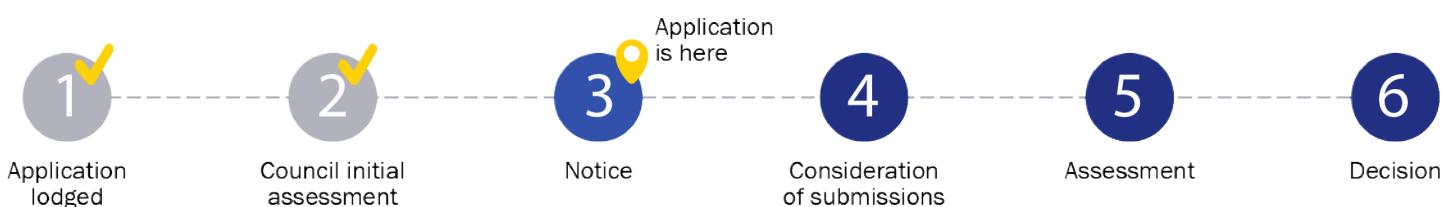


# Notice of Application for a Planning Permit



|  |  |   |  |  |
|--|--|---|--|--|
| The land affected by the application is located at:  | 357 Army Road, Pakenham VIC 3810<br>L1 TP326574 V8164 F350   |   |  |  |
| The application is for a permit to:  | Buildings and works associated with the construction of a replacement dwelling   |   |  |  |
| A permit is required under the following clauses of the planning scheme:   |  |   |  |  |
| 35.04-5  | Construct a building or construct or carry out works associated with a use in Section 2 (Dwelling)   |   |  |  |
| 42.01-2  | Construct a building or construct or carry out works   | <br><b>ADVERTISED MATERIAL</b><br>Planning Application: T250701<br>Date Prepared: 29 January 2026  |  |  |
| <b>APPLICATION DETAILS</b>   |  |   |  |  |
| The applicant for the permit is:   | Town Planning & Co   |   |  |  |
| Application number:  | T250701  |   |  |  |
| <p>You may look at the application and any documents that support the application at the office of the Responsible Authority:</p> <p>Cardinia Shire Council, 20 Siding Avenue, Officer 3809.</p> <p>This can be done during office hours and is free of charge.</p> <p>Documents can also be viewed on Council's website at <a href="http://cardinia.vic.gov.au/advertisedplans">cardinia.vic.gov.au/advertisedplans</a> or by scanning the QR code.</p> |  |   |  |  |
| <b>HOW CAN I MAKE A SUBMISSION?</b>  |  |   |  |  |
| This application has not been decided. You can still make a submission before a decision has been made. The Responsible Authority will not decide on the application before:   |  | 13 February 2026  |  |  |
| <b>WHAT ARE MY OPTIONS?</b><br><br>Any person who may be affected by the granting of the permit may object or make other submissions to the responsible authority.<br><br>If you object, the Responsible Authority will notify you of the decision when it is issued.  | An objection must: <ul style="list-style-type: none"><li>be made to the Responsible Authority in writing;</li><li>include the reasons for the objection; and</li><li>state how the objector would be affected.</li></ul> | The Responsible Authority must make a copy of every objection available at its office for any person to inspect during office hours free of charge until the end of the period during which an application may be made for review of a decision on the application. |  |  |





ePlanning

## Application Summary

Portal Reference A4254551

### Basic Information

|               |  |
|---------------|--|
| Proposed Use  | Development of a replacement dwelling, decommissioning of existing dwelling, earthworks and all associated works |
| Current Use   | Dwelling, sheds and associated structures  |
| Cost of Works | \$950,000  |
| Site Address  | 357 Army Road Pakenham 3810  |

### Covenant Disclaimer

Does the proposal breach, in any way, an encumbrance on title such as restrictive covenant, section 173 agreement or other obligation such as an easement or building envelope?  No such encumbrances are breached

Note: During the application process you may be required to provide more information in relation to any encumbrances.

### Contacts

Total \$1,580.10



Civic Centre  
20 Siding Avenue, Officer, Victoria

Council's Operations Centre (Depot)  
Burton Road, Pakenham, Victoria



Postal Address  
Cardinia Shire Council  
P.O. Box 7, Pakenham VIC, 3810  
Email: mail@cardinia.vic.gov.au

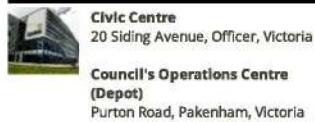


Monday to Friday 8.30am–5pm  
Phone: 1300 787 624  
After Hours: 1300 787 624  
Fax: 03 5941 3784

## Documents Uploaded

| Date       | Type                 | Filename   |
|------------|----------------------|--|
| 14-11-2025 | Additional Document  | Land Capability Assessment_357 Army Rd Pakenham.pdf    |
| 14-11-2025 | A Copy of Title      | Title Documents.pdf                                    |
| 14-11-2025 | Site plans           | Development Plans.pdf                                  |
| 14-11-2025 | Site plans           | Site Survey Plan.pdf                                   |
| 14-11-2025 | Overlay Requirements | Town Planning Report V1.0 - 357 Army Road PAKENHAM.pdf |

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



**Postal Address**  
Cardinia Shire Council  
P.O. Box 7, Pakenham VIC, 3810  
**Email:** mail@cardinia.vic.gov.au

Monday to Friday  
8.30am–5pm  
**Phone:** 1300 787 624  
**After Hours:** 1300 787 624  
**Fax:** 03 5941 3784



**Civic Centre**  
20 Siding Avenue, Officer, Victoria  
**Council's Operations Centre (Depot)**  
Purton Road, Pakenham, Victoria

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Monday to Friday 8.30am–5pm  
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**After Hours:** 1300 787 624  
**Fax:** 03 5941 3784

# WOOD RESIDENCE

## Proposed New Dwelling

357 Army Road,  
Pakenham, VIC  
3810

Job No:24083



DRAKE DESIGN PTY LTD  
Suite 2, Level 1, 2 Beaconsfield-Emerald Rd  
Beaconsfield Vic 3807  
Email: info@drakedesign.com.au  
www.drakedesign.com.au  
ABN: 52 638 464 906 ACN: 121 878 331

Town Planning Issue

| Sheet List - TP |                           |          |
|-----------------|---------------------------|----------|
| DWG NO.         | TITLE                     | REVISION |
| TP000           | Cover Sheet               | 1        |
| TP101           | Existing / Demo Site Plan | 1        |
| TP102           | Existing Floor Plan       | 1        |
| TP201           | Proposed Site Plan        | 1        |
| TP202           | Proposed Floor Plan       | 1        |
| TP301           | Proposed Elevation        | 1        |
| TP601           | Proposed Materials        | 1        |
| TP901           | Proposed 3D Views         | 1        |



Proposed New Dwelling

357 Army Road, Pakenham, VIC 3810

Jamie Wood

DRAKE  
DESIGN  
REGISTERED  
Building Practitioner

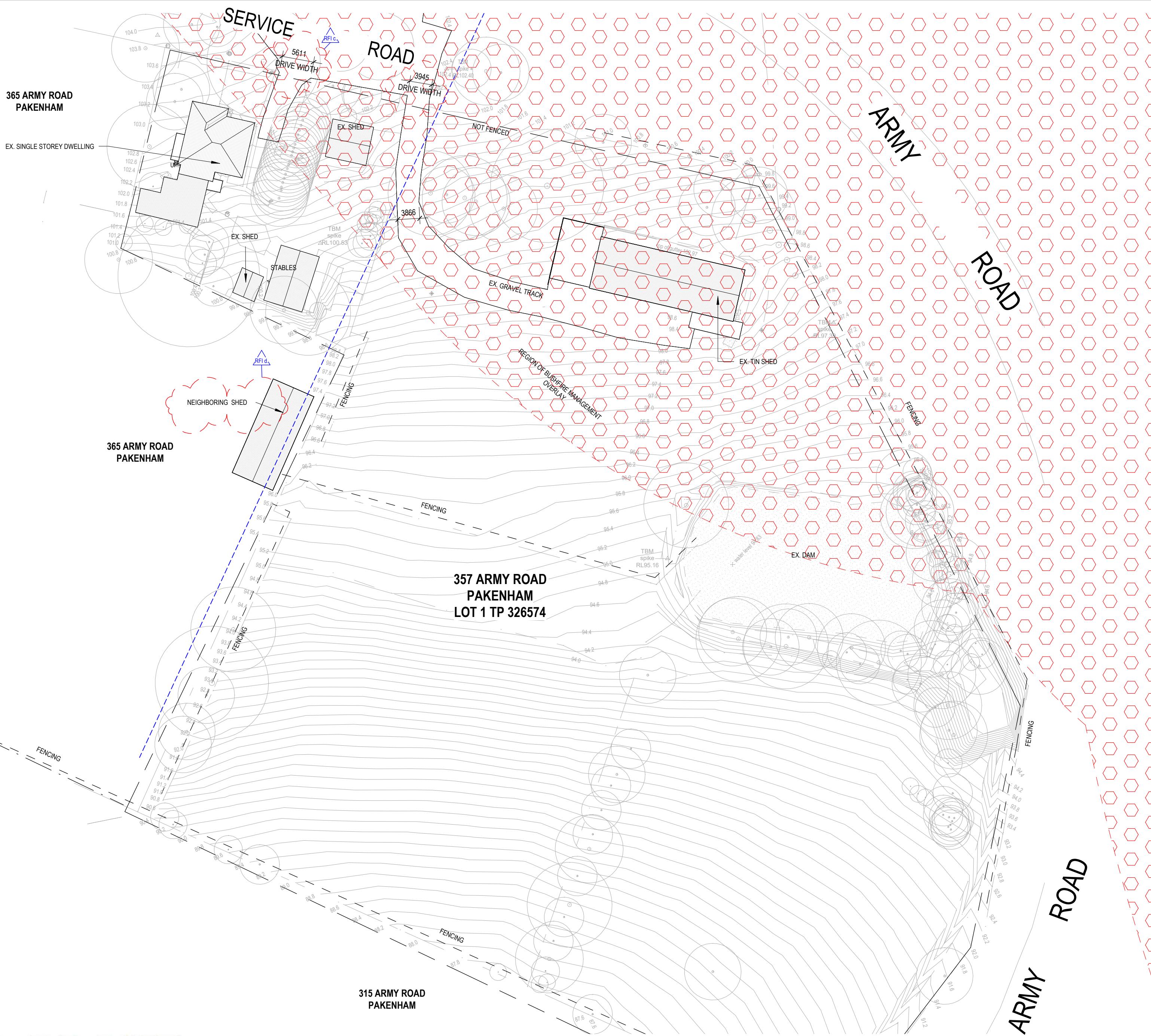
Proposed New Dwelling

357 Army Road, Pakenham, VIC 3810

Jamie Wood

Job No:24083  
Cover Sheet TP000 1

Date: JAN. 2025 Scale: @A2 Drawn by: Author  
Rev No. 1 Description TP1 ISSUE Date 14-01-2026



| Areas - Site Calculations |                         |            |
|---------------------------|-------------------------|------------|
|                           | Area                    | Percentage |
| Total Site Area           | 19419.63 m <sup>2</sup> | 100%       |



## Proposed New Dwelling

**357 Army Road, Pakenham, VIC 3810**

Jamie Wood

DRAKE DESIGN PTY LTD  
SUITE 2, LEVEL 1  
2 BEACONFIELD-EMERALD RD  
BEACONFIELD VIC 3807  
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INFO@DRAKEDESIGN.COM.AU  
WWW.DRAKEDESIGN.COM.AU  
A.T.F. DRAKE FAMILY TRUST - ABN: 52 638 464 906 - ADN: 191 678 331

**Job No:24083**

Existing / Demo Site Plan TP101 1

Date: JAN. 2025 Scale: 1 : 500 @A2 Drawn by: Author

Rev No.

