (development area)
- Access provisions – Currently one nominated access point.
- Water provisions – No reticulated service.
- Adjoining properties – Density of vegetation cover and residential development.

The bushfire protection measures are as follows:

- FDI = 100
- Radiant heat flux; $q = \text{kW/m}^2$
- Vegetation classification = Forest
- Building siting from classifiable vegetation = 70.0 - 200.0 metres
- Slope = Upslope/Flat (North and West) and Downslope >0-5° (South and East)
- Defendable space (accommodation building) = Forest (North and West) - Upslope/Flat = 25.0 metres: Forest (South and East) – Downslope >0-5° = 32.0 metres. The minimum construction standard is BAL 29. Table 2 Defendable space and construction, Clause 53.02.

Note. The Forest – Downslope >0-5° – BAL 29 defendable space distance of 32.0 metres is to be adopted to all sides of the proposed dwelling in accordance with the CFA - Applying the Bushfire Hazard Landscape Assessment in a Bushfire Management Overlay and the DELWP - Planning Permit Applications Bushfire Management Overlay Technical Guide, September 2017 documents'.

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Using the Bushfire Attack Level, Method 1 of AS3959-2009 and Clause 53.02 of the Central Goldfields Planning Scheme it is determined that the site is suitable for a BAL 29 rating. Construction requirements would be as per Construction for Bushfire Attack Level 29 (BAL 29).

5.0 Conclusion.

It is considered that the configuration of the site addresses and is deemed to be in accordance with the provisions of the Central Goldfields Planning Scheme. The site could provide for residential use and development consistent with the policy directions of the Scheme including the Incorporated and Referenced Documents.

The Central Goldfields Shire Council has identified the potential risks to life, property and community infrastructure from inappropriately located land use and development within a bushfire prone area. The Council has given consideration to the nature of bushfire within the local environment and the close proximity of the future proposed residential development to the vegetation interface, and the risks involved. Through the guidance of the relevant planning provisions the Council is promoting safe and site and locality responsive use and development.

It is considered that by incorporating the appropriate BAL 29 stipulated bushfire protection measures to the site the proposed residential use and development would satisfy the direction of the Central Goldfields Shire Council and the Central Goldfields Planning Scheme provisions. Future residential use and development of the site must be assessed in accordance with the details of the proposal. The identified BAL ratings are indicative to the existing conditions.

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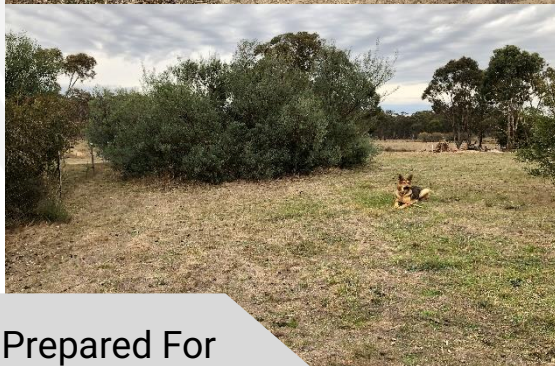
The findings contained in this report are the result of specific methodologies used in accordance with normal practices. They represent a reasonable interpretation of the relevant land controls, and the general condition of the site and surrounding natural and built environment at the time of investigation. If this document is to be used as part of a planning permit application with a mandatory referral to the Country Fire Authority (CFA) under Section 55 of the Planning and Environment Act 1987, the CFA official response and BAL construction standard recommendations may differ to that recommended within this report.

The report has carefully considered the proposed development, the existing site and surrounding natural and built form, relevant land controls and the latest information available at the time of production. The author does not guarantee that this report is without error, flaw, or omission of relevant data or information and disclaims all liability for any loss or consequence that may occur as a result of reliance upon this document or until formally endorsed by the relevant authority.



LAND CAPABILITY ASSESSMENT

185 Peacock Track, LILLICUR



Prepared For

Swan Build Pty Ltd

Issued:
11.06.24

Reference:
I1956

Primary

Min. Treatment Standard

LOW-
MOD.

Contraint Risk

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1 Introduction

1.1 THE CONSULTANT

Geocentral Engineering has been engaged to undertake a Land Capability Assessment (LCA) for a proposed residence. The field investigation and report was undertaken by Mr Darren Kosh who has appropriate professional indemnity insurance for this type of work.

1.2 REPORT SUMMARY

This report will accompany an application for a Septic Tank Permit to Install for an onsite wastewater management system for a residence. This document provides information about the site and soil conditions. It also provides a detailed LCA for the allotment and includes a conceptual design for a suitable onsite wastewater management system, including recommendations for monitoring and management requirements.

Either Primary or secondary treatment is considered appropriate for the allotment.

1.3 SITE OVERVIEW

The ~14.2ha allotment overies ordocivian hillscape.
The allotment has good grass cover with scattered shrubs onsite and existing shed to eat of proposed works.
Proposed development is in south-eastern corner of the lot.
No hydrophytic vegetation was observed within the Land Application Area (LAA).

Site lies within a declared water catchment.
Non-incised watercourse passes the parcel approximately 40m to the south-west.
Non Potable dam present adjacent to south-western boundary.
Potable Dam is present approx.. 20m south of the lot.
No groundwater boreholes were identified on the allotment.

The site is elevated approximately 260m AHD, above 1: 100-year flood levels.
The proposed construction and land application areas, have a mild ~8% fall towards the north-east; offering poor-fair surface drainage.

Existing residences neighbour the allotment, approximately 600m to the north-west, 350m north and west.

Access at the time of inspection was available via the north-western southern frontage onto Peacock Track.

There is adequate available land available for sustainable onsite effluent management that maintains the required buffers to protect surface waters and the floodways.

At the time of our inspection in May 2024, the land was firm & dry underfoot.



2 Description of the Development

Site Address: 185 Peacock Track, Lillicur 3371
(Allotment 26,W/ PP2994)
Owner/Developer: S+C White
Council Area: Central Goldfields Shire
Zoning: RLZ – Rural Living Zone.
Overlays: Bushfire Management Overlay (BMO)
Salinity Management Overlay (SMO)
Allotment Size: 14.2 ha.

Domestic Water Supply: Onsite tank water proposed

Anticipated Wastewater Load:

Proposed 3-bedroom residence @ four people max.
occupancy. = 600 L/day with full¹ water-reduction
fixtures. Wastewater generation = 150L/person/day; total
design load (source Table 4 of the EPA Code of Practice
891.3).

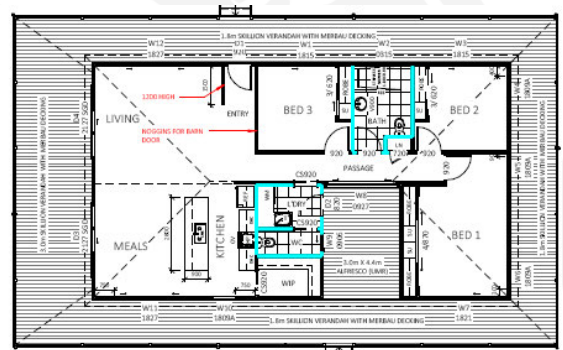


Figure 1: Floor Plan excerpt

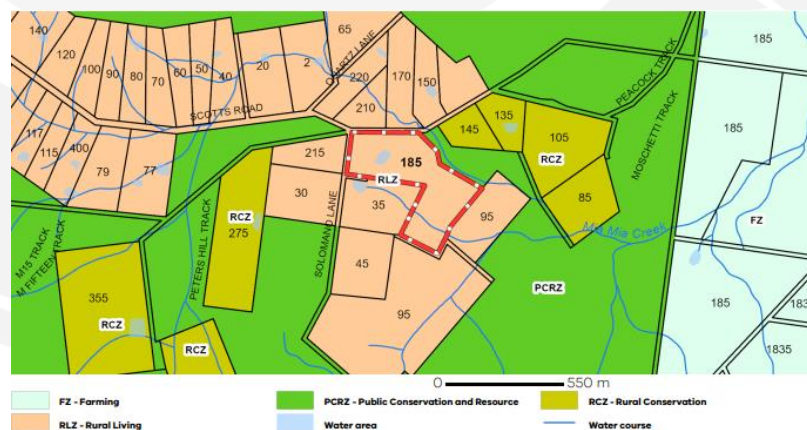
Availability of Sewer: The area is currently unsewered and highly unlikely to be sewerred within the foreseeable future, due to low development density in the area and the considerable distance from existing wastewater services.

Vehicle Access: Access is currently available via the northern boundary.

Category Risk: Medium

14.2ha (Low), <100m to watercourse (Low), >300m to reservoir (Low), Land not subject to inundation (Low), Soil Type; Red Dulex Soil (Med) (i.e. Sodosol), <10% slope (low), Density <1:40ha within catchment

Figure 2: Zoning



¹ WELS-rated water-reduction fixtures and fittings - minimum 4 Stars for dual-flush toilets, shower-flow restrictors, aerator taps, flow/pressure control valves and minimum 3 Stars for all appliances (e.g. water-conserving automatic clothes washing machines).

3 Site and Soil Assessment

Mr Darren Kosh undertook site investigations on 30th May 2024.

3.1 SITE KEY FEATURES

Table 1 summarises the key features of the site about effluent management proposed for the site.

NOTE:

- The site lies within the Loddon River (Laanecoorie) Declared Water Supply Catchment.
- The site experiences limited runoff from adjacent private land.
- The risk of effluent transport offsite is low-moderate, as identified in the Domestic Wastewater Management Plan.

An aerial photograph is provided in Figure 2 below, Figure 3 provides a locality plan of the allotment, while Appendix A provides a site plan showing the location of site features, the proposed land application area and required setback distances.

Figure 2: Aerial photograph

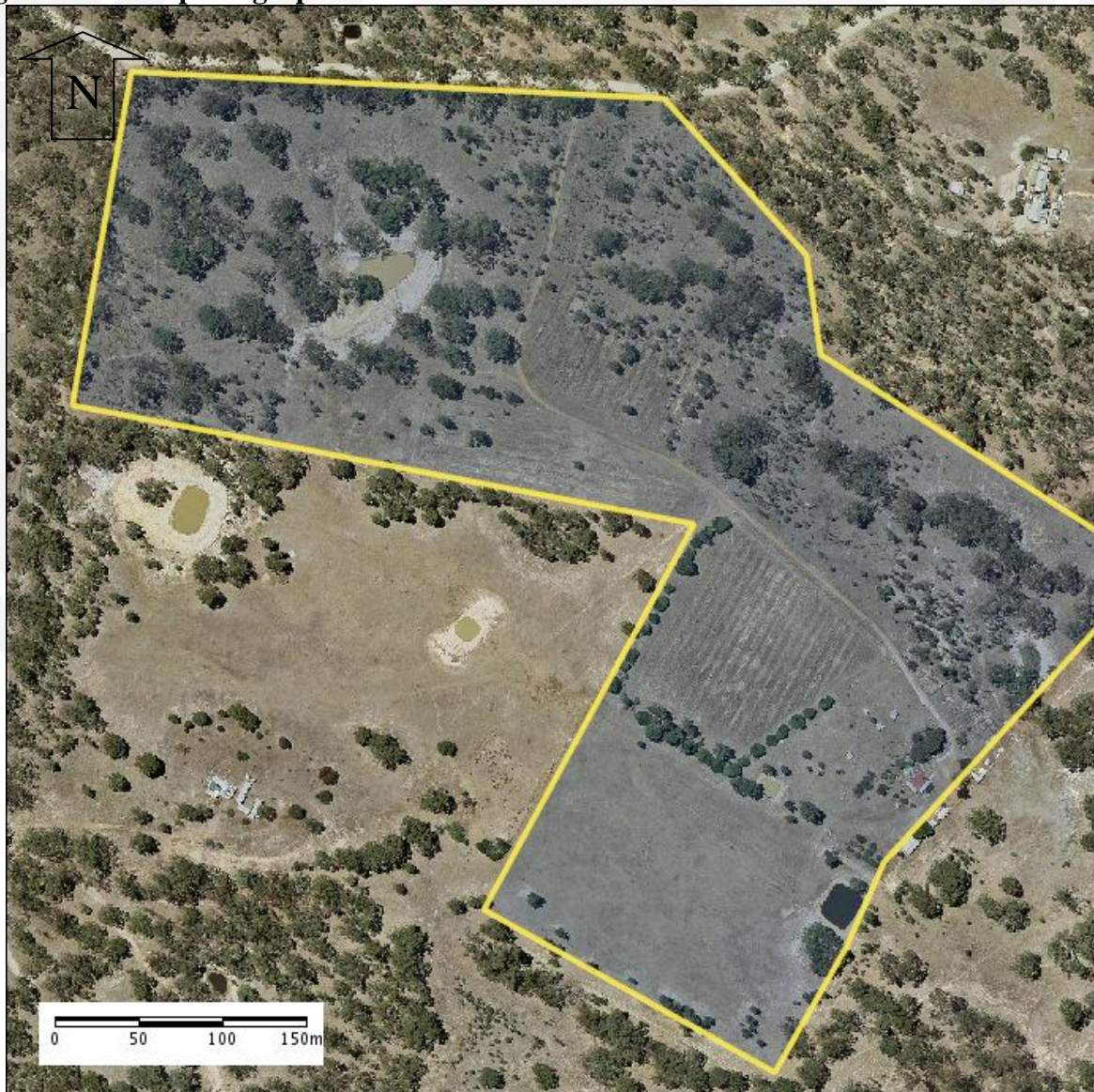


Figure 4: Locality Plan

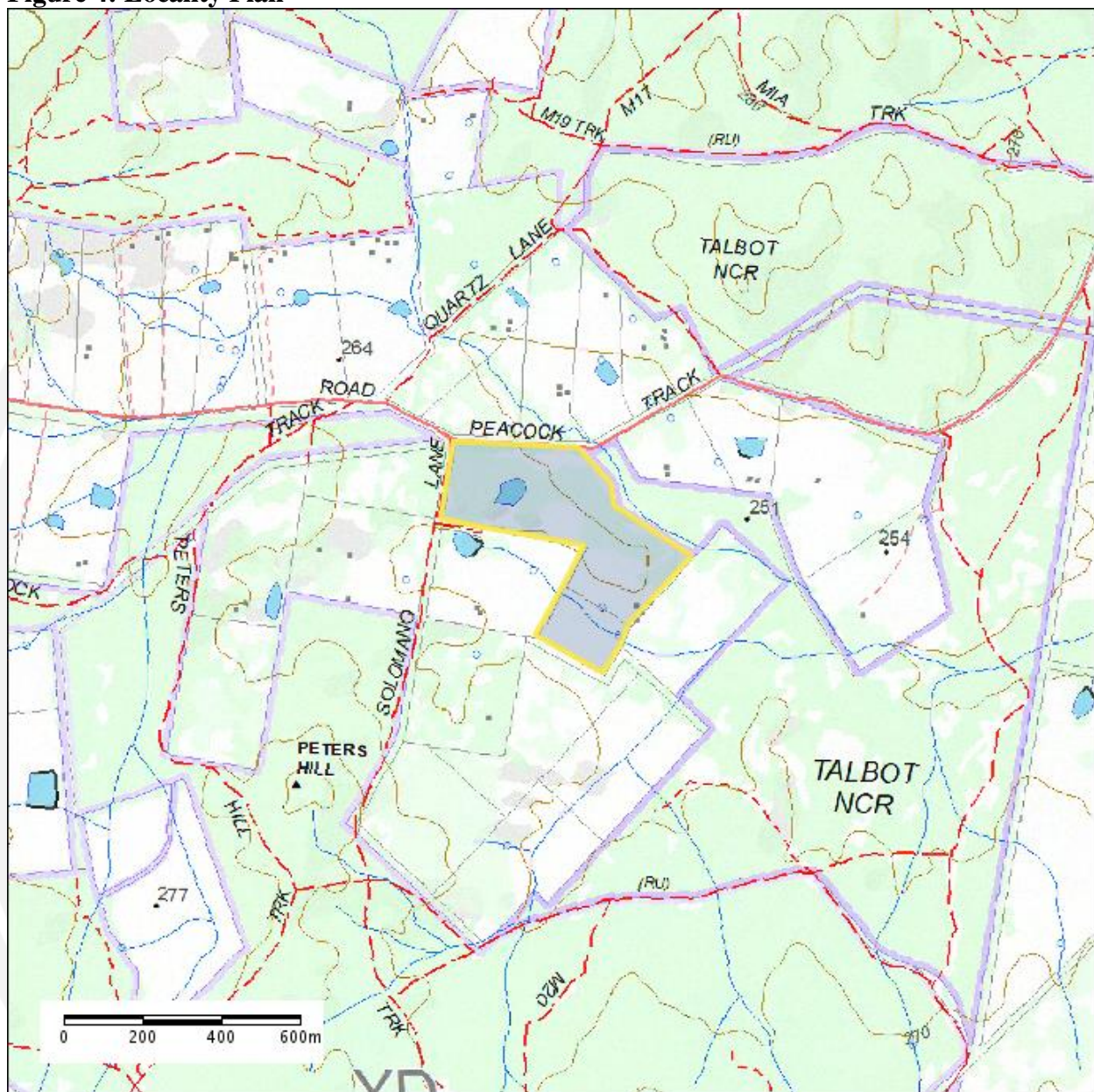


Table 1: Site Assessment

Feature	Description	Level of Constraint	Mitigation Measures																																																																																																																														
Buffer Distances	All appropriate secondary, buffer distances in Table 5 of the Code (2016) are achievable for the proposed effluent management area.	Minor	NN																																																																																																																														
Climate	<table><tr><th>Statistic</th><th>Jan</th><th>Feb</th><th>Mar</th><th>Apr</th><th>May</th><th>Jun</th><th>Jul</th><th>Aug</th><th>Sep</th><th>Oct</th><th>Nov</th><th>Dec</th><th>Annual</th></tr><tr><td>Mean</td><td>48.5</td><td>22.3</td><td>25.3</td><td>31.7</td><td>38.6</td><td>47.5</td><td>50.6</td><td>50.5</td><td>45.3</td><td>40.5</td><td>43.9</td><td>37.6</td><td>486.4</td></tr><tr><td>Lowest</td><td>0.0</td><td>0.6</td><td>0.8</td><td>2.2</td><td>7.8</td><td>4.4</td><td>18.0</td><td>16.2</td><td>6.0</td><td>2.0</td><td>8.0</td><td>2.0</td><td>278.4</td></tr><tr><td>5th %ile</td><td>0.0</td><td>1.0</td><td>2.4</td><td>3.2</td><td>17.4</td><td>16.0</td><td>28.8</td><td>16.4</td><td>10.3</td><td>3.7</td><td>10.4</td><td>7.0</td><td>333.1</td></tr><tr><td>10th %ile</td><td>2.2</td><td>1.3</td><td>3.4</td><td>7.6</td><td>20.0</td><td>19.8</td><td>35.2</td><td>22.8</td><td>13.2</td><td>5.0</td><td>10.7</td><td>11.4</td><td>337.3</td></tr><tr><td>Median</td><td>23.0</td><td>13.5</td><td>20.4</td><td>27.7</td><td>31.8</td><td>39.8</td><td>50.4</td><td>47.6</td><td>31.9</td><td>27.1</td><td>41.2</td><td>31.4</td><td>444.2</td></tr><tr><td>90th %ile</td><td>118.4</td><td>52.5</td><td>61.7</td><td>65.3</td><td>73.8</td><td>82.4</td><td>66.2</td><td>90.8</td><td>77.5</td><td>77.0</td><td>82.0</td><td>82.7</td><td>707.5</td></tr><tr><td>95th %ile</td><td>131.6</td><td>66.1</td><td>62.6</td><td>68.3</td><td>75.4</td><td>88.4</td><td>68.6</td><td>97.6</td><td>91.3</td><td>101.6</td><td>94.9</td><td>87.4</td><td>762.3</td></tr><tr><td>Highest</td><td>242.0</td><td>73.8</td><td>81.4</td><td>76.8</td><td>103.6</td><td>93.8</td><td>84.0</td><td>115.2</td><td>195.6</td><td>192.4</td><td>100.2</td><td>87.8</td><td>870.0</td></tr></table> <div>Station 88137 Average annual pan evaporation is 1394mm (Temperate)</div>	Statistic	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Mean	48.5	22.3	25.3	31.7	38.6	47.5	50.6	50.5	45.3	40.5	43.9	37.6	486.4	Lowest	0.0	0.6	0.8	2.2	7.8	4.4	18.0	16.2	6.0	2.0	8.0	2.0	278.4	5th %ile	0.0	1.0	2.4	3.2	17.4	16.0	28.8	16.4	10.3	3.7	10.4	7.0	333.1	10th %ile	2.2	1.3	3.4	7.6	20.0	19.8	35.2	22.8	13.2	5.0	10.7	11.4	337.3	Median	23.0	13.5	20.4	27.7	31.8	39.8	50.4	47.6	31.9	27.1	41.2	31.4	444.2	90th %ile	118.4	52.5	61.7	65.3	73.8	82.4	66.2	90.8	77.5	77.0	82.0	82.7	707.5	95th %ile	131.6	66.1	62.6	68.3	75.4	88.4	68.6	97.6	91.3	101.6	94.9	87.4	762.3	Highest	242.0	73.8	81.4	76.8	103.6	93.8	84.0	115.2	195.6	192.4	100.2	87.8	870.0	Minor	NN
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Drainage	Mild slope, significant run-on. Clay-rich surface soils represent a risk of surface ponding. No mottling was observed.	Minor	Adopt diversion drain																																																																																																																														
Erosion & Landslip	Highly permeable silt loam topsoil, and moderately permeable silty clay subsoils. The sub-soil was found to be slightly dispersive. Erodibility is therefore considered Moderate. Given the available LAA has a light 5-8% fall, we consider the erosion risk to be Low. No evidence of rill, nor sheet erosion was observed. Nor mass movement. No evidence of landslip. Landslip potential is low.	Low	NN																																																																																																																														
Exposure & Aspect	The proposed LAA site experiences high sun and wind exposure. The land predominantly has a slight SW aspecty, with limited overshadowing.	Minor	NN																																																																																																																														
Flooding	The site lies above 1:100-year flood levels (DELWP). However, the soils are prone to excessive saturation at lower elevations.	Minor	NN																																																																																																																														