**Description**  
TP1 ISSUE

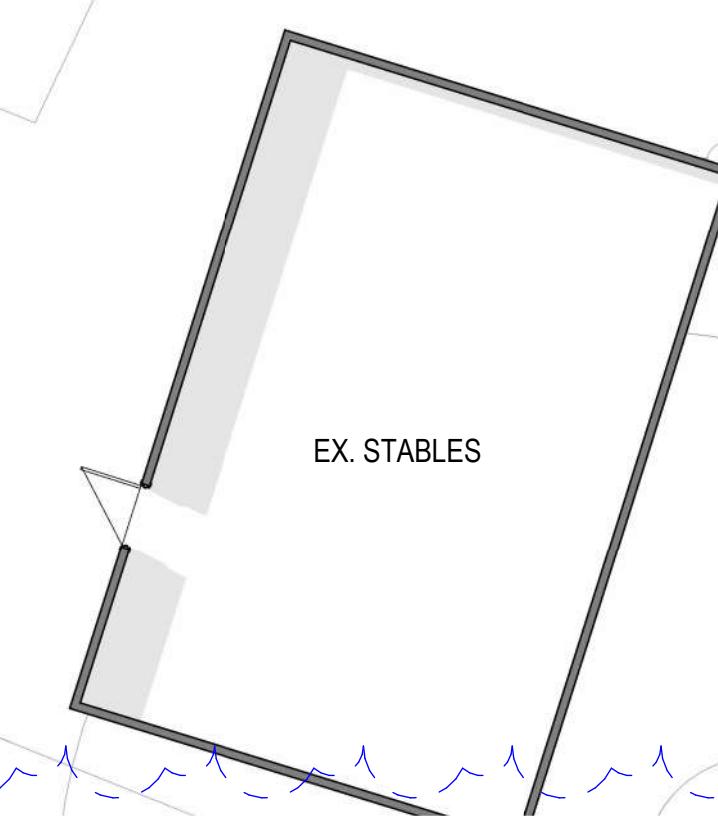
14-01-2026

1

EX. SINGLE STOREY  
DWELLING TO BE RE  
PURPOSED AS STUDIO  
WITH FOOD PREPARATION  
FACILITIES REMOVED



TBM  
spike  
△RL100.53



**Proposed New Dwelling**  
**357 Army Road, Pakenham, VIC 3810**

Jamie Wood

Job No:24083

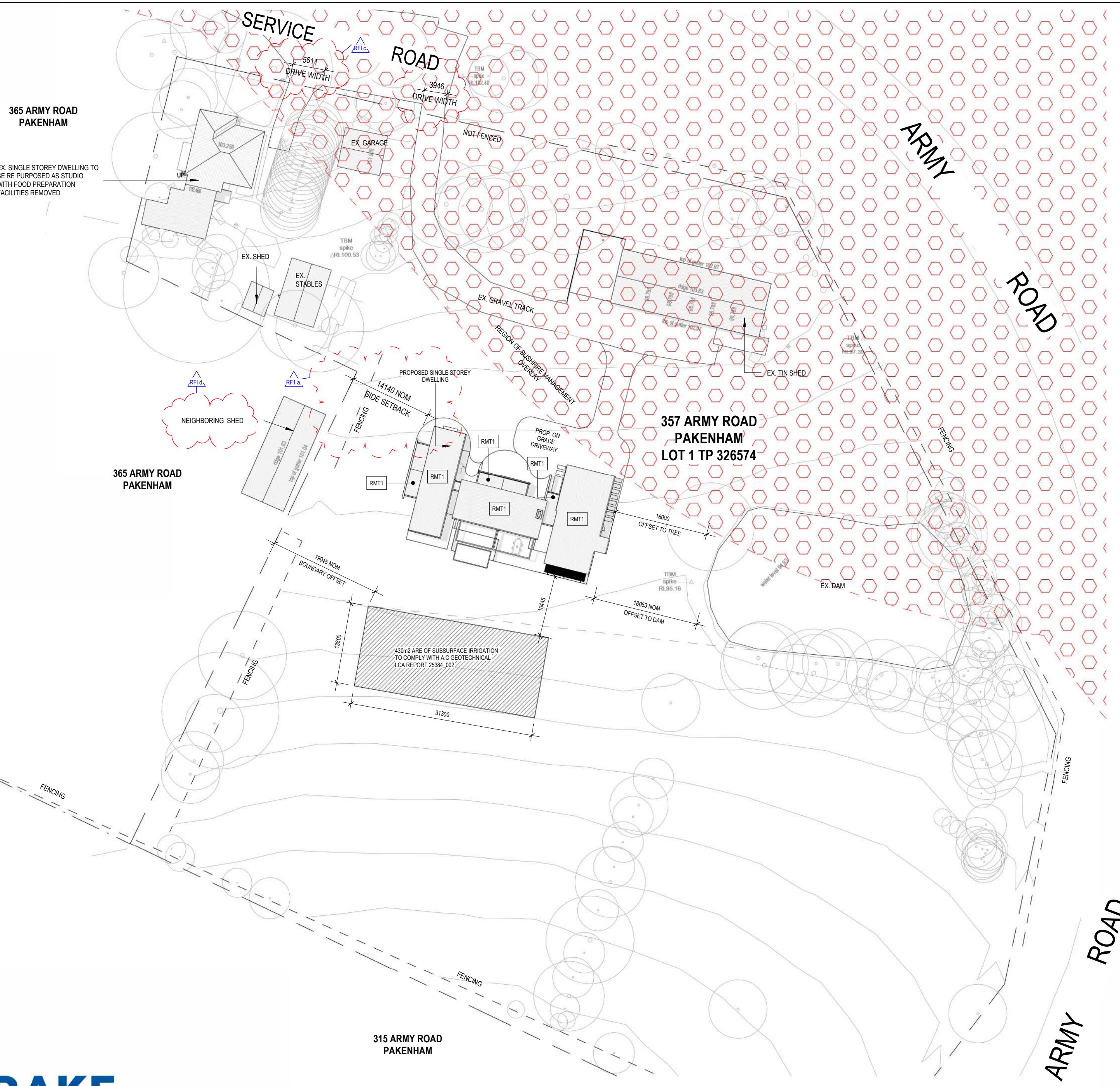
Existing Floor Plan TP102 1

Date: JAN. 2025 Scale: 1:100 @A2 Drawn by: Author

Rev No.  
1

Description  
TP1 ISSUE

Date  
14-01-2026



| Areas - Site Calculations |                         |            |
|---------------------------|-------------------------|------------|
|                           | Area                    | Percentage |
| Total Site Area           | 19419.63 m <sup>2</sup> | 100%       |
| Permeable Area            | 18266.13 m <sup>2</sup> | 94.06%     |

| Areas - Proposed      |                       |       |
|-----------------------|-----------------------|-------|
|                       | Area                  | SQ    |
| Proposed Ground Floor | 322.24 m <sup>2</sup> | 34.69 |
| Proposed Garage       | 59.34 m <sup>2</sup>  | 6.39  |
| Proposed Alfresco     | 123.25 m <sup>2</sup> | 13.27 |
| Proposed Porch        | 6.54 m <sup>2</sup>   | 0.70  |
| Total Area            | 511.36 m <sup>2</sup> | 55.04 |



## Proposed New Dwelling

**357 Army Road, Pakenham, VIC 3810**

Jamie Wood

Drake Design Pty Ltd :P  
Suite 2, Level 1 03 8769 8096 :P  
2 Beaconsfield-Emerald Rd info@drakedesign.com.au :W  
Beaconsfield Vic 3307 www.drakedesign.com.au :W

A.T.F. DRAKE FAMILY TRUST - ABN: 52 638 464 906 - ACN: 121 876 331

**Job No:24083**

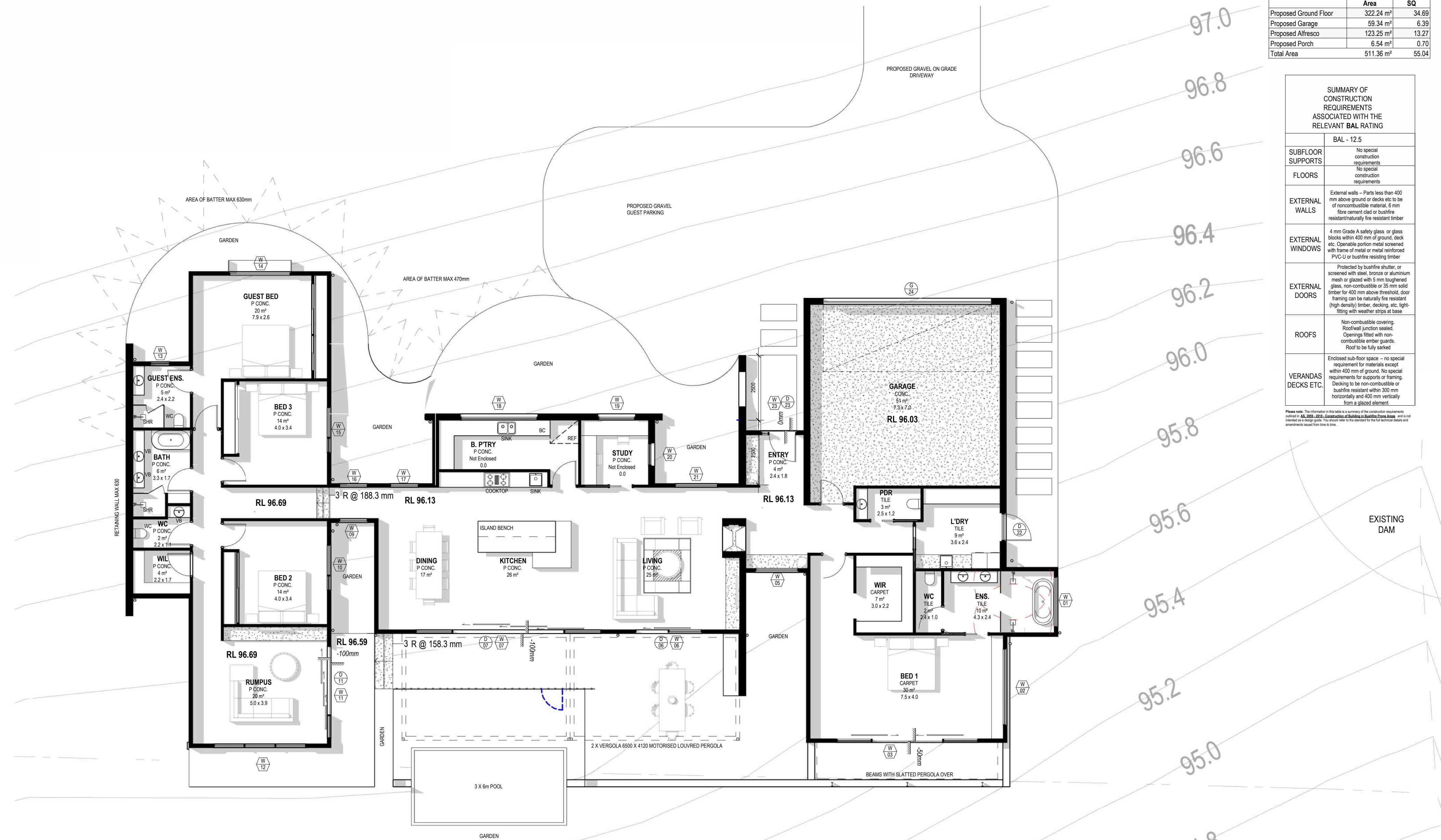
**Proposed Site Plan** **TP201** 1

Date: JAN 2025 Scale: 1 : 500 @A2 Drawn by: CAF

Rev No

**Description**  
TP1 ISSUE

ate



# **Proposed New Dwelling**

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## **357 Army Road, Pakenham, VIC 3810**

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| Areas - Proposed      |                       |       |
|-----------------------|-----------------------|-------|
|                       | Area                  | SQ    |
| proposed Ground Floor | 322.24 m <sup>2</sup> | 34.69 |
| proposed Garage       | 59.34 m <sup>2</sup>  | 6.39  |
| proposed Alfresco     | 123.25 m <sup>2</sup> | 13.27 |
| proposed Porch        | 6.54 m <sup>2</sup>   | 0.70  |
| otal Area             | 511.36 m <sup>2</sup> | 55.04 |

**SUMMARY OF  
CONSTRUCTION  
REQUIREMENTS  
ASSOCIATED WITH THE  
RELEVANT BAL RATING**

**Please note:** The information in this table is a summary of the construction requirements outlined in [AS 3959 - 2018 - Construction of Building in Bushfire Prone Areas](#) and is not intended as a design guide. You should refer to the standard for the full technical details and amendments issued from time to time.