Table 1 continued

Feature	Description	Level of Constraint	Mitigation Measures
Groundwater	The soil was found to be Dry. Excessive Groundwater was encountered. The water-table is estimated as <5m below the surface. No observed, nor recorded groundwater bores on site (DELWP map base).	Minor	NN
Imported Fill	No imported fill material was observed anywhere on the site.	Nil	NN
Land Available for LAA	Considering all the constraints and buffers, the site has adequate suitable land for land application of treated effluent. The preferred effluent management area is on the fairly elevated area north of the proposed residence. Alternatively, other areas which abide recommended setbacks may be adopted.	Minor	NN
Landform	Ordovician backslope.	Minor	NN
Rock Outcrops	Minor siltstone gravels encountered. Minor rock outcrops observed.	Minor	NN
Run-on & Runoff	The proposed effluent management area receives significant run-on from the north. Any run-on can be easily controlled.	minor	Adopt diversion drains.
Slope	The proposed effluent management area has a mild slope (~5-8%) to the south.	Minor	NN
Surface Waters	Non-incised branch of Mia Mia creek is documented 40m south-west of the allotment. Potable Dam is present 20m South of lot. Non-potable farm dam abuts south-western boundary. The site lies within a water catchment area.	Moderate	Adopt recommended setbacks with or without concession
Vegetation	Good grass cover. Scattered trees. Row of shrubs to west and east of works. No hydrophytic vegetation or salt-tolerant vegetation within the proposed LAA was observed.	Minor	NN

*NN-Not Needed

3.2 SITE ASSESSMENT RESULTS

Based on the most constraining site features (Run-on, Climate) the overall land capability of the site to sustainably manage all effluent on the site is good.

In order to provide adequate protection of surface and ground waters, we recommend a secondary treatment system is applied via subsurface irrigation.

3.3 SOIL KEY FEATURES

The site's soils have been assessed for their suitability for onsite wastewater management by a combination of soil survey and a desktop review of published soil survey information as outlined below.

Published Soils Information

The area is classified as being part of the Castlemaine Group (Ocl), a marine sedimentary deposit from the Lancefieldian stage known to comprise significant sandstone, mudstone and black shale. Clays of this classification are commonly moderately reactive.

Note: undocumented shafts, ventilation shafts, shallow workings and mining spoil may be present onsite.

Soil Survey and Analysis

A soil survey was carried out at the site to determine suitability for application of treated effluent. Soil investigations were conducted across the site as shown in Appendix A, using continuous flight augers. This was sufficient to adequately characterise the soils as only minor variation would be expected throughout the area of interest. Full profile descriptions of the bores are provided in Appendix A.

Samples of all discrete soil layers for each soil type were collected and subjected to limited subsequent laboratory analysis. The extent of tests, detailed in Table 2, is based upon our experience in the area; and the constraining site conditions (e.g. lack of a sufficient clearance depth).

Soil permeability was not directly measured but can be inferred with reference to AS/NZS 1547:2012 and Appendix A of the Code of Practice, which describes conservative Design Loading Rates (DLRs) and Design Irrigation Rates (DIRs) for various effluent application systems according to soil type. Critical soil properties are texture and structure, but depth, colour and degree of mottling are also used to infer drainage conditions.

In our experience, these values are a more conservative and appropriate option for cases such as this, as the presence of tree roots, fissures, and structural imperfections and other natural irregularities tend to offer unrepresentative onsite permeability values.

For the soil in the proposed land application area, a number of features present moderate constraints, but in each case, a mitigation measure is presented to address the specific constraint in such a way as to present an acceptable wastewater management solution.

Table 2a: Soil Assessment

NN = Not Necessary *Comparable Samples taken offsite within same geology

Feature	Assessment	Level of Constraint	Mitigation Measures
Cation Exchange Capacity (CEC)	Top-soil: 7.1 MEQ% (Low) (Sample 1) 7.1 MEQ% (Low) (Sample 2) I.e. Low resistance to changes in soil chemistry. Likely low in fertility and susceptible to soil acidification. Soil may become more sodic. Good tree and grass growth evident.	Moderate	See Emerson Aggregate Class Mitigation
Exchangeable Calcium	Top-soil: 749 mg/kg (Low) (Sample 1) 745 mg/kg (Low) (Sample 2) Calcium-magnesium ratio also shows a low calcium content. Good grass and tree growth evident. 56.1% Typ. Undesirable for plant growth.	Minor	NN
Exchangeable Magnesium	Top-soil: 319 mg/kg (Moderate) (Sample 1) 324 mg/kg (Moderate) (Sample 2) Good grass and tree growth evident. 23.9% Typ. Undesirable for plant growth.	Minor	NN
Exchangeable Potassium	Top-soil: 253 mg/kg (Moderate) (Sample 1) 245 mg/kg (Moderate) (Sample 2) Good grass and tree growth evident. 19.0% Typ. Undesirable for plant growth.	Minor	NN
Exchangeable Sodium	Top-soil: 14 mg/kg (Very Low) (Sample 1) 17 mg/kg (Very Low) (Sample 2) Good grass and tree growth evident. 1.0% Typ. Undesirable for plant growth.	Minor	NN
Electrical Conductivity (at 25°C)	Top-soil: 0.019 dS/m (Sample 1) 0.024 dS/m (Sample 2) (Salinity effects are mostly negligible)	Nil	NN
Emerson Aggregate Class	Air-dried aggregates: Top-soil: Class 2 (Poor) (Sample 1) Class 2 (Poor) (Sample 2) Re-moulded ped: Top-soil: Class 2 (Poor) (Sample 1) Class 2 (Poor) (Sample 2) slightly dispersive	Moderate	See below
	Adopt larger LAA by at least 10% and limit surface run-on. Recommend Gypsum Application		
pH	Top-soil: 5.1 (Fair) (Sample 1) 5.2 (Fair) (Sample 2) Strongly Acidic High acidity and Al Cation content may inhibit root growth Phosphorus adsorption to soil particles is especially strong when soil pH quite high Good grass growth evident	Minor	Optional: Apply Lime
Sodicity Exchangeable Sodium Percentage (ESP)	Top-soil: 0.9 %; Non-sodic (Sample 1) 1.0 %; Non-sodic (Sample 2) Gypsum application is unlikely to impede plant growth.	Nil	NN
Sodium Absorption Ratio (SAR)	Top-soil: 0.02 (Sample 1) 0.03 (Sample 2) No sodium problems. Capable of increased salinity from Gypsum application.	Nil	NN
Rock Fragments	Variable and assessed at around 5% coarse fragments in the B horizon.	Minor	NN

Table 2b: Soil Assessment

Feature	Assessment	Level of Constraint	Mitigation Measures
Soil Depth	Topsoil: 0-240 mm Silt Loam	Moderate	Subsoil permeability assumed.
	Subsoil: -900+mm Silty Clay	Minor	NN
Soil Permeability & Design Loading Rates	Top-soil: Equivalent to a massive LOAM; 0.5-1.5m/day saturated permeability (K_{sat}) (AS/NZS1547:2012); corresponding to 4.0mm/day Design Irrigation Rate (DIR) allowed for subsurface irrigation (EPA, 2016).	Minor	Shallow, Subsoil permeability assumed.
	Sub-soil: Equivalent to a moderately structured light clay; 0.06-0.12m/day saturated permeability (K_{sat}) (AS/NZS1547:2012); 3.0mm/day Design Loading Rate (DLR) allowed sub-surface irrigation (EPA, 2016).	Minor	NN
Soil Texture & Structure	Topsoil 0-240 mm: LOAM, massive, equivalent to Category 3b.	Minor	NN
	Subsoil -1000 mm: Light Clay, Moderate structure, (Category 5b) in accordance with AS/NZS/NZS 1547:2012	Minor	NN
Water-table Depth	Soil found to be dry. Free Groundwater was not encountered. Water table is estimated with data of region as <5m below the surface. No mottling.	Minor	NN

3.4 OVERALL LAND CAPABILITY RATING AND CONSTRAINT RISK ASSESSMENT

Based on the results of the site and soil assessment tabled above and provided in the Appendices, the overall land capability of the proposed effluent management area is good.

The constraint risk appears to be moderate, consistent with the listed risk under the DWMP.

The >14ha allotment is in an area of low housing density. Shallow clays with slightly dispersive conditions are not recommended with conventional trenches or beds, however Wick or ETA beds are suitable.

The proposed dwelling is positioned within 100m of a watercourse to the south-west, within a declared water catchment, so an option for 20/30 treatment with subsurface irrigation is also provided, to allow a reduced setback. Given the allotments size however this is not essential.

3.5 MEETING ENVIRONMENTAL AND PLANNING OBJECTIVES

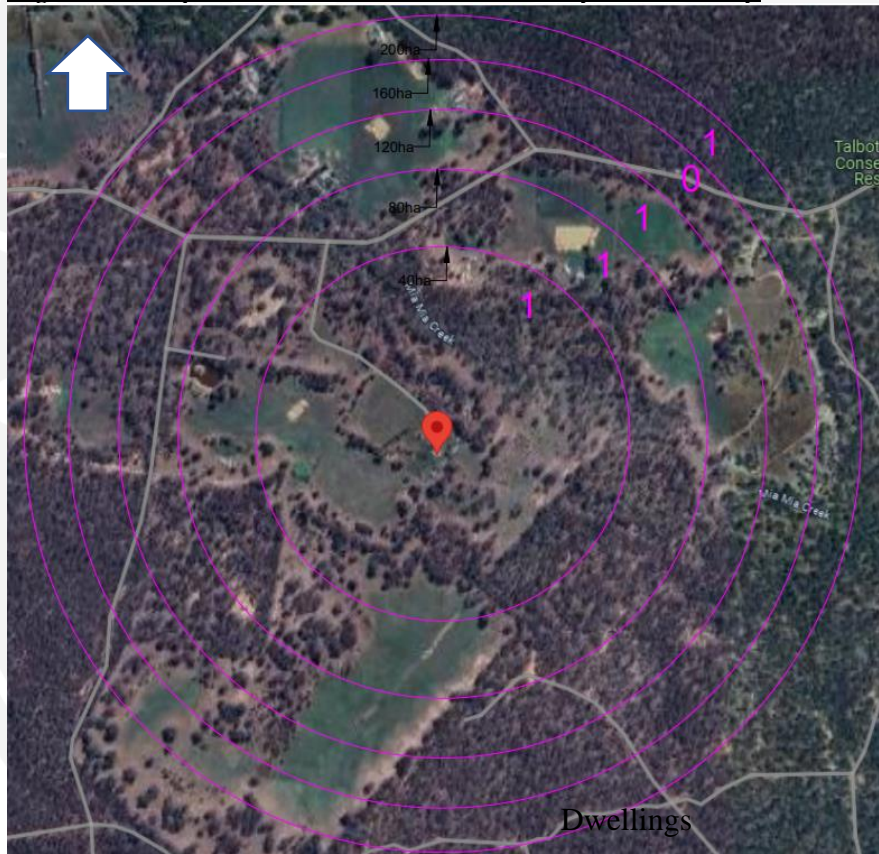
The proposed density of development in the area averages 1:40ha over the surrounding 200ha.

The proposed dwellings on this existing allotment maintain a similar density as that of nearby allotments (Appendix A) and have been designed in accordance with the DWMP, with reference to the MAV Guidelines and EPA Vic. Code of Practice.

This report has identified favorable soil (Table 2) and slope (Table 1) characteristics and consider the size of run-off generated by the development is sustainable.

We interpret that the proposed development is in accordance with Category 4 of the Ministerial Guidelines on Planning Permit Applications in open, potable water supply catchment areas, 2012 and meet water quality objectives in the Environmental Protection Overlay (Schedule 1).

Figure 5: Proposed Wastewater Treatment System Density



*Each circle represents 40ha

4 Wastewater Management System

The following sections provide an overview of a suitable onsite wastewater management system, with sizing and design considerations and justification for its selection. Detailed design for the system should be undertaken at the time of the building application and submitted to Council.

4.1 TREATMENT SYSTEM

Primary treatment of effluent with Wick or ETA trenches is considered adequate for this allotment. This is a large allotment located in an area of low housing density, and little likelihood of this changing significantly in the foreseeable future.

Alternatively, secondary treatment and disposal by shallow sub-surface irrigation is also suitable.

4.2 System Types

Refer to the EPA website for the list of approved options that are available <http://www.epa.vic.gov.au/en/your-environment/water/onsite-wastewater>. The property owner has the responsibility for the final selection of the primary or secondary treatment system and will include the details of it in the Septic Tank Permit to Install/Alter application form for Council approval.

4.2.1 Recommended Tank Size

As per AS1547:2012; septic tanks should allow 24 hour settling period for the average daily flow from the property plus scum and sludge storage.

Minimum (all-waste) operational capacity, under AS1547:2012 is 3000L.

Consequently, we recommend a 3000L tank is adopted. This is for an equivalent of up to 1000L waste a day, and 2000L of sludge and scum (Nom. 5 persons).

4.2.2 Recommended Sand Bed Sizing

Generic Insitu Sand Filters, such as detailed in EPA COP App. G, are no longer accepted without certificate, as at 2021 (EPA Reg. 2021 (26(2)(c)(i) + 32(2)(c)(i)).

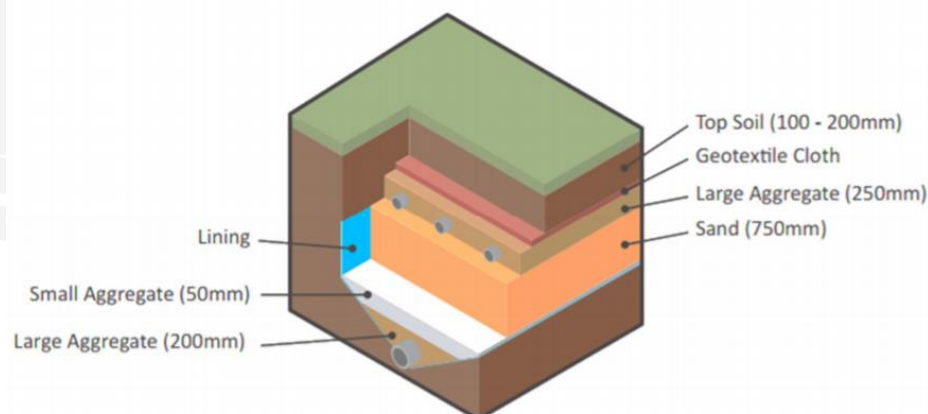
We recommend a minimum bed area of 12m² for the proposed building. Nominal. 2.0m wide x 6m long.

Sand bed filter to be designed and installed in accordance with EPA accreditation and best industry practice. This includes;

- The distribution pit and/or distribution pipes are to be vented
- Distribution boxes are to be installed so that the access cover is at ground level
- Base of the sand filter is to be lined
- Distribution pipes are to be 90mm slotted pipe a maximum 1 metre spacing apart and a minimum 500mm from the edge of the sand filter
- Pump wells are not to be installed inside the sand filter.
- Aggregate is to be clean, hard quartz stone or other approved stone free of dust, dirt, loam, soft particles, organic and other foreign matter.
 - o Small aggregate is to be 5-10mm in size.
 - o Large aggregate is to be 20-25mm in size
- Clean washed sand, with;
 - o Sand with effective size between 0.25 mm and 0.60 mm (i.e. maximum particle size of the smallest 10% by mass)
 - o Uniformity coefficient less than four (i.e. the ratio of the maximum particle size of the smallest 60% by mass of the sample, to the maximum particle size of the smallest 10% by mass.)
 - o Sand with clay and fine silt content less than 5% by volume.

It is not possible to accurately determine the effective size and uniformity coefficient of sand visually. Sand too fine tends to clog too quickly, sand too coarse will not provide sufficient oxidation of the effluent, and clay particles react with anionic detergents to reduce permeability of the sand. Mechanical Analysis (Sieve and settling test) as per AS1141 is required.

Figure 4.22: Sand Bed



4.2.3 Recommended Materials for Construction

4.2.3.1 ETA / Wick Beds

- Minimum capacity 3000L Septic Tank, preferably concrete
- 100mm sewer pipe from dwelling to septic tank
- 90mm PVC pipe to DB's
- Distribution Boxes – Concrete or HDPE
- Aggregate in bed – Blue metal or Clean Scoria 20-40mm
- Paper, Geotextile Cloth or Woven Weedmat over aggregate
- Trench capping – loam or similar site top soil

4.2.3.2 Aerated Wastewater Treatment System (AWTS)

- Current EPA Certificate of Approval
- Visual / Audible Alarm

4.2.3.3 Subsurface Irrigation

- Pressure Compensating pipework – Toro, Wasteflow, or Similar
- Inline filter
- Vacuum Breaker with a Surface Box
- Flush out valve with a Surface Box

4.3 EFFLUENT MANAGEMENT SYSTEM

A range of possible land application systems has been considered, such as absorption trenches, evapotranspiration/absorption (ETA) beds, subsurface irrigation and mounds. The preferred system is pressure compensating subsurface irrigation. Subsurface irrigation will provide even and widespread dispersal of the treated effluent within the root zone of plants. This system will provide beneficial reuse of effluent and ensures the risk of effluent being transported off-site will be negligible. In addition, the adoption of a sub-surface textile irrigation system, e.g. KISSS, would be a suitable further mitigation of the risk of dispersion, however, we do not see this as essential in this case.

4.3.1 Subsurface Irrigation System

4.3.1.1 Description

A detailed irrigation system design is beyond the scope of this report; however, a general description of subsurface irrigation is provided here for the information of the client and Council.

Subsurface irrigation comprises a network of drip-irrigation lines that is specially designed for use with wastewater. The pipe contains pressure compensating emitters (drippers) that employ a biocide to prevent the build-up of slimes and inhibit root penetration. The lateral pipes are usually 0.6 to 1.0 m apart, installed parallel along the contour. Installation depth is 100-150 mm in accordance with AS/NZS 1547:2012. It is critical that the irrigation pump is sized properly to ensure adequate pressure and delivery rate to the irrigation network. A filter is installed in the main line to remove fine particulates that could block the emitters. This must be cleaned regularly (typically monthly) following manufacturer's instructions. Vacuum breakers should be installed at the high point/s in the system to prevent air and soil being sucked back into the drippers when the pump shuts off. Flushing valves are an important component and allow periodic flushing of the lines, which should be done at six monthly intervals. Flush water can be either returned to the treatment system or could be released to a small dedicated gravel-based trench.

All excavation used to install the pipes must be backfilled properly to prevent preferential subsurface flows along trench lines. Irrigation areas must not be subject to high foot traffic movement, and vehicles and livestock must not have access to the area otherwise compaction around emitters can lead to premature system failure.

4.3.1.2 Sizing the Irrigation System

To determine the necessary size of the irrigation area water balance modelling has been undertaken using the method and water balance tool in the Victorian Land Capability Assessment Framework (2013) and the EPA Code (2016). The results show that the minimum required irrigation area is 261m². The calculations are summarised below, with full details provided in Appendix B.

The water balance can be expressed by the following equation:

$$\text{Precipitation} + \text{Effluent Applied} = \text{Evapotranspiration} + \text{Percolation}$$

Data used in the water balance include:

- Mean monthly rainfall and mean monthly pan evaporation (Maryborough);
- Average daily effluent load – 600 L (from Table 4 of the Code);
- Design irrigation rate (DIR) – 3.0 mm/day (from Table 3 of the Code);
- Crop factor – 0.6 to 0.8; and
- Retained rainfall – 75%

The nominated area method is used to calculate the area required to balance all inputs and outputs to the water balance. As a result of these calculations, at least 229m² of the land application area is required.

Given the environmental hazard of the site, and nutrient uptake detailed below, a minimum of 261m² of the land application area is recommended.

4.3.1.3 Nutrient Balance

A nutrient balance has been undertaken to check that the LAA is of sufficient size to ensure nutrients are assimilated by the soils and vegetation. The model used here is based on a simplistic methodology but improves on this by incorporating more variables in the respective nutrient cycles to more accurately model actual processes.

It acknowledges that a proportion of nitrogen will be retained in the soil through processes such as mineralisation (the conversion of organic nitrogen to ammonia) and volatilisation (Geary and Gardner 1996). It also accounts for crop growth rates (and hence nutrient uptake rates) for a typical pasture.

Note: The Victorian Land Capability Assessment Framework gives sole consideration to nitrogen. However, Phosphorus balance is added in this instance, as per the EPA Vic COP: onsite wastewater management (2016), due to environmentally sensitive conditions, to determine the size of the sustainable irrigation area required to limit the impact of both nitrates and phosphorus.

Some assumptions used in the modelling follow:

- Hydraulic loading – 600 L/day;
- Nitrogen concentration in effluent – 30 mg/L;
- Nitrogen percentage lost to soil processes – 20%
- Phosphorus concentration in effluent – 10 mg/L;
- Critical nutrient loading rates – 220 kg/ha/year (60 mg/m²/day) for nitrogen and 50 kg/ha/year (14 mg/m²/day) for phosphorus;

- Soil phosphorus sorption capacity – 3375 kg/ha of soil;
- Proportion of phosphorus sorption capacity utilised – 50%; and
- Design life of the system - 50 years;

The area required for nitrogen assimilation is 219 square metres, while phosphorus requires 261 square metres.