## EXISTING DAM

Job No:24083  
Plan TP202 1

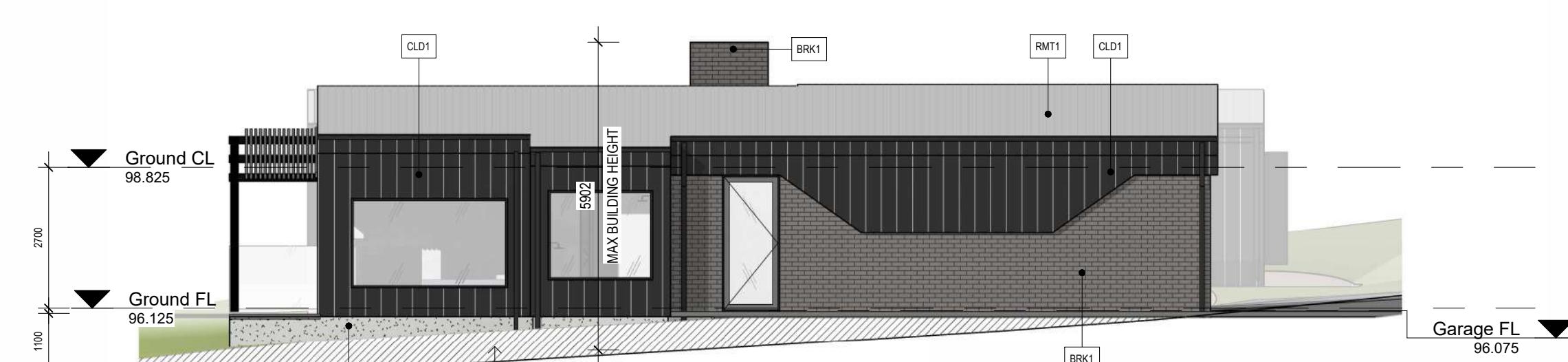
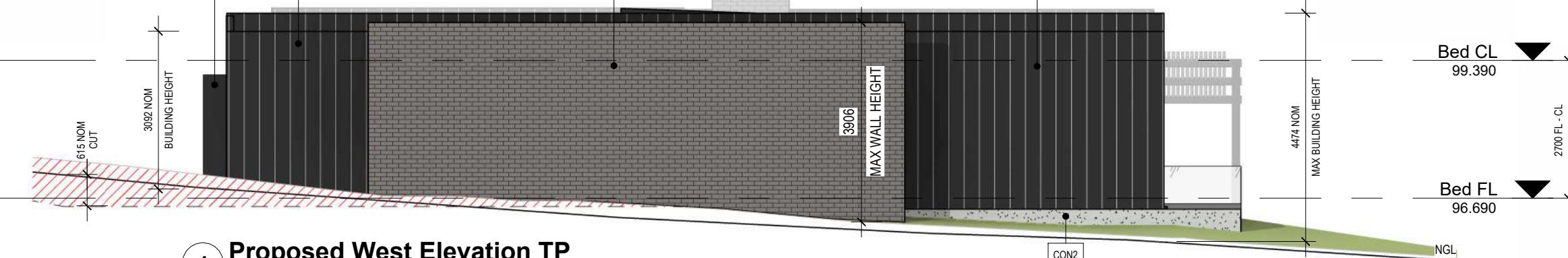
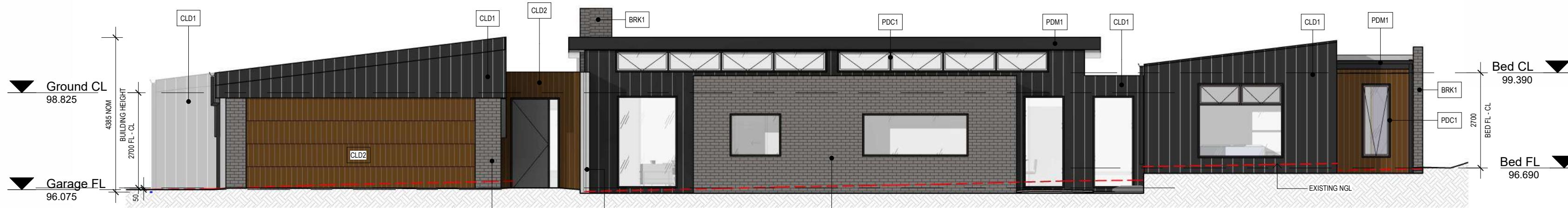
Date: JAN. 2025 Scale: As indicated @A2 Drawn by: CAE

Rev No.

## Description

**Date**





| Schedule - External Material |                                |                     |                                       |       |
|------------------------------|--------------------------------|---------------------|---------------------------------------|-------|
| Code                         | Description                    | Manufacturer        | Model                                 | Image |
| BRK1                         | BRICKWORK:                     | AUSTRAL OR SIMILAR  | RECYCLED REDS OR SIMILAR              |       |
| CLD1                         | VERTICAL CLADDING:             | UNICOTE             | LUX MIDNIGHT MATTE 300mm INTERLOCKING |       |
| CLD2                         | VERTICAL CLADDING              | UNICOTE             | LUX ASHWOOD 150MM INTERLOCKING        |       |
| CON2                         | CONCRETE                       | BY BUILDER          | TIFF / OFF FORM CONCRETE PANEL        |       |
| PDC1                         | WINDOW AND DOOR FRAMES:        | BY BUILDER          | POWDER COATED TO MATCH CLD1           |       |
| PDM1                         | DOWNPIPES, FASCIA AND GUTTERS: | LYSAUGHT OR SIMILAR | PRESSED METAL TO MATCH CLD1           |       |
| RMT1                         | ROOF:                          | LYSAUGHT OR SIMILAR | PRESSED METAL TO MATCH CLD1           |       |

Job No: 24083

Proposed Elevations TP301 1

Date: JAN. 2025 Scale: 1 : 100 @A2 Drawn by: CAE

Rev No. 1 Description TP1 ISSUE Date 14-01-2026

| Schedule - External Material |                                |                     |                                       |   |
|------------------------------|--------------------------------|---------------------|---------------------------------------|---|
| Code                         | Description                    | Manufacturer        | Model                                 | Image   |
| BRK1                         | BRICKWORK:                     | AUSTRAL OR SIMILAR  | RECYCLED REDS OR SIMILAR              |    |
| CLD1                         | VERTICAL CLADDING:             | UNICOTE             | LUX MIDNIGHT MATTE 300mm INTERLOCKING |    |
| CLD2                         | VERTICAL CLADDING              | UNICOTE             | LUX ASHWOOD 150MM INTERLOCKING        |   |
| CON2                         | CONCRETE                       | BY BUILDER          | TIILT / OFF FORM CONCRETE PANEL       |  |
| PDC1                         | WINDOW AND DOOR FRAMES:        | BY BUILDER          | POWDER COATED TO MATCH CLD1           |  |
| PDM1                         | DOWNPIPES, FASCIA AND GUTTERS: | LYSAUGHT OR SIMILAR | PRESSED METAL TO MATCH CLD1           |  |
| RMT1                         | ROOF:                          | LYSAUGHT OR SIMILAR | PRESSED METAL TO MATCH CLD1           |  |



Proposed New Dwelling  
357 Army Road, Pakenham, VIC 3810

Jamie Wood

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03 9759 8096 |P  
info@drakedesign.com.au |E  
www.drakedesign.com.au |W