4.3.1.4 Installation of the Irrigation System

Installation of the irrigation system must be carried out by a suitably qualified, licensed plumber or drainer experienced with effluent irrigation systems.

To ensure even distribution of effluent, it is essential that the pump capacity is adequate for the size and configuration of the irrigation system, taking into account head and friction losses due to changes in elevation, pipes, valves, fittings etc. An additional, optional measure to achieve even coverage is to divide the irrigation area into two or more separate sub-zones, of minimum 133.5 m² each, dosed alternately using an automatic indexing or sequencing valve, generically known as a 'roto-valve'.

The Netafim system, with 3l/hr. emitters spaced at 300mm centres, and provided with 25mm diameter manifolds at each end of the laterals, is a suitable system, as is the Wasteflow system, although this system should be zoned into two areas, and tends to place more load on the pressure pumps than other systems.

The irrigation area and surrounding area must be vegetated or revegetated immediately following installation of the system, preferably with turf. The area should be fenced or otherwise isolated (such as by landscaping), to prevent vehicle and stock access; and signs should be erected to inform householders and visitors of the extent of the effluent irrigation area and to limit their access and impact on the area.

All trenching used to install the pipes must be backfilled properly with soil to prevent preferential subsurface flows along trench lines, particularly where trenches are not absolutely parallel to contours.

Stormwater run-on must be diverted around the proposed irrigation area. Upslope diversion berms or drains will need to be constructed as shown on the site plan. Stormwater from roofs and other impervious surfaces must not be disposed of into the wastewater treatment system or onto the effluent management system.

4.3.2 ETA Beds

4.3.3 Description

Detailed system design is beyond the scope of this report, however, a general description of trench irrigation is provided here for the information of the client and Council, with more information available in Appendix D of the Code of Practice.

All trenching must be installed along the contour with the trench bases level. The trench width shall be 1.0m wide, with the length as shown on the site plan, and installed with at least 2m of clear spacing between the trenches. The individual trenches shall be connected via a distribution box, with the outlets provided to encourage an even distribution of effluent over all trenches rather than the more conventional system of allowing the flooding of the first trench before overflowing to the second trench and so on.

Trenches shall be constructed as per the EPA certificate of Approval. A self-supporting arch in the trench may be used but is not essential.

Effluent disposal trench areas must not be subject to high foot traffic movement, and vehicles and livestock must not have access to the area otherwise compaction of the soil can lead to premature system failure.

4.3.3.1 Sizing the Bed

To determine the necessary size of the disposal area, water balance modelling has been undertaken using the method and water balance tool in the Victorian Land Capability Assessment Framework (2013) and the EPA Code (2016). The results show that the required minimum trench area is 102 m². The calculations are summarised below, with full details provided in Appendix B.

The water balance can be expressed by the following equation:

$$\text{Precipitation} + \text{Effluent Applied} = \text{Evapotranspiration} + \text{Percolation}$$

Data used in the water balance include:

- Mean monthly rainfall and mean monthly pan evaporation (Ballarat);
- Average daily effluent load – 600 L (from Table 4 of the Code);
- Design loading rate (DLR) – 5 mm/day (from Appendix A of the Code);
- Crop factor – 0.6 to 0.8; and
- Retained rainfall – Variable

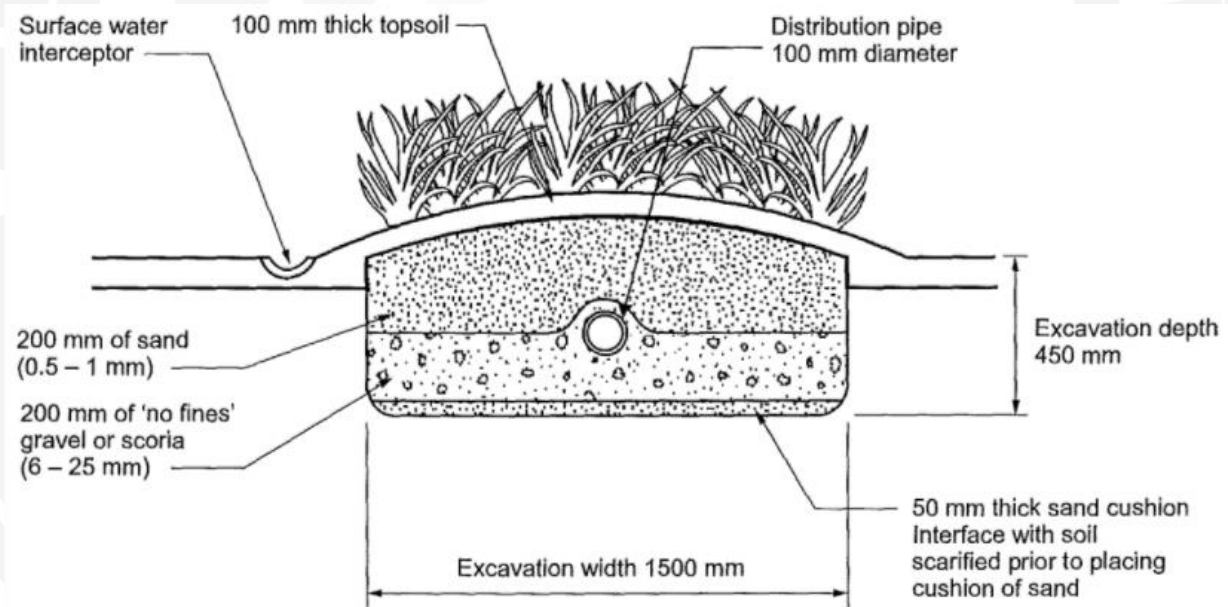
As a result of these calculations at least 102m² of land application area is required.

4.3.3.2 Installation of the ETA System

Absorption trenches are a traditional method of disposal of wastewater from primary treatment septic tank systems. The trenches are constructed with a “slotted pipe” or “arch tunnel” to distribute the effluent evenly along the trench. The effluent is disposed of by absorption into the surrounding soils, transpiration into roots of grasses above the trench and evaporation through the top-soil. Absorption trenches are to be a maximum length of 30 metres, a minimum 2 metres apart, each installed with a distribution box at the beginning of the trench with access at ground level. The top of the trench is to be mounded to allow for natural settlement of soil and to stop surface water entering the trench. Absorption trenches are not suitable in heavy clay-based soils.

Aggregate is to be 20-40mm clean, hard quartz stone or other approved stone free of dust, dirt, loam, soft particles, organic and other foreign matter. Trenches are to be installed a maximum of 400mm deep. Deeper trenches will cause the system to fail. Where sufficient fall cannot be achieved between the septic tank and absorption trenches to maintain this depth, a pump well will need to be installed prior to the trenches.

4.3.4 ETA Bed Detail



(Figure L6AS1547;2012)

4.3.4.1 Installation of the Wick System

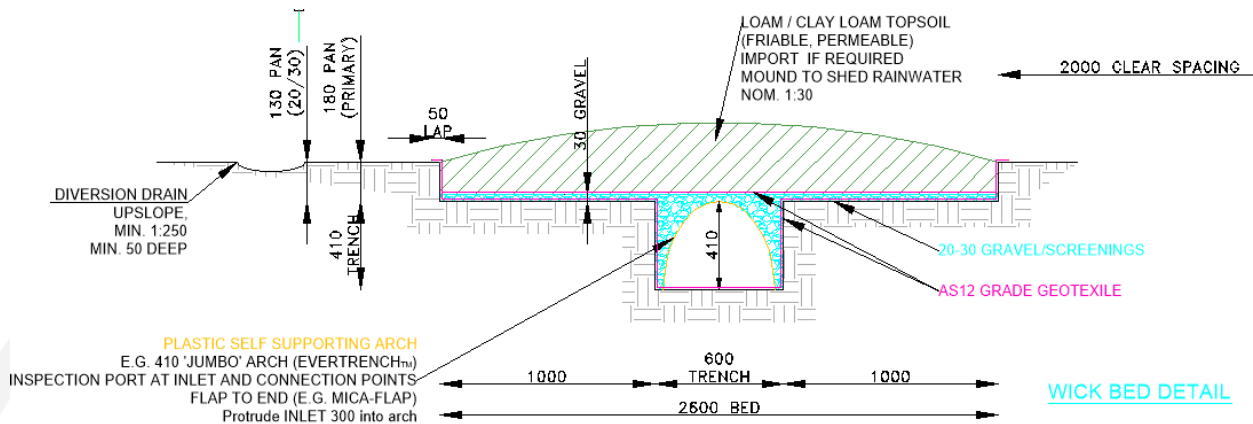
To be installed in accordance with Code of Practice 891.4, Appendix E, p57-59.

Rows to be a maximum of 30m long, and a minimum of 2m apart.

Installation:

1. Peg out the trench and pan areas.
2. Remove the topsoil and stockpile. Where this is a friable, loamy soil it can be reused as the final layer of the Wick Trench and Bed. Otherwise neither the topsoil nor lower soil horizons are to be reused in the system, and suitable loamy soil must be imported.
3. Excavate the trench to a depth of 600 mm and the adjacent pan to 130 mm for secondary effluent and 180 mm for primary effluent systems.
4. Continuously check the level of the bed of the trench and the pan with a laser level to ensure they are flat.
5. Lay the 'A12 grade' geotextile fabric (with dry pore size 230 μm) in a continuous length across the trench and pan. i.e. down the outer side wall of the trench, across the base of the trench, up the inner side wall of the trench, across the base of the pan and up the outer side wall of the pan.
6. Ensure the geotextile extends at least 50 mm further than the top of the side walls
7. Overlap the edges of the geotextile down the length of the trench and pan system until all bases and side walls are covered.
8. Place the plastic self-supporting arch in sections 410 mm wide and 1200 mm long, into the trench on top of the geotextile.
9. Install inspection ports at trench entry points and the connection points to other trenches.
10. Install a mica-flap vent at the end of the each trench to facilitate air being drawn into the trench, up the pipe line into the septic tank, through the pipe line into the house drainage system and up through the roof vent. The mica-flap acts as a marker for the end of the trench.
11. Spread clean 20 – 30 mm gravel over the arch in the trench and across the pan to a depth of 30 mm. Ensure the top of the gravel layer is level.
12. Lay overlapping lengths of geotextile across the top of the gravel layer, ensuring the geotextile extends at least 50 mm further than the side walls of the trench and pan.
13. Spread good quality friable and permeable loamy soil over the top of the geotextile to a depth of 100 mm for secondary effluent and 150 mm for primary effluent systems. Never use soil from lower soil horizons.
14. Slightly mound the surface of the topsoil across the trench and bed to help shed rainwater off the system (see detail).
15. Plant the topsoil with a suitable grass or plants that thrive when their roots are continuously wet, especially those with large leaves as they will transpire more water than plants with small leaves.
16. Install stormwater diversion drains to direct stormwater away from the Wick System.

4.3.5 Wick Bed Detail



4.3.6 Summary and Discussion

The preferred irrigation area is based on the larger of the water and/or nutrient balance calculations. An area of at least 261m² of subsurface irrigation or 101.3m² of Wick or ETA beds is required.

It is worth noting that the modelling includes several significant factors of conservatism:

- Given the proximity to the southern watercourse within a water catchment, subsurface irrigation is sized for sustainable phosphorous absorption
- Hydraulic load – this assumes 4 people will permanently occupy a 3-bedroom residence. It is likely that the actual occupancy and flow rates over the life of the house will be significantly less than this.
- 75% retention of rainwater. Given clay-rich soil, and fall across the LAA, this is conservative.

4.3.6.1 Siting and Configuration of the Irrigation System

The preferred area is on the elevated, northern portions of the allotment; setback from trafficable areas. Appendix A shows potential siting and layouts for a sub-surface irrigation system. There is, however, some flexibility in selecting the location and configuration of the irrigation system, but it must comply with setback distances from watercourses, children play areas and boundaries.

It is recommended that the owner consults an irrigation expert familiar with effluent irrigation equipment to design the system, and an appropriately registered plumbing/drainage practitioner to install the system. The irrigation plan must ensure even application of effluent throughout the entire irrigation area.

4.3.6.2 Buffer Distances

Setback buffer distances from effluent land application areas and treatment systems are required to help prevent human contact, maintain public amenity and protect sensitive environments. The relevant buffer distances for this site, for secondary treated effluent, taken from Table 5 of the Code (2016) are:

- 50 metres from potable or non-potable groundwater bores through Category 1 and 2a soils;
- 20 metres from potable or non-potable groundwater bores through Category 2b – Category 6 soils;
- 30 metres from watercourses & dams that are non-potable;
- 3 metres if area up-gradient and 1.5 metres if area down-gradient of property boundaries and buildings.
- 1.5 metres from a water supply pipe
- 3.0 metres upslope from a storm-water drain or children's grassed playground (subsurface irrigation only)
- 15.0 metres upslope from a cutting or escarpment
- 1.5m (vertically) between the depth of the irrigation pipes and to the highest seasonal water-table.

All nominal buffers are achievable.

Note that the site plan in Appendix A shows the location of the proposed wastewater management system components and other relevant features.

4.3.6.3 Reserve Disposal Field:

A suitable area for a reserve disposal field is available on this allotment, despite Clause 3.10.2 of the Code of Practice provides that a reserve area is not required for a sub-surface pressure-compensating irrigation system where the sizing of the system has been calculated using the latest version of the Model LCA report and the recommended design irrigation rates, unless Council considers the site to be high risk.

4.4 ADDITIONAL RISK MANAGEMENT MEASURES

Soil Amelioration

Gypsum Application

Prior to installation of the irrigation system, Gypsum must be applied.

This would involve:

- Aerating the soil, e.g. rotary hoeing
- Spreading Gypsum
 - o Application rates can vary depending on the concentration of the product. Follow written directions where applicable. Typically 1-2kg/m² of Gypsum is required.
 - o Gypsum is insoluble, tending to stay where spread. Hence uniform coverage is essential. This may be achieved with a drop/broadcast spreader.
- Raking in gypsum after application.
- Watering the gypsum in heavily.

5 Monitoring, Operation, and Maintenance

Maintenance is to be carried out in accordance with the EPA Certificate of Approval of the selected secondary treatment system and Council's permit conditions. The treatment system will only function adequately if appropriately and regularly maintained.

To ensure the treatment system functions adequately, residents must:

- Have the septic tank pumped out when it is full, or at the minimum frequency required by Council under the permit to use;
- Use household cleaning products that are suitable for septic tanks;
- Keep as much fat and oil out of the system as possible; and
- Conserve water (AAA rated fixtures and appliances are recommended).

To ensure the land application system functions adequately, residents must:

- Regularly harvest (mow and remove) vegetation within the LAA and remove this to maximise uptake of water and nutrients;
- Monitor and maintain the disposal system following the manufacturer's recommendations,
- Do not erect any structures and avoid vehicle and livestock access to the LAA, to prevent compaction and damage; and
- Ensure that the LAA is kept level by filling any depressions with good quality topsoil (not clay).

Additional Risk Management Measures:

We do not believe that further risk mitigation areas are warranted on this site, however, the minimisation of effluent should be encouraged.

6 Conclusions

As a result of our investigations, we conclude that sustainable onsite wastewater management is feasible with appropriate mitigation measures, as outlined, for the proposed residence.

Specifically, we recommend the following:

- Primary treatment of wastewater by a conventional septic tank.
- Land application of treated effluent to a minimum
 - Wick / ETA bed area of
 - 101.3m² for a 3-Bedroom of equivalent residence
(e.g. 3 rows, min 2.0m clear spacing, x 1.5m wide x 22.5m long ETA bed,
OR 2 rows, min 2.0m clear spacing, x 2.45m wide x 21.6m long Wick Bed)
- Trenches located min. 100m from SW watercourse, e.g. pumpwell to NE of proposed dwelling, min. 3m downslope of driveway

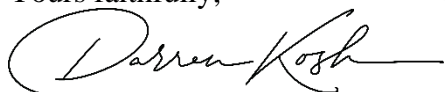
Alternatively,

- Secondary treatment of wastewater to a 20/30 standard by an EPA-accredited treatment system;
- Land application of treated effluent to a minimum
 - Subsurface irrigation area of
 - 261m² for a 3-Bedroom of equivalent residence,
 - 50% concession on southern watercourse setback is available where:
 - maintenance and service contract, with a service technician accredited by the manufacturer, is in place to ensure the system is regularly serviced in accordance with Council Septic Tank Permit conditions
 - Council is satisfied the reduction in set-back distance is necessary to permit the appropriate development of the site and that risks to public health and the environment are minimised

Further,

- Apply Gypsum to LAA to mitigate dispersive risk (see Soil Amelioration)
- Installation of water saving fixtures and appliances in the new residence to reduce the effluent load;
- Use of low phosphorus and low sodium (liquid) detergents to improve effluent quality and maintain soil properties for growing plants; and
- Operation and management of the treatment and disposal system in accordance with the manufacturer's recommendations, the EPA Certificate of Approval, the EPA Code of Practice (2016) and the recommendations made in this report. We recommend a septic tank and sand filter for this allotment, although an EPA approved treatment plant may also be used.

Yours faithfully,



Darren Kosh
MIE Aust, CPEng, NER

7 References

- Environment Protection Authority (2003). *Guidelines for Environmental Management: Use of Reclaimed Water* Publication 464.2.
- Environment Protection Authority (1991). *Guidelines for Wastewater Irrigation* Publication 168.
- Environment Protection Authority (2016). Publication 891.4 *Code of Practice for Onsite Wastewater Management*.
- Geary, P. and Gardner, E. (1996). On-site Disposal of Effluent. In Proceedings of the one-day conference *Innovative Approaches to the Management of Waste and Water*, Lismore 1996.
- Isbell, R.F. (1996). The Australian Soil Classification. CSIRO Publishing, Melbourne.
- Municipal Association of Victoria, Department of Environment and Sustainability and EPA Victoria (2013) *Victorian Land Capability Assessment Framework*.
- Standards Australia / Standards New Zealand (2012). AS/NZS 1547:2012 *On-site domestic wastewater management*.
- USEPA (2002). *Onsite Wastewater Treatment Systems Manual*. The United States Environmental Protection Agency.

8 Limitations

Recommendations are provided based on the site and soil conditions encountered at the specific test sites identified and our local experience.

Subsurface conditions can vary over small areas. Test sites have been selected to provide an indication of overall site conditions; however unidentified variations may occur.

Any variation of onsite conditions to those recorded must be referred to this office for approval or additional testing. This includes cutting/filling, addition or removal of trees, altered drainage conditions, groundwater fluctuation, demolition.

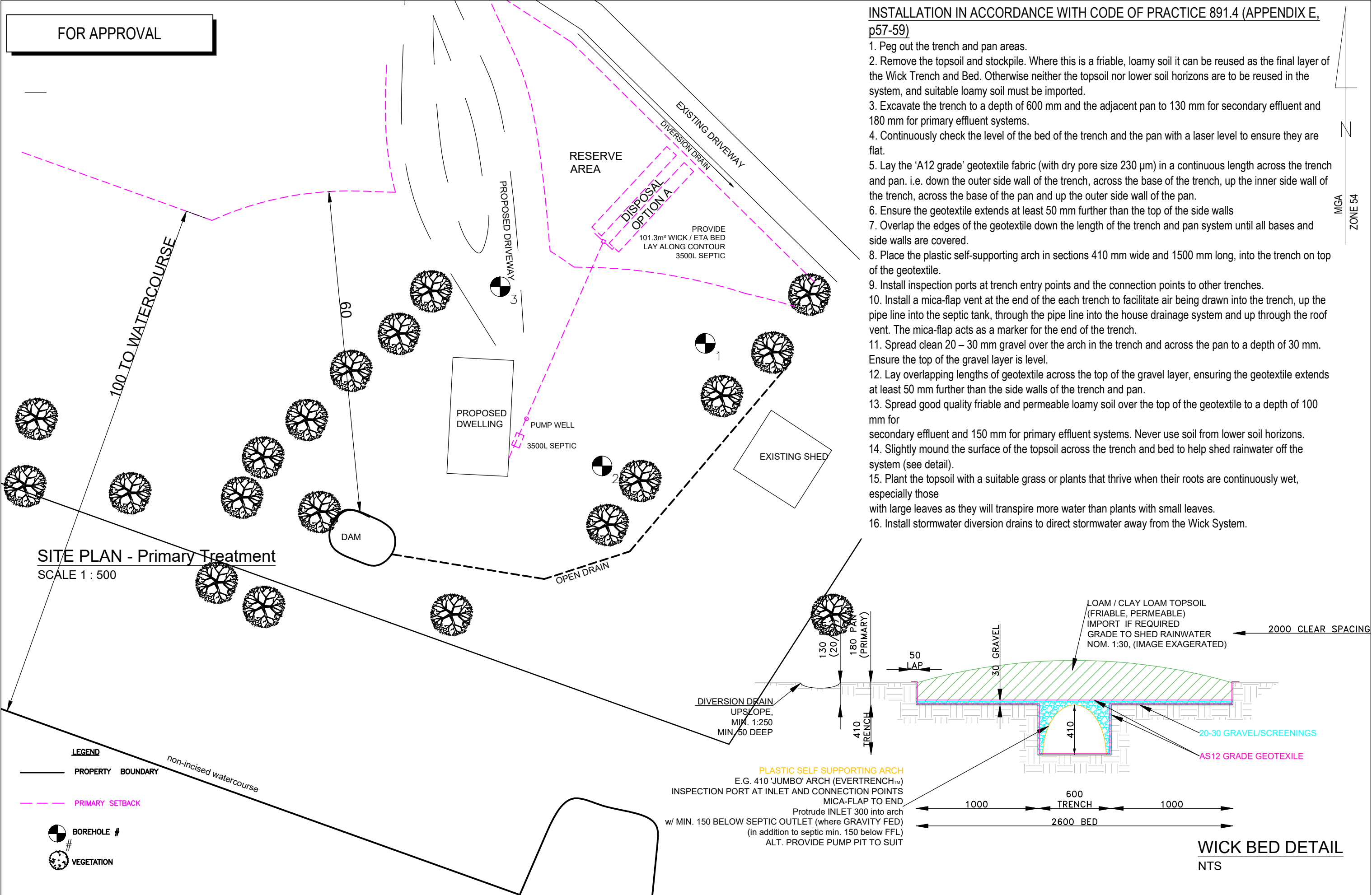
This report is conditional on type of building, siting and conditions present or provided. Changes beyond this will require consultation with this office.