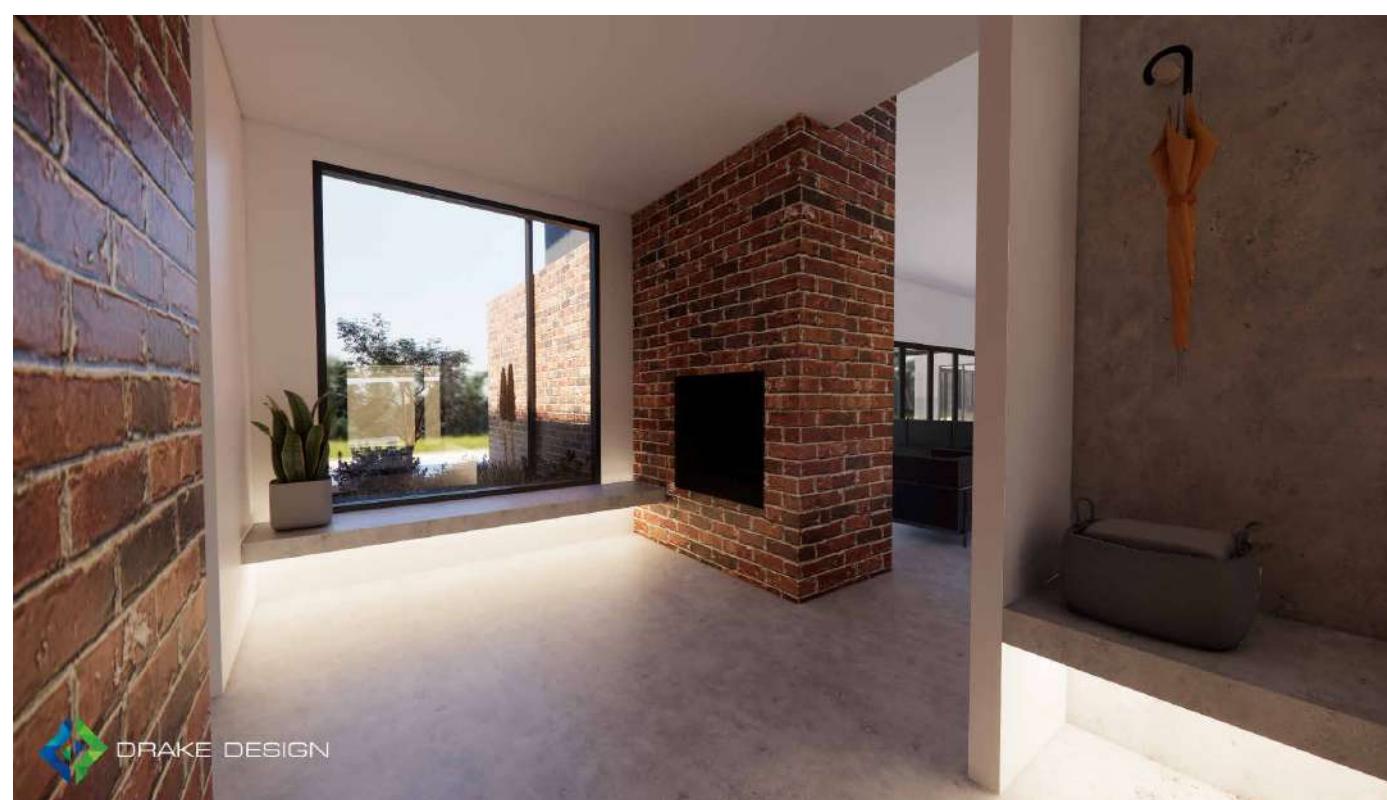
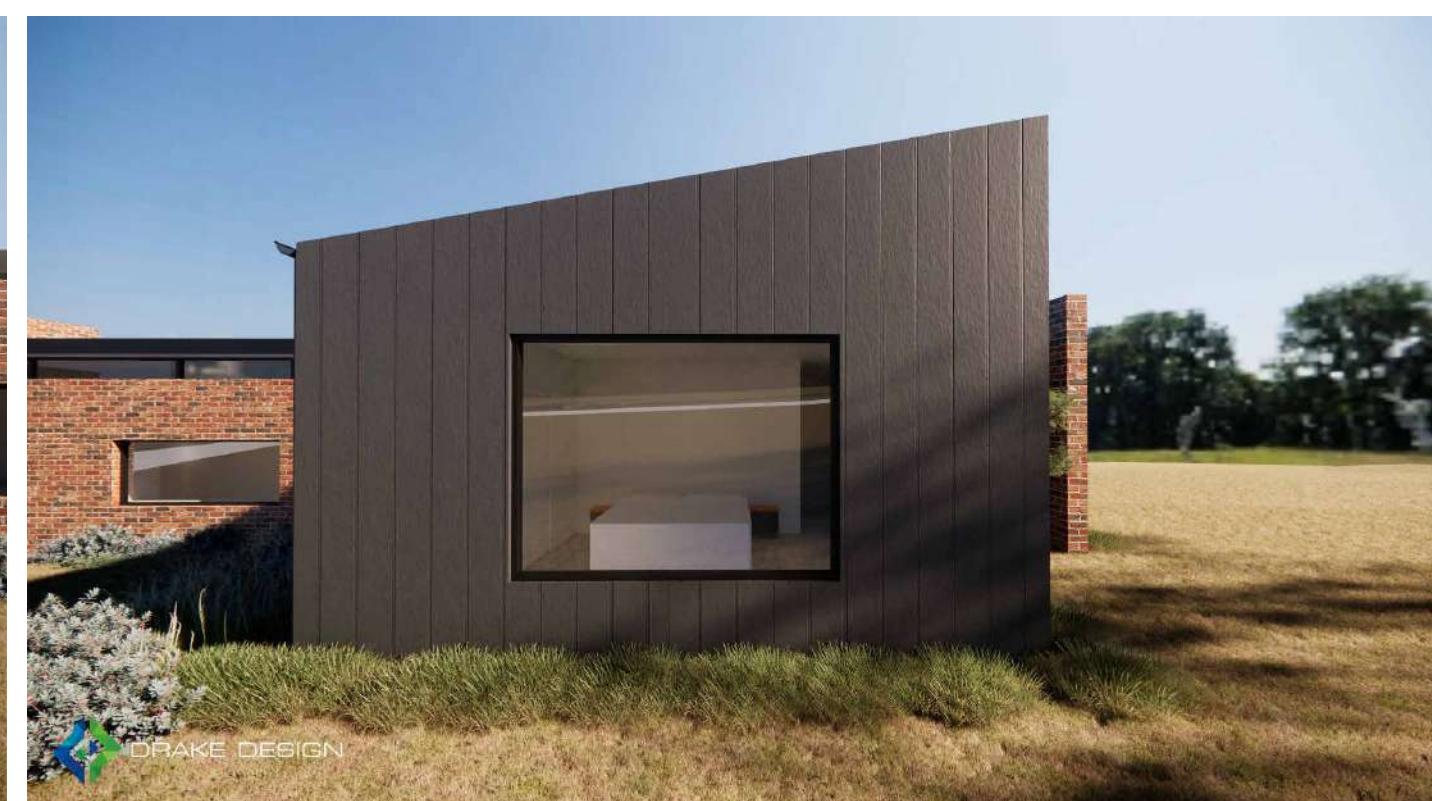
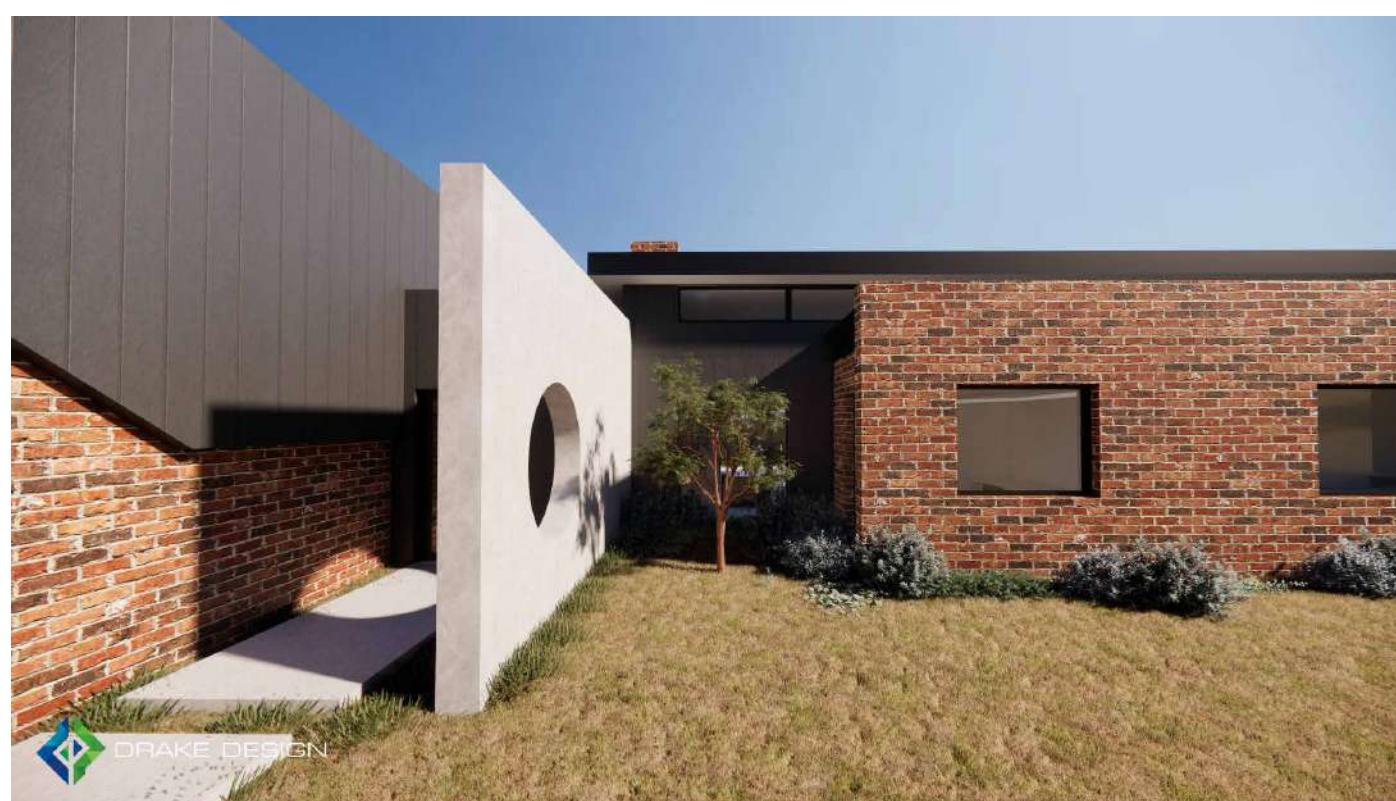
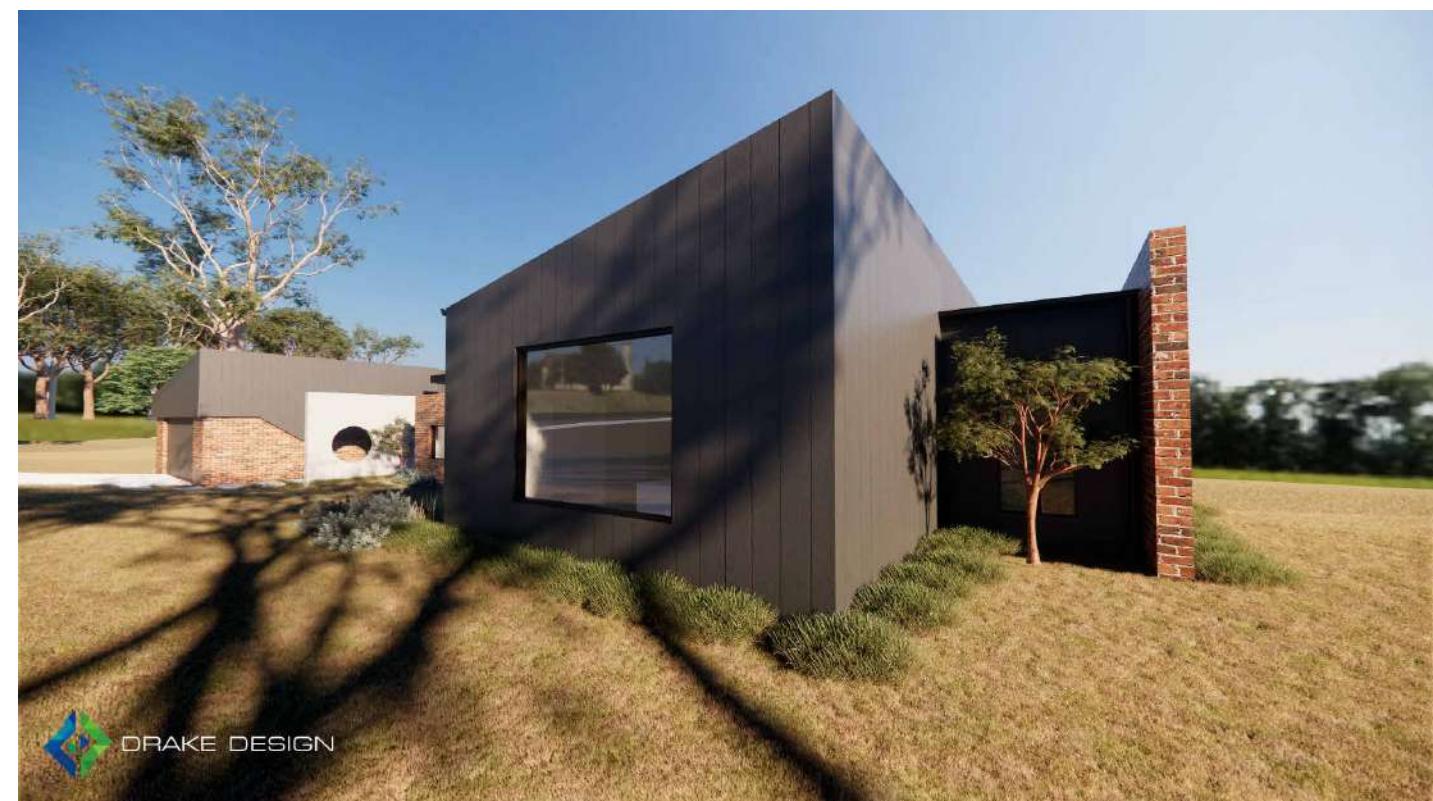
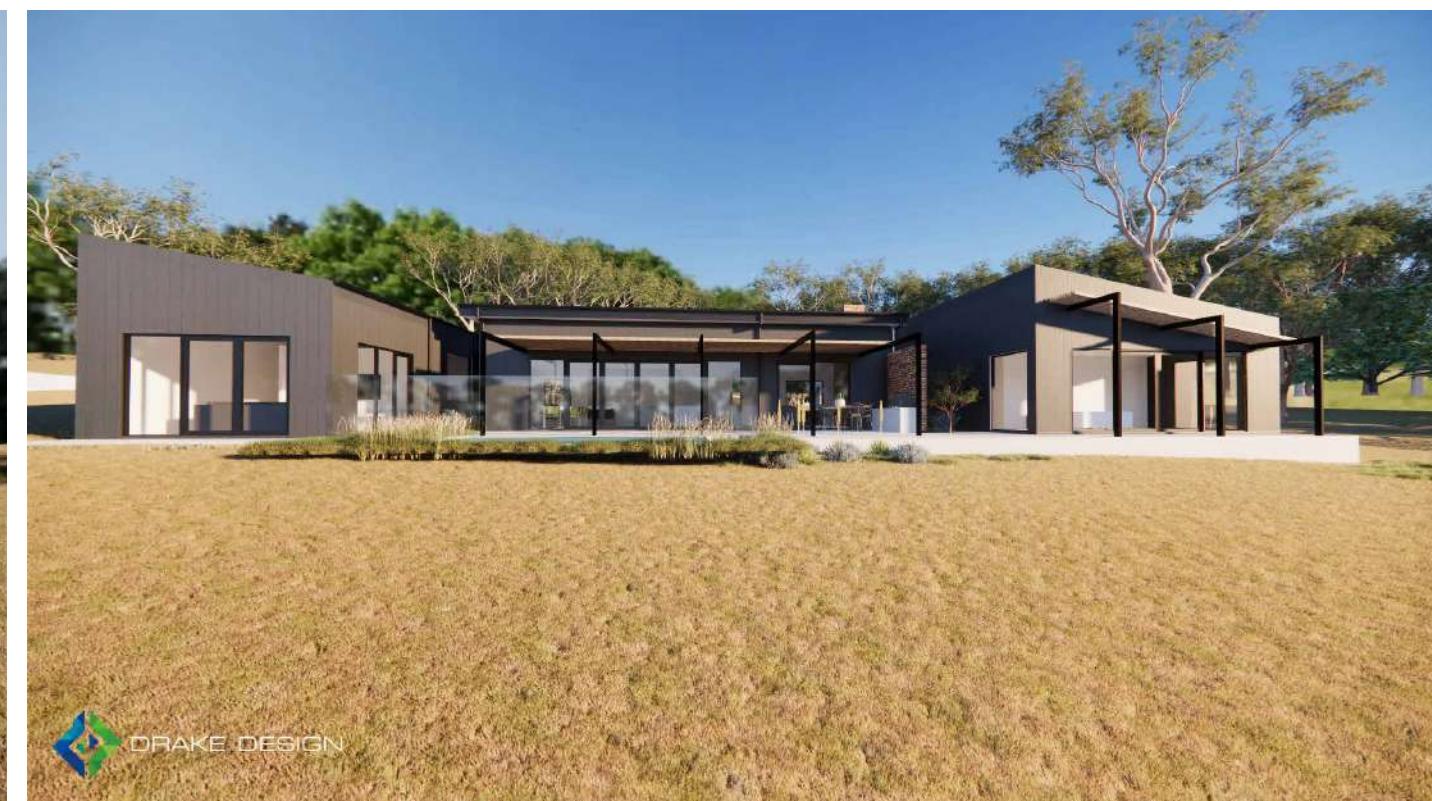
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Job No:24083