This report primarily considers the ability to sustainably manage wastewater within the allotment.

Long term effects of higher development density within the catchment is beyond the scope of this report.

Recommendations outlined in this report are subject to Council, EPA and referral Water Authority approval as appropriate.

This report and its attachments do not constitute detailed design of the wastewater treatment system.

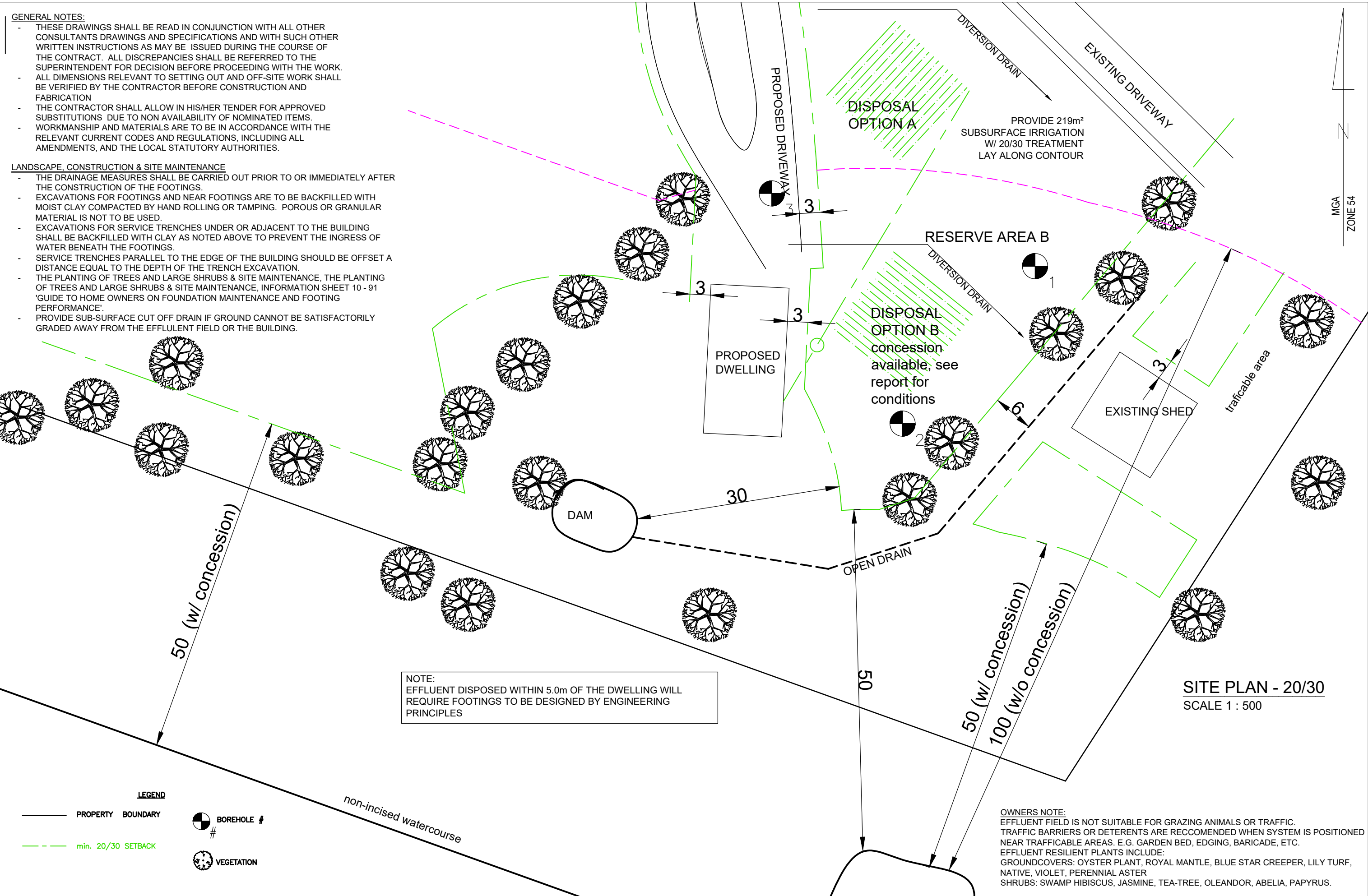


- INSTALLATION IN ACCORDANCE WITH CODE OF PRACTICE 891.4 (APPENDIX E, p57-59)
1. Peg out the trench and pan areas.
 2. Remove the topsoil and stockpile. Where this is a friable, loamy soil it can be reused as the final layer of the Wick Trench and Bed. Otherwise neither the topsoil nor lower soil horizons are to be reused in the system, and suitable loamy soil must be imported.
 3. Excavate the trench to a depth of 600 mm and the adjacent pan to 130 mm for secondary effluent and 180 mm for primary effluent systems.
 4. Continuously check the level of the bed of the trench and the pan with a laser level to ensure they are flat.
 5. Lay the 'A12 grade' geotextile fabric (with dry pore size 230 µm) in a continuous length across the trench and pan. i.e. down the outer side wall of the trench, across the base of the trench, up the inner side wall of the trench, across the base of the pan and up the outer side wall of the pan.
 6. Ensure the geotextile extends at least 50 mm further than the top of the side walls
 7. Overlap the edges of the geotextile down the length of the trench and pan system until all bases and side walls are covered.
 8. Place the plastic self-supporting arch in sections 410 mm wide and 1500 mm long, into the trench on top of the geotextile.
 9. Install inspection ports at trench entry points and the connection points to other trenches.
 10. Install a mica-flap vent at the end of the each trench to facilitate air being drawn into the trench, up the pipe line into the septic tank, through the pipe line into the house drainage system and up through the roof vent. The mica-flap acts as a marker for the end of the trench.
 11. Spread clean 20 – 30 mm gravel over the arch in the trench and across the pan to a depth of 30 mm. Ensure the top of the gravel layer is level.
 12. Lay overlapping lengths of geotextile across the top of the gravel layer, ensuring the geotextile extends at least 50 mm further than the side walls of the trench and pan.
 13. Spread good quality friable and permeable loamy soil over the top of the geotextile to a depth of 100 mm for secondary effluent and 150 mm for primary effluent systems. Never use soil from lower soil horizons.
 14. Slightly mound the surface of the topsoil across the trench and bed to help shed rainwater off the system (see detail).
 15. Plant the topsoil with a suitable grass or plants that thrive when their roots are continuously wet, especially those with large leaves as they will transpire more water than plants with small leaves.
 16. Install stormwater diversion drains to direct stormwater away from the Wick System.

				SCALE 1:500	DISCLAIMER	CLIENT:	TITLE:	PROJECT:	DATE	JOB NO:	REV.
				0 5 10 15 20	This plan has been prepared for Identification purposes only and as such is not a new survey of the title dimensions.	SWAN BUILD P/L	SITE PLAN - PRIMARY TREATMENT	PROPOSED DWELLING	11.05.24	I1956	
				LENGTHS ARE IN METRES				SITE ADDRESS:	AS SHOWN	DRAWING NO.: APP. A	-
								185 Peacock Track, LILLICUR	D.G.K.		
NO.	DATE	ISSUED BY	REVISION / ISSUED FOR								

- GENERAL NOTES:**
- THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL OTHER CONSULTANTS DRAWINGS AND SPECIFICATIONS AND WITH SUCH OTHER WRITTEN INSTRUCTIONS AS MAY BE ISSUED DURING THE COURSE OF THE CONTRACT. ALL DISCREPANCIES SHALL BE REFERRED TO THE SUPERINTENDENT FOR DECISION BEFORE PROCEEDING WITH THE WORK.
 - ALL DIMENSIONS RELEVANT TO SETTING OUT AND OFF-SITE WORK SHALL BE VERIFIED BY THE CONTRACTOR BEFORE CONSTRUCTION AND FABRICATION
 - THE CONTRACTOR SHALL ALLOW IN HIS/HER TENDER FOR APPROVED SUBSTITUTIONS DUE TO NON AVAILABILITY OF NOMINATED ITEMS.
 - WORKMANSHIP AND MATERIALS ARE TO BE IN ACCORDANCE WITH THE RELEVANT CURRENT CODES AND REGULATIONS, INCLUDING ALL AMENDMENTS, AND THE LOCAL STATUTORY AUTHORITIES.

- LANDSCAPE, CONSTRUCTION & SITE MAINTENANCE**
- THE DRAINAGE MEASURES SHALL BE CARRIED OUT PRIOR TO OR IMMEDIATELY AFTER THE CONSTRUCTION OF THE FOOTINGS.
 - EXCAVATIONS FOR FOOTINGS AND NEAR FOOTINGS ARE TO BE BACKFILLED WITH MOIST CLAY COMPACTED BY HAND ROLLING OR TAMPING. POROUS OR GRANULAR MATERIAL IS NOT TO BE USED.
 - EXCAVATIONS FOR SERVICE TRENCHES UNDER OR ADJACENT TO THE BUILDING SHALL BE BACKFILLED WITH CLAY AS NOTED ABOVE TO PREVENT THE INGRESS OF WATER BENEATH THE FOOTINGS.
 - SERVICE TRENCHES PARALLEL TO THE EDGE OF THE BUILDING SHOULD BE OFFSET A DISTANCE EQUAL TO THE DEPTH OF THE TRENCH EXCAVATION.
 - THE PLANTING OF TREES AND LARGE SHRUBS & SITE MAINTENANCE, THE PLANTING OF TREES AND LARGE SHRUBS & SITE MAINTENANCE, INFORMATION SHEET 10 - 91 'GUIDE TO HOME OWNERS ON FOUNDATION MAINTENANCE AND FOOTING PERFORMANCE'.
 - PROVIDE SUB-SURFACE CUT OFF DRAIN IF GROUND CANNOT BE SATISFACTORILY GRADED AWAY FROM THE EFFLUENT FIELD OR THE BUILDING.