Proposed Materials TP601 1

Date: JAN. 2025 Scale: @A2 Drawn by: Author

Rev No. 1 Description TP1 ISSUE Date 14-01-2026



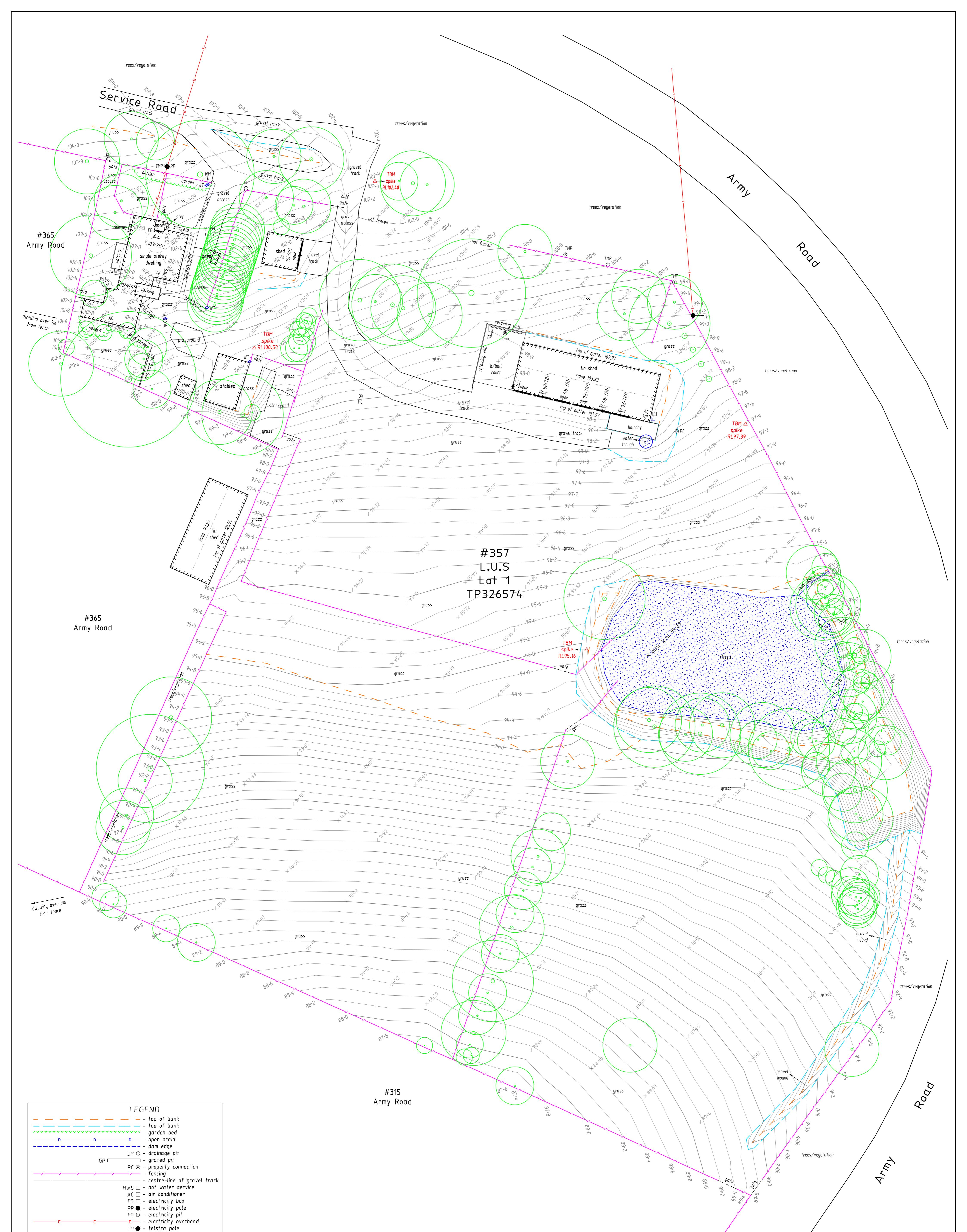
## Proposed New Dwelling 357 Army Road, Pakenham, VIC 3810

Jamie Wood

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Level 1  
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Beaconfield Vic 3807  
03 9759 8096 |P  
info@drakedesign.com.au |E  
www.drakedesign.com.au |W

Job No:24083  
Proposed 3D Views TP901 1

Date: JAN. 2025  
Rev No. 1  
Scale: @A2  
Description: TP1 ISSUE  
Drawn by: CAE  
Date 14-01-2026



# Town Planning Response

## 357 Army Road PAKENHAM

Version 1.0 | November 2025

# Executive Summary

## Background



**Property Description**  
Lot 1 TP 326574S  
Vol. 08164 Fol. 350

## Application Details

|                                |  |
|--------------------------------|--|
| Description of Proposal        | Development of a replacement dwelling, decommissioning of existing dwelling, earthworks and all associated works |
| Permit Trigger/s               | Clause 35.04-5 (GWZ1) – <i>Construct a building or carry out works, earthworks</i>                               |
| Responsible Authority          | Cardinia Shire Council   |
| Mandatory Referral Authorities | N/A  |

## Planning Considerations

|                              |  |
|------------------------------|--|
| Relevant Planning Scheme     | Cardinia   |
| Zone                         | Clause 35.04 – Green Wedge Zone, Schedule 1 (GWZ1)   |
| Overlays                     | Clause 42.01 – Environmental Significance Overlay, Schedule 1 (ESO1)<br>Clause 44.06 – Bushfire Management Overlay (BMO) |
| Strategic Planning Documents | N/A  |

## Cultural Heritage

|                                       |                               |
|---------------------------------------|-------------------------------|
| Traditional Custodians                | Bunurong / Boonwurrung people |
| Area of cultural heritage sensitivity | No                            |

# 1. The Proposal

We make this application for a planning permit pursuant to Section 47 of the *Planning & Environment Act 1987* (the Act) and in accordance with Regulation 13 of the *Planning & Environment Regulations 2015* (the Regulations).

This application seeks approval for the:

*Development of a replacement dwelling, decommissioning of existing dwelling, earthworks and all associated works*

at 357 Army Road, Pakenham (the Site).

This Application seeks approval for the development of a well-considered and site responsive single storey dwelling, which is to replace the existing dwelling onsite. The existing dwelling will be decommissioned into a home studio internally with kitchen facilities removed.

The proposed dwelling is positioned generally within the middle of the Site, west of the existing dam and south of the existing driveway and shed. The existing gravel driveway will be extended to the south providing vehicular access to the dwelling.

To minimise bushfire risk, the dwelling is positioned outside of the Bushfire Management Overlay which affects the front portion of the Site.

There is no vegetation removal required to facilitate the development of the dwelling and works. We emphasise that the siting of the dwelling maintains a generous distance of 16m from an existing canopy tree located on the western side of the dam.

The design adopts a muted and natural external materiality, incorporating dark grey cladding, ashwood vertical cladding, face brickwork and sloping roof forms. Modest earthworks are detailed on the development plans to level the development area.

The proposed dwelling provides a double garage, formal entry, open plan living, kitchen, dining with butler's pantry, a rumpus room, laundry with powder room, study, master bedroom with ensuite and walk-in-robe, three bedrooms (one with ensuite), and a separate bathroom with water-closet.

An outdoor dining area with swimming pool are also detailed on the plans with integrated gardens throughout.

Due to the gently sloping topography, the development incorporates a modest degree of earthworks to ensure the built form sits within the land. Cut and fill is utilised around the dwelling to provide levelled surface areas and vehicle access. All cut and fill will be appropriately designed and stabilised.

An indicative 430sqm wastewater irrigation field is nominated southward of the dwelling, in accordance with the recommendations detailed within the accompanying Land Capability Assessment (LCA) prepared by A. C Geotechnical.

# 2. Site & Site Context

## 2.1 Title Particulars

The Site is formally known as Lot 1 on TP326574S within Volume 08164 Folio 350.

The title documents demonstrates that the Site is not encumbered by any restrictive covenants or agreements, nor burdened by any registered easements.

## 2.2 Site Description

The subject site is located on the south-west side of Army Road which bends at the point of the site itself. The irregular shaped allotment affords a land holding of 1.94 hectares.

The Site is currently developed with a single storey dwelling located close to the northern (front) boundary, two small sheds, stables and larger shed positioned further eastward that was constructed in 2022.

A dam is positioned to the eastern side of the Site and post and wire fencing delineates paddocks and title boundaries.

A gravel service road extending along the southern side of Army Road provides vehicular access to the Site. A gravel crossover and driveway lead to the dwelling and a second gravel access point leads to the larger shed. The existing access points are to be retained and utilised. The existing driveway will be extended at-grade southward towards the new dwelling.