NOTE:
EFFLUENT DISPOSED WITHIN 5.0m OF THE DWELLING WILL
REQUIRE FOOTINGS TO BE DESIGNED BY ENGINEERING
PRINCIPLES

SITE PLAN - 20/30
SCALE 1 : 500

LEGEND

- PROPERTY BOUNDARY
- min. 20/30 SETBACK
- BOREHOLE #
- VEGETATION

OWNERS NOTE:
EFFLUENT FIELD IS NOT SUITABLE FOR GRAZING ANIMALS OR TRAFFIC.
TRAFFIC BARRIERS OR DETERENTS ARE RECCOMENDED WHEN SYSTEM IS POSITIONED
NEAR TRAFFICABLE AREAS. E.G. GARDEN BED, EDGING, BARICADE, ETC.
EFFLUENT RESILIENT PLANTS INCLUDE:
GROUNDCOVERS: OYSTER PLANT, ROYAL MANTLE, BLUE STAR CREEPER, LILY TURF,
NATIVE, VIOLET, PERENNIAL ASTER
SHRUBS: SWAMP HIBISCUS, JASMINE, TEA-TREE, OLEANDOR, ABELIA, PAPYRUS.

				SCALE 1:500		DISCLAIMER This plan has been prepared for Identification purposes only and as such is not a new survey of the title dimensions.		CLIENT: SWAN BUILD P/L	TITLE: SITE PLAN - 20/30 TREATMENT	PROJECT: PROPOSED DWELLING	DATE 11.06.24	JOB NO: I1956	REV. -
-	11.06.24	DGK	FOR APPROVAL	0	5	10	15	20			SCALE: AS SHOWN	DRAWING NO.: APP. B	
NO.	DATE	ISSUED BY	REVISION / ISSUED FOR	LENGTHS ARE IN METRES		info@geocentral.com.au				SITE ADDRESS: 185 Peacock Track, LILLICUR	DRAWN: D.G.K.		

APPENDIX C. Soil Profiles.

Client: Swan Build
 Location: 185 Peacock Track
 Date: -
 Drill Type: Hand Auger:
 Diameter: 90mm Power Auger: X

Drill Rig:
 Backhoe:

Sheet No: 1/1
 Job No: -
 Logged By: DGK

Depth (mm)	Soil Description	Profile	Grade	Penetrometer
Bore 1	As Illustrated			
0	Silt LOAM Light brown, dry, med. Dense, minor gravel present. High permeability	Aa	SiL	>50kPa
240	Silty CLAY Yellow-brown, stiff, dry, moderate plasticity, slightly coherent, moderate permeability, minor siltstone gravel present.	B1	LC	>100kPa
900	End of Bore.			
Bore 2	As Illustrated			
0	Silt LOAM Light brown, dry, med. Dense, minor gravel present. High permeability	Aa	SiL	>50kPa
80	Silt LOAM white, dry, med. Dense, minor gravel present. High permeability	Aa	SiL	>50kPa
240	Silty CLAY Yellow-brown, stiff, dry, moderate plasticity, slightly coherent, moderate permeability, minor siltstone gravel present.	B1	LC	>100kPa
1000	End of Bore.			
Bore 3				
0	Silt LOAM Light brown, dry, med. Dense, minor gravel present. High permeability	Aa	SiL	>50kPa
80	Silt LOAM white, dry, med. Dense, minor gravel present. High permeability	Aa	SiL	>50kPa
240	Silty CLAY Yellow-brown, stiff, dry, moderate plasticity, slightly coherent, moderate permeability, minor siltstone gravel present.	B1	LC	>100kPa
800	End of Bore.			

Report any variations to the above profile to the Engineer for approval.

APPENDIX D. Subsurface Water and Nutrient Balances

Sub-surface Irrigation - Water Balance Calculation 185 Peacock Track, Lillicur

Assessor: Darren Kosh (BEngSc, MEngTech)

Summary

LAA:

3 Bed	261 m ²
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Assumptions:

DIR:	3 mm/day	Effective Permeable Strata	Light Clays
DIR	21 mm/week		
Daily Flow	600 l/day	with	Full Water Reduction Fixtures
OR		3 (Equivalent) Bedrooms	
Surface Run-off 'C'	0.37	>6 % slope,	Pasture, Non-clayey surface soils
Pan Evaporation	1393.7 mm	(Temperate NW)	

Month	Pan Evap. E mm (Temperate NW)	Crop Factor	Evap-Trans ET mm	Rainfall (Mean) mm (#88137)	Ret. Rain Rr mm	Perc	Total Output mm/m	Effluent Applied mm	Total Input mm/m	Storage for month mm/m	Land for Zero Storage (m ²)
Jan	223	0.80	178.4	48.5	30.6	93.0	271	71.3	101.8	169.6	77
Feb	196	0.80	156.8	22.3	14.0	84.0	241	64.4	78.4	162.4	74
Mar	149	0.70	104.3	25.3	15.9	93.0	197	71.3	87.2	110.1	103
Apr	91.7	0.70	64.2	31.7	20.0	90.0	154	69.0	88.9	65.3	134
May	50	0.60	30.0	28.6	18.0	93.0	123	71.3	89.3	33.7	177
Jun	31	0.60	18.6	47.5	29.9	90.0	109	160.2	190.1	-81.5	229
July	38	0.60	22.8	50.6	31.9	93.0	116	71.3	103.1	12.7	222
Aug	50	0.60	30.0	50.5	31.8	93.0	123	71.3	103.1	19.9	204
Sept	80	0.70	56.0	45.3	28.5	90.0	146	69.0	97.5	48.5	153
Oct	119	0.80	95.2	40.5	25.5	93.0	188	71.3	96.8	91.4	114
Nov	174	0.80	139.2	43.9	27.7	90.0	229	69.0	96.6	132.6	89
Dec	192	0.80	153.6	37.6	23.7	93.0	247	71.3	95.0	151.6	83
Totals	1393.7			472.3				Min. Area	229	m ²	

Sub-surface Irrigation - Nutrient Balance Calculation

<u>Wastewater Loading:</u>			<u>Nutrient Crop Uptake:</u> (Lawn-managed)		
Hydraulic Load	600	l/day	Crop N Uptake	240	kgN/ha/yr
			Crop P Uptake	25.0	kgP/ha/yr
<u>Nitrogen Loading:</u>			<u>Phosphorous Sorption:</u>		
Effluent N Concentration	30	mg/l	P sorption result	589.2	mg/kg
Daily N Load	18000	mg/day			
Annual N Load	6570000	mg			
Allow 20% loss through denitrification, volatilisation etc.					
Actual annual N load	5.256	kg/yr			
<u>Phosphorous Loading:</u>			Minimum Area Required:		
Effluent P Concentration	10	mg/l	Nitrogen		
Daily P Load	6000	mg/day	219 m²		
Annual P Load	2.19	kg	Phosphorous*		
Allow uptake by plants	25.0	P/ha/yr	261 m²		

Eff. Soil thickness (mm)	P sorption (mg/kg)	P sorption / layer	Bulk density g/cm ³	P sorp kg/ha
240	150	3600	1.8	6480 sic
1260	500	63000	1.3	81900 sic
0	0	0	0	0 -
(Weighted) P Sorption allow:		589.2	kg/ha	
Design Life	50	year		
Factor	0.5			
P Sorption each year	58.92	kg/ha/yr		
Total annual uptake rate:	58.92	+	25.0	= 83.92 Pkg/ha/yr

APPENDIX E. Wick Bed Sizing

Wick Bed Water Balance 185 Peacock Track, Lillicur

Assessor: Darren Kosh (BEngSc, MEngTech)

Assumptions:

DLR	5 mm/day	(Table 9, COP)	(Design Loading Rate)
Daily Flow	600 L/day	(Table 4, COP)	
Annual Pan Evaporation	1393.7 mm		(Interplated from average BoM data)
Mean Rainfall	472.3 mm at	Ballarat	(BoM Station ID: (#88137))

Water Balance:

Month	Pan Evap. E	Crop Factor	Evap-Tran ET	Rainfall R (Mean) (#88137)	Surface RO Coefficient F	Ret. Rain Rr R*F	Percolation I mm trench	Disp. Rate B S+R+P-E-ET-I	Effluent Applied L	Required Area L/B m ²
(Temperate NW)	mm		mm	mm		mm		mm		
Jan	223	0.80	971.2889	48.5	0.45	145.2	155.0	981	18600.0	19.0
Feb	196	0.80	853.6889	22.3	0.45	66.8	140.0	927	16800.0	18.1
Mar	149	0.70	567.8556	25.3	0.45	75.8	155.0	647	18600.0	28.7
Apr	91.7	0.70	349.4789	31.7	0.45	94.9	150.0	405	18000.0	44.5
May	50	0.60	163.3333	28.6	0.45	85.6	155.0	233	18600.0	79.9
Jun	31	0.60	101.2667	47.5	0.45	142.2	150.0	109	18000.0	165.1
July	38	0.60	124.1333	50.6	0.55	124.0	155.0	155	18600.0	119.9
Aug	50	0.60	163.3333	50.5	0.55	123.7	155.0	195	18600.0	95.6
Sept	80	0.70	304.8889	45.3	0.45	135.6	150.0	319	18000.0	56.4
Oct	119	0.80	518.3111	40.5	0.45	121.3	155.0	552	18600.0	33.7
Nov	174	0.80	757.8667	43.9	0.45	131.5	150.0	776	18000.0	23.2
Dec	192	0.80	836.2667	37.6	0.45	112.6	155.0	879	18600.0	21.2

Month	Trial Area y	App. Rate	Disp. Rate	Net Rate	Exceedance	Stored Depth
	m ²	mm	(from above) mm	mm	mm	mm
Dec	89.2					0.0
Jan		208.5	981	-773	0.0	0.0
Feb		188.3	927	-739	0.0	0.0
Mar		208.5	647	-439	0.0	0.0
Apr		201.8	405	-203	0.0	0.0
May		208.5	233	-24	0.0	0.0
Jun		201.8	109	93	0.0	92.8
July		208.5	155	53	92.8	146.1
Aug		208.5	195	14	146.1	160.0
Sept		201.8	319	-117	160.0	42.5
Oct		208.5	552	-344	42.5	0.0
Nov		201.8	776	-575	0.0	0.0
Dec		208.5	879	-670	0.0	0.0

Trench Storage (Sat) 152 mm
Surface Storage (AWC) 0 mm
Peak Depth: 380 mm

Lin. M 36.4 m
bed width 2.45 m
Bed Area 89.20465 m²
Trench wid 0.45 m
Tench Area 16.38453 m²
5.444444 Ab/At

41.3174 Disp. Only

Depth of Stored Effluent =

Depth = 400.0 mm

Summary:

Min. 89.3 m² Wick bed
e.g. 2 rows, min. 2.0m clear spacing, x 2.45 m wide x 18.3 m long

Recommend:

Min. 101.3 m² Wick bed
e.g. 2 rows, min. 2.0m clear spacing, x 2.45 m wide x 20.7 m long

APPENDIX F. Site Photographs

Frontage



Photograph 1: LAA B



Photograph 2: Open Drain, SE



Photograph 3: Proposed siting



Photograph 4: Surface Water, Mia Mia Creek + Dam



Photograph 5: Vegetation