Canopy trees surround the existing dwelling including a stand of pine trees to the eastern side of the driveway. Trees are also established along the title boundaries, within the frontage, around the dam and paddock fencing. The remainder of the Site is grassed, including where the proposed dwelling is to be sited.

As detailed within the accompany site survey plan, the highest elevation point occurs at the north-west corner of the Site and gradually falls in a south-east to south direction. Embankments are established around the dam.

The slope is approximately 9.6% at the position of the proposed dwelling.

## 2.3 Site Context and Neighbourhood Character

The Site is located approximately 4km north-east of the centre of Pakenham (train station) and approximately 55km south-east of the Melbourne CBD. Pakenham, within the Shire of Cardinia is located within wider Metropolitan Melbourne and is subject to higher urban growth being within the Casey-Cardinia South-east Growth Corridor.

The Site is positioned within an established rural residential area where the development pattern predominantly incorporates a range of single dwellings on large allotments. Many properties are established as hobby farms with small scale animal keeping/grazing or simply established as rural living. Some crop raising is evident in the area.

The Rural Conservation Zone is established on the northern side of Army Road and is a continuation of land covered by ESO1 which identifies the 'Northern Hills' landscape. Areas further north of the Site contain more dense remnant vegetation and sloping terrain and are affected by the Bushfire Management Overlay.

Architectural styles vary in the area, however typical brick, weatherboard and rendered cladding is common with pitched roofing. Dwellings are commonly positioned to take advantage of landscape views.

Informal gardens and open style fencing with post and wire is commonplace, typical of a low-density or rural living character.

## 2.4 Permit History

A review of Cardinia Shire Council Planning register indicates that planning approval was issued for the shed constructed on the Site in 2022, ref: T210778.

## 3. Controls, Triggers & Exemptions

### 3.1 Planning Controls

|           |   |
|-----------|---|
| Zone      | Clause 35.04 – Green Wedge Zone, Schedule 1 (GWZ1)  |
| Overlays  | Clause 42.01 – Environmental Significance Overlay, Schedule 1 (ESO1)<br>Clause 44.06 – Bushfire Management Overlay (BMO), only affects northern portion of the Site |
| Abutments | Transport Zone 3  |

### 3.2 Permit Triggers

|                |   |
|----------------|---|
| Clause 35.04-5 | Construct or carry out works, earthworks (GWZ1) |
|----------------|---|

## 4. Expectations

### 4.1 Public Notice

It is anticipated that the Application will be advertised by way of letter and sign pursuant to Section 52 of the Act.

### 4.2 Referrals

It is anticipated that the Application will be referred internally without delay – and ideally without the initial 28-day preliminary assessment phase.

### 4.3 Decision timeframe

It is anticipated that the decision will be issued within 60 statutory days, pursuant to Section 79 of the Planning and Environment Act 1979 (the Act) and Regulation 31 (1) of the Planning and Environment Regulations 2015.

# 5. Planning Policy Framework

## 5.1 Relevant Planning Policy

Clause 12.05-1S Environmentally Sensitive Areas

Clause 12.05-2S Landscapes

Clause 13.02-1S Bushfire Planning

Clause 15.01-6S Design for rural areas

Clause 16.01-3S Rural Residential Development

Clause 19.03-3S Integrated Water Management

Clause 21 Municipal Strategic Statement

Clause 21.02 Cardinia Shire key issues and strategic vision

Clause 21.02-2 Landscape

Clause 21.02-3 Biodiversity

Clause 21.02-4 Bushfire Management

Clause 21.04-2 Agriculture

Clause 21.03-5 Rural Residential and Rural Living Development

## 5.2 Planning Policy Response

The Planning Policy Framework and Local Planning Policy Framework encourages use and development that is appropriately located and sensitive to the rural characteristics and natural features of each locality.

Development and use of land which should be consistent with sustainable land management and land capability practices and consider the conservation values and environmental sensitivity of the locality.

The Framework promotes good building design that is commensurate with the surrounding pattern of built form and landscape character.

Clause 21.03-5 – ‘Rural residential and rural living development’ supports rural residential development on lots between 0.4-2.0 hectares within existing urban areas and townships.

We submit that the use of the land has already been established as ‘residential’ and the proposed development of a replacement dwelling on a 1.94-hectare site, is appropriate within the context of the surrounding residential pattern of development. The Site is within proximity to the urban edge of Pakenham, and approximately 4km from the town centre.

The proposed replacement dwelling supports the rural residential policy context and does not diminish viable agricultural land. The proposal will not result in extensive land/water degradation or loss of high-quality pasture. We emphasise that the positioning of the dwelling ensures that the paddocks are retained for agricultural use.

Furthermore, the land is large enough to treat wastewater onsite, as confirmed within the accompanying Land Capability Assessment prepared by A.C Geotechnical. An indicative effluent field of 430sqm is nominated on the downslope.

The proposed replacement dwelling is appropriately sited outside of the Bushfire Management Overlay and is positioned within a cleared area. In response to Clause 13.02-1S – *Bushfire planning*, access to the dwelling is unobstructed and the relevant Bushfire Attack Level (BAL) will be adopted in design.

The height and scale of the development respects the sloping landscape character and avoids visual intrusion to the street and surrounding properties. Existing vegetation is to be retained, and no significant impact is proposed to retained trees.

Overall, the contemporary design of the dwelling maintains architectural elements that are commensurate with the rural landscape, including sloping roof forms which mimic the sloping topography. The dwelling incorporates articulation to all facades and utilises materials and muted colours sympathetic to the natural landscape setting, consistent with the Planning Policy Framework.

# 6. Zone Considerations

## 6.1 Clause 35.04 – Green Wedge Zone, Schedule 1 (GWZ1)

As expressed at Clause 35.04 – Green Wedge Zone, the Purpose of the Zone is:

- *To implement the Municipal Planning Strategy and the Planning Policy Framework.*
- *To provide for the use of land for agriculture.*
- *To recognise, protect and conserve green wedge land for its agricultural, environmental, historic, landscape, recreational and tourism opportunities, and mineral and stone resources.*
- *To encourage use and development that is consistent with sustainable land management practices.*
- *To encourage sustainable farming activities and provide opportunity for a variety of productive agricultural uses.*
- *To protect, conserve and enhance the cultural heritage significance and the character of open rural and scenic non-urban landscapes.*
- *To protect and enhance the biodiversity of the area.*

Pursuant to Clause 35.04-1, a ‘dwelling’ is a Section 2 – Permit Required use within the Green Wedge Zone Schedule 1, subject to the following conditions being satisfied:

- *Must be the only dwelling on the lot. This does not apply to the replacement of an existing dwelling if the existing dwelling is removed or altered (so it can no longer be used as a dwelling) within one month of the occupation of the replacement dwelling.*
- *Must meet the requirements of Clause 35.04-2.*

The existing dwelling will be decommissioned, and the kitchen facilitates removed to no longer be constituted as a ‘dwelling’ as per the definition at Clause 73.03 – *Land use terms*, therefore satisfying the conditional requirement in the table.

To respond to the second dot point, as expressed at Clause 35.04-2, a lot used for a dwelling must meet the following requirements:

- *Access to the dwelling must be provided via an all-weather road with dimensions adequate to accommodate emergency vehicles.*
- *The dwelling must be connected to reticulated sewerage if available. If reticulated sewerage is not available, all wastewater from the dwelling must be treated and retained within the lot in accordance with the requirements of the Environment Protection Regulations under the Environment Protection Act 2017 for an on-site wastewater management system.*
- *The dwelling or small second dwelling must be connected to a reticulated potable water supply or have an alternative potable water supply with adequate storage for domestic use as well as for fire fighting purposes.*
- *The dwelling or small second dwelling must be connected to a reticulated electricity supply or have an alternative energy source.*

Whilst the Site does not afford convenient access to reticulated sewerage infrastructure, all wastewater from the dwelling will be treated and retained on the lot in accordance with all relevant local and EPA requirements. A Land Capability Assessment accompanies this application, confirming the Site’s capability to treat wastewater.

The existing gravel crossover and driveway are suitable for an all-weather accessway and can be widened if required to achieve the 3.5m width requirement. The gradient of the driveway is not steep.

The Site is connected to reticulated potable water and electricity supply.

Clause 35.04-5 identifies the permit requirements as they apply to buildings and works. We interpret that the following permit triggers apply to the proposal:

- *A building or works associated with a use in Section 2 of Clause 35.04-1*
- *Earthworks specified in a schedule to this zone, if on land specified in a schedule.*
- *A building which is within any of the following setbacks:*
  - *100 metres from a dwelling or small second dwelling not in the same ownership.*

The replacement dwelling is within 100m of an adjoining dwelling at 365 Army Road, to the west.

We consider the Decision Guidelines, as expressed at Clause 35.04-6 an appropriate ‘test’ for what is considered both reasonable and appropriate for the Site when considering the proposed development, and Site Context.

We say that this Application presents a sound and considered response to all relevant guidelines, as demonstrated by the fact that:

- The proposed development presents a sound response to the relevant planning policy framework, as discussed in Section 5.2.
- The continued use of the Site for the purpose of a Dwelling bears no detrimental impact upon the future agricultural capacity of the Site, which is limited given the modest lot size (1.94 ha), landscape qualities and proximity to surrounding residential properties.
- The proposed dwelling is positioned logically, outside of the Bushfire Management Overlay and within a cleared area which does not require any vegetation removal.
- The Application minimises undue impact to flora and fauna habitats whereby development is limited in area across the Site, with no vegetation removal. Retained trees are appropriately protected.
- The proposed dwelling is appropriately setback from all title boundaries. Due to established structures and vegetation cover, the dwelling will not be highly visible from the street.
- Reasonable boundary setbacks are provided to neighbouring land, ensuring space between built form is maintained and there remains ample space for landscaping. It is not expected that the proposed dwelling will cause any adverse amenity impact.
- The single storey height of the dwelling sits low within the landscape, and the sloping roof forms commensurate with the undulating topography.
- The design incorporates recessed walls, fenestration, mixed materiality and architectural features that collectively articulate each perspective. Muted grey tones and face brickwork respond appropriately to the rural context.
- Existing vegetation on the Site and on adjoining properties, including canopy trees, will soften the development. The dwelling will not extend above any ridgeline or canopy line of mature vegetation.

- The development avoids any unreasonable extent of cut or fill, whereby the existing slope is largely maintained. The driveway extension will be at-grade.
- The environmental and landscape values of the land will not be unreasonably impacted upon.
- The development of a dwelling in an established rural-residential area is not expected to result in any unreasonable effects upon any neighbouring land uses, which are all ‘dwelling’.
- The provision of the replacement dwelling is not expected to result in any detrimental impacts or effects when considering matters of noise, traffic, or any other off-site amenity consideration.

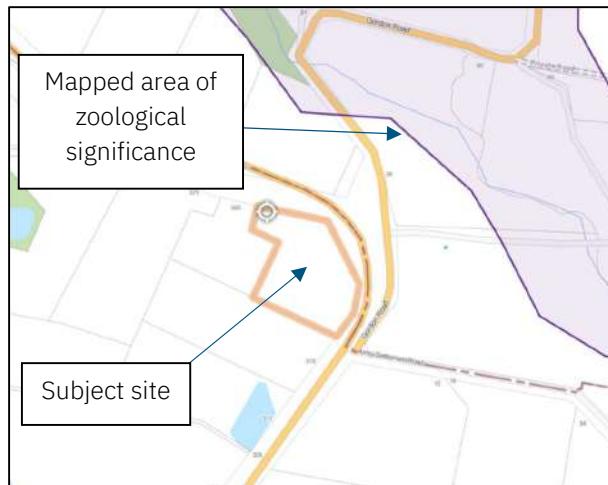
# 7. Overlay Considerations

## 7.1 Clause 42.01 – Environmental Significance Overlay, Schedule 1 (ESO1)

We consider that the proposal does not trigger a permit requirement pursuant to the ESO1 as the following requirements are met:

- Building materials are of subdued colours which complement the landscape.
- The dwelling is less than 7m in height.
- Excavation/fill does not exceed 1m in depth.
- The slope of the land where the buildings and works are proposed is less than 20%.
- No vegetation removal is proposed.
- There is no registered building envelope.
- We note that the Site is not within a mapped area of zoological or botanical significance, as shown via the image below:

*Image 1: Mapped zoological areas, source: Cardinia 'My Council Services' map*



## 8. Conclusion

Town Planning & Co. Pty Ltd act for the landowners who seek approval for development of a replacement dwelling, decommissioning of existing dwelling, earthworks and all associated works at 357 Army Road, Pakenham.

Planning approval is required pursuant to GWZ1.

We submit that the development presents a sound response to the relevant objectives and standards of the Planning Policy Framework, planning controls and decision guidelines.

The replacement dwelling appropriately integrates with the established pattern of development in the area and the existing dwelling is proposed to be decommissioned internally.

The scale and layout of the proposed dwelling appropriately responds to the sloping landscape context. Reasonable boundary setbacks are provided ensuring no adverse impact to the street or surrounding properties.

The proposal does not require the removal of any vegetation, and no impact is proposed to the environmental values of the Site and surrounds.

We submit that the Application presents an orderly planning outcome that will positively contribute to the rural living character of area, whilst protecting the environmental and landscape values of Army Road and surrounds.

Furthermore, the development ensures that the existing amenity afforded to adjoining land is not unreasonably impacted upon.

We submit that the application as presented is most worthy of Councils support.

## Appendices

|             |              |    |
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| Appendix B. | Site Images  | 15 |

## Appendix A. Context Maps

## Appendix A



Aerial Image – Landchecker 14/08/25

357 Army Road, Pakenham



## Appendix A

## Context Maps

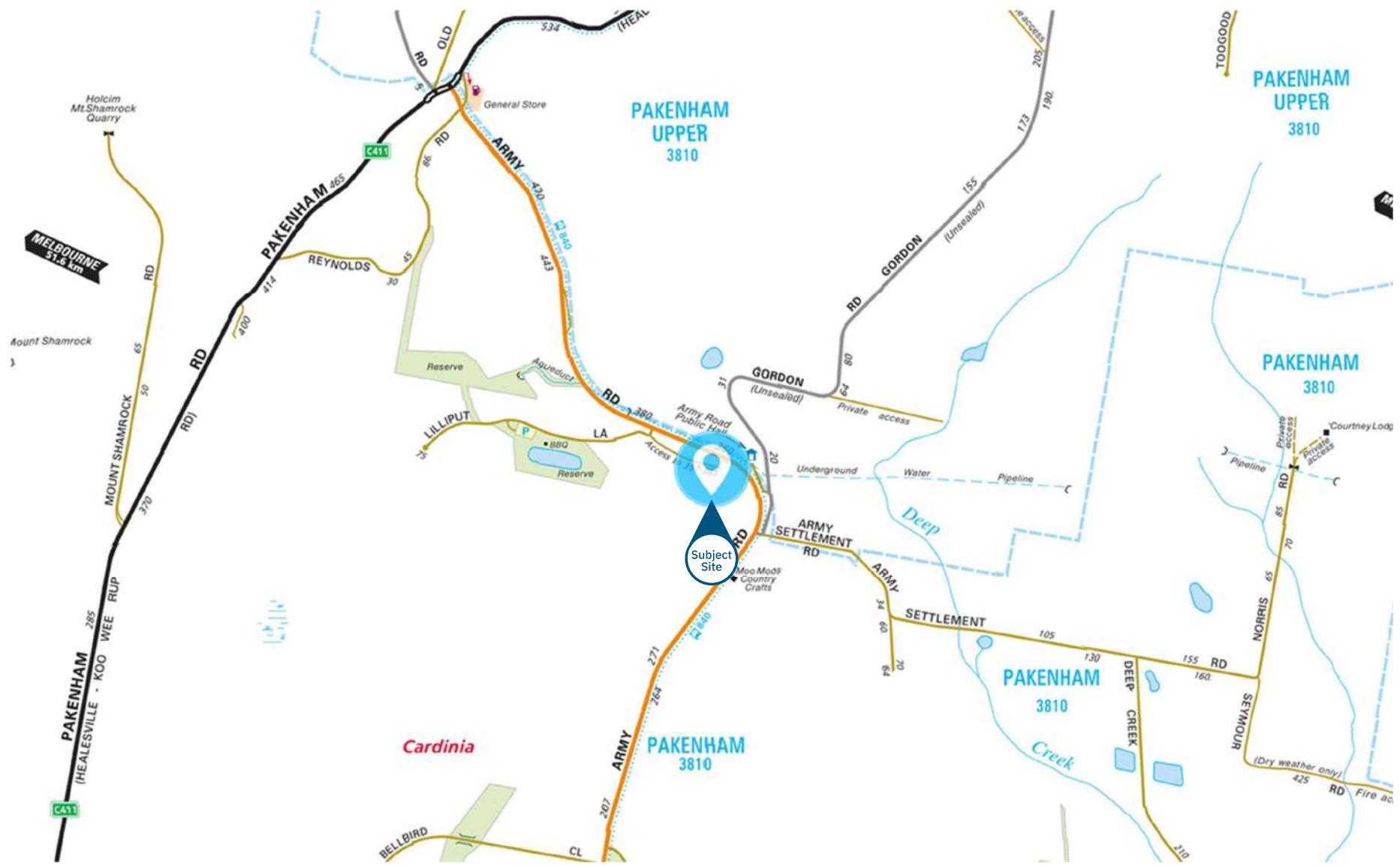


## Zone Map

357 Army Road, Pakenham



## Appendix A



## Street Directory Map

357 Army Road, Pakenham

## Appendix B. Site Images

## Appendix B

## Site Images



1. Approaching entry to Site, facing east



2. Facing east along service road



3. Facing north-east towards Army Road



4. Facing west along service road

## Appendix B



5. Canopy tree at entrance



6. Row of pines along driveway



7. Eastern elevation of existing dwelling



8. Existing shedding

## Appendix B



9. Facing south across paddock (1)



10. Facing south across paddock and towards proposed dwelling location



11. Adjoining shed at 365 Army Road



12. Facing east towards existing shed and proposed dwelling location

## Appendix B

## Site Images

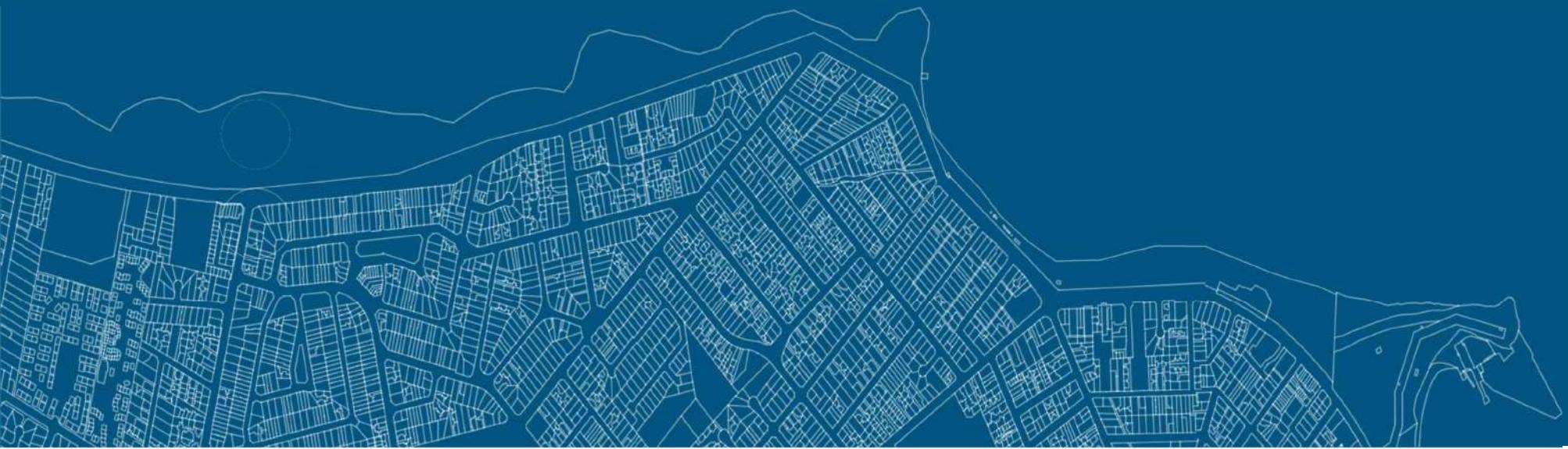


13. Facing east towards existing dam



14. Existing gravel driveway

We recognise that our Mornington Studio is located on the traditional lands of the Boon Wurrung / Bunurong people of the Kulin Nation. We acknowledge their profound and ongoing connection to Country. In our work, we are privileged to have the opportunity to visit other traditional lands, and we actively seek to learn more about the cultural heritage of Australia as a symbol of our commitment to reconciliation.



## Land Capability Assessment

357 Army Road, Pakenham



Report Number: 25384\_002

## 1. SUMMARY:

The following summary table should be read in conjunction with the entire report.

|   |  |                            |
|---|--|----------------------------|
| <u>Designs wastewater load</u>                        | 4 Bedroom dwelling   | 900 L/day                  |
| <u>Soils characteristics</u>                          | <u>Horizon A</u>   | <u>Horizon B</u>           |
| Soil category   | 3b Loam  | 5b Light clay              |
| Indicative permeability                               | 0.5-1.5 m/d  | 0.06-0.12 m/d              |
| <u>Critical site features</u>                         | <ul style="list-style-type: none"> <li>Onsite dam.</li> <li>Low permeable clay soils.</li> </ul> |                            |
| <u>Minimum treatment requirements</u>                 | Secondary  |                            |
| <u>Disposal system</u>                                | <u>Suitability</u>   | <u>Area required</u>       |
| Absorption trenches                                   | Not suitable   | N/A                        |
| Wick trench (Primary treated wastewater)              | Not suitable   | N/A                        |
| Wick trench (Secondary treated wastewater)            | Suitable   | 68 m (1.6 m wide trenches) |
| Subsurface irrigation                                 | Suitable   | 430 m <sup>2</sup>         |
| ETA Beds  | Suitable   | 100 m <sup>2</sup>         |
| Mound   | Suitable   | 220 m <sup>2</sup>         |
| <u>Wastewater can be sustainably disposed to land</u> | Yes  |                            |

## 2. INTRODUCTION:

A.C. Geotechnical Pty Ltd (AC) have been engaged to undertake a Land Capability Assessment (LCA) for 357 Army Road, Pakenham.

The objectives of the assessment was to determine the following:

- Sub-surface ground profile and geological setting.
- The depth to groundwater (if encountered).
- The permeability of the soil profile.
- The capability of the site to sustainably manage wastewater within the allotment boundaries.
- A management program that should be put into place to minimise health and environmental impacts of on-site wastewater management, including the impact on surface water and groundwater.

### 2.1 Proposed Development:

It is proposed to construct a new four (4) bedroom dwelling on the site.

## 3. SITE DESCRIPTION:

### 3.1 Site Location:

The subject site is located on the west side of Army Road, near the intersection with Gordon Road. The site is surrounded by similar size properties, the assumed land use of these properties is summarised in **Table 3.1**.

**Table 3.1 -Surrounding land use**

|       |                         |
|-------|-------------------------|
| North | Low density residential |
| South | Low density residential |
| East  | Low density residential |
| West  | Low density residential |

### 3.2 Site Topography and Condition:

The site contains an existing dwelling and shed located at the northern end. It is understood that the existing dwelling will be demolished following the construction of the new residence. The site slopes gently to the south, with an off-stream dam located near the eastern boundary that collects surface runoff from the site.

Vegetation across the site consists primarily of open pasture with scattered trees.

Site photographs are included in **Appendix B**.

### 3.3 Key Site Information:

A summary of site characteristic and wastewater loading are included in **Table 3.3**.

**Table 3.3 -Key site features**

|  |  |
|--|--|
| <b>Site Address</b>                        |  |
| <b>Owner/Applicant</b>                     |  |
| <b>Local Council</b>                       |  |
| <b>Zoning</b>                              | Green Wedge A (GWAZ)   |
| <b>Total Land Area</b>                     | Approximately 1.94 ha  |
| <b>Domestic Water Supply</b>               | Reticulated/Tank   |
| <b>Design Wastewater Load (Litres/Day)</b> | <u>EPA Guideline for onsite wastewater management, May 2024</u> ,<br>Household on mains water supply<br>180 L / person / day.<br>Persons = no. bedrooms + 1 (4 + 1 = 5 persons)<br><u>Design wastewater load</u><br>$5 \times 180 = 900 \text{ L / day}$ |
| <b>Design Organic Material Load</b>        | <u>EPA Guideline for onsite wastewater management, May 2024</u> ,<br>60 g per person per day<br>$(5 \times 60) = 300 \text{ g/day}$  |
| <b>Availability of sewer</b>               | Sewer is not likely to become available to this area in the near future  |
| <b>Groundwater Quality</b>                 | Groundwater is classified as Brackish (1000 - 3500 mg/L TDS) <a href="http://www.vvg.org.au">www.vvg.org.au</a>  |
| <b>Water Table</b>                         | Local registered bores in the area suggest the ground water is held approximately 50 m below the surface   |
| <b>Climate</b>                             | Average annual rainfall 772 mm   |
| <b>Flood Potential</b>                     | Outside a 1 in 100-year flood event  |
| <b>Water Catchment Area</b>                | N/A  |
| <b>Proximity to Waterways</b>              | Onsite dam   |
| <b>Vegetation</b>                          | Pasture grasses, scattered mature trees  |
| <b>Exposure</b>                            | Generally open   |
| <b>Slope</b>                               | Gentle slope down to the south   |
| <b>Landform</b>                            | Hills  |
| <b>Erosion Potential</b>                   | Negligible   |
| <b>Surface Drainage</b>                    | Good   |
| <b>Rocks and Rock Outcrop</b>              | None   |

### 3.4 Site Geology:

According to the Geological Survey of Victoria, the site is located within an area underlain by Devonian-aged Hornfels, bordering on Devonian intrusive rocks belonging to the Tynong Granite formation. An extract from GeoVic 3 illustrating the mapped geological units is provided in **Figure 3.4**.

The Tynong Granite typically comprises medium- to coarse-grained, grey biotite granite that weathers to form a profile of residual soils consisting predominantly of sandy clays and silty sands. These residual soils are generally of moderate to high permeability and are often mottled and friable in the upper horizons, with increasing clay content and partially weathered rock fragments at depth.

In the weathering profile, the transition from residual soil to highly weathered granite can occur over a relatively short depth range, typically between 0.5 m and 2.0 m. The underlying granitic rock is generally competent, although localised zones of sheeting or jointing may influence excavation stability and groundwater movement.

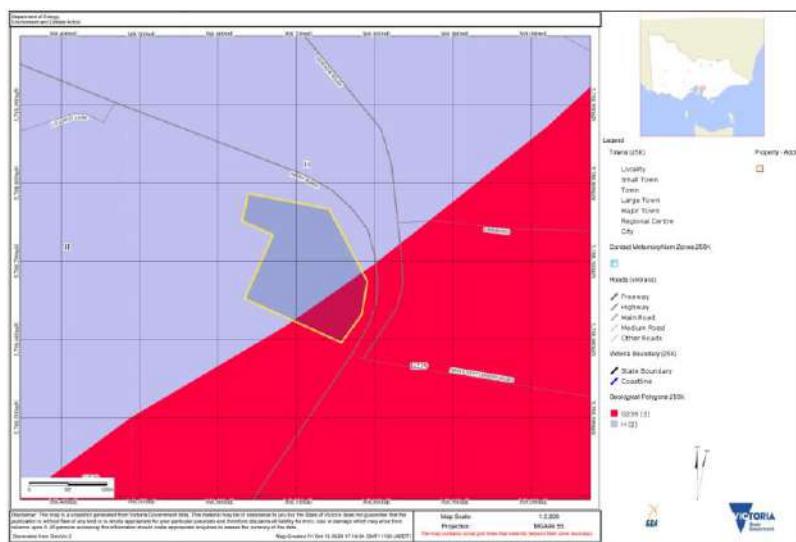


Figure 3.4 Extract of Geological from GeoVic 3

## 4. SOIL ASSESSMENT AND CONSTRAINTS:

### 4.1 Soil Profile:

The soil profile encountered during the investigation consisted of dark brown silty sand overlaying orange/brown, medium plasticity, silty clay.

No groundwater was encountered during this investigation. No abnormal moisture conditions were identified through this assessment.

Borelogs are included in **Appendix C**.

### 4.2 Site Exposure:

The site is exposed to prevailing winds, and the proposed effluent disposal area receives good exposure to both sunlight and wind throughout the year. This exposure is favourable for evapotranspiration and the ongoing performance of a land application system.

#### 4.3 Soil Assessment:

Laboratory analysis on each sample collected included the following:

- Texture Analysis using ribboning technique.
- Modified Emerson Analysis.
- Electrical Conductivity.
- pH analysis.

A summary of the analysis is included in **Table 4.3**.

**Table 4.3 -Summary of soil assessment**

| BORE HOLE 1  | SAMPLE DEPTH: 200mm           | SAMPLE DEPTH: 600mm           |
|--|-------------------------------|-------------------------------|
| <b><u>SOIL ASSESSMENT</u></b><br><b><u>(AS1547-2012)</u></b> | <b><u>SOIL HORIZON: A</u></b> | <b><u>SOIL HORIZON: B</u></b> |
| <b>Soil Colour</b>   | Dark brown                    | Orange/brown                  |
| <b>Soil Texture</b>  | Loam                          | Light clay                    |
| <b>Coarse Fragments (%)</b>                                  | None                          | None                          |
| <b>Soil Structure</b>  | Weak                          | Moderate                      |
| <b>Soil Dispersion</b>                                       | Non-dispersive                | Non-dispersive                |
| <b>Soil Permeability</b>                                     | 0.5-1.5 m/d                   | 0.06-0.12 m/d                 |
| <b>Soil Category</b>   | 3b                            | 5b                            |
| <b>pH 1:5 Ratio Electronic Method</b>                        | 6.7                           | 6.4                           |
| <b>Electrical Conductivity</b>                               | 0.05 dS/m                     | 0.04 dS/m                     |
| <b>Salinity Hazard</b>                                       | Non-saline                    | Non-saline                    |



**Figure 4.3 Laboratory Analysis**

#### 4.4 Field Assessed Permeability:

In-situ permeability testing was conducted at multiple locations across the site using a constant-head permeameter (see site plan in **Attachment A** for test locations). The testing was carried out in accordance with AS/NZS 1547:2012, employing the constant-head test method.

The field-assessed permeability was calculated using the Talsma-Hallam equation for a constantly maintained head of water, as specified in AS/NZS 1547:2012. This method provides an estimate of the soil's saturated hydraulic conductivity, which is essential for the design and sizing of land application areas.

$$K_{\text{sat}} = \frac{4.4 Q [0.5 \sinh^{-1}(H/2r) - \sqrt{(r/H)^2 + 0.25} + r/H]}{2\pi H^2}$$

Where:

$K_{\text{sat}}$  = saturated hydraulic conductivity of the soil in cm/min.

4.4 = correction factor for a systematic under-estimate of soil permeability in the mathematical derivation of the equation.

Q = rate of loss of water from the reservoir in  $\text{cm}^3/\text{min}$ .

H = depth of water in the test hole in cm.

r = radius of the test hole in cm.

A summary of permeability results are included in **Table 4.4**. Permeability Calculations are included in **Appendix D**.

**Table 4.4 -Summary of insitu permeability**

| Constant Head Permeability                   |            |
|--|------------|
| Indicative permeability ( $K_{\text{sat}}$ ) | 0.09 m/day |

**Note:** The results in the table above are based on average readings taken from the test holes.

The corresponding  $K_{\text{sat}}$  value of 0.09 m/day in EPA Guidelines 2024 Appendix A Table 9 is category 5 (light clay soil).

#### 4.5 Critical site Features:

The following site characteristics are considered critical for the design and assessment of the proposed wastewater management system:

- Onsite dam.
- Low permeable clay soils.

## 5. LAND CAPABILITY ASSESSMENT MATRIX:

**Table 5.1** and **Table 5.2** includes a Land Capability Assessment (LCA) matrix in accordance with EPA Publication 746.1. The LCA has been developed for the whole site however soils information relates to soils within the vicinity of the proposed Land Application Area (LAA).

**Table 5.1 -Land capability assessment matrix - Site**

| Land Features  | Land Capability Class Rating |                                  |  |                          |               | Site Rating                     | Comments                       | Mitigation |
|--|------------------------------|----------------------------------|--|--------------------------|---------------|---------------------------------|--------------------------------|------------|
|  | Very Good (1)                | Good (2)                         | Fair (3)   | Poor (4)                 | Very Poor (5) |                                 |                                |            |
| <b>General Characteristics</b>                                 |                              |                                  |  |                          |               |                                 |                                |            |
| <b>Site drainage</b>   | No visible signs of dampness | Moist soil but no standing water | Visible signs of dampness i.e. water tolerant plants | Water ponding on surface | 1             | No abnormal moisture conditions | N/A                            |            |
| <b>Runoff</b>  | None                         | Low                              | Moderate   | High                     | Very High     | 1                               | Low runoff potential           | N/A        |
| <b>Flood / inundation potential (yearly return exceedance)</b> | Never                        | < 1 in 100                       | >1 in 100 to < 1 in 20                               | > 1 in 20                | 1             | No flood potential              | N/A                            |            |
| <b>Proximity to water courses</b>                              | > 60 metres                  |                                  |  | < 60 metres              | 4             | Onsite dam                      | N/A                            |            |
| <b>Slope (%)</b>   | 0 - 2                        | 2 - 8                            | 8 - 12   | 12 - 20                  | > 20          | 2                               | Gentle slope down to the south | N/A        |

| Landslip  | No potential for failure                   | Low potential for failure           | High potential for failure       | Present or Past Failure | 1                        | No landslip potential         | N/A   |   |
|---|--|-------------------------------------|----------------------------------|-------------------------|--------------------------|-------------------------------|---|---|
| <b>Groundwater table (m) seasonal watertable depth</b>              | >5.0                                       | 2.5 – 5.0                           | 2.0 – 2.5                        | 1.5 – 2.0               | <1.5                     | 1                             | Groundwater held at approximately 50 m below the surface. Potential for shallow perched water table above clay strata | Secondary treatment of wastewater required.             |
| <b>Rock Outcrops (% of land surface containing rocks &gt;200mm)</b> | 0%   | <10%                                | 10-20%                           | 20-50%                  | >50%                     | 1                             | None  | N/A   |
| <b>Erosion Potential</b>  | No erosion potential                       | Minor                               | Moderate                         | High                    | Severe erosion potential | 1                             | Negligible erosion potential  | Maintain current level of surface cover where practical |
| <b>Exposure</b>   | High sun and wind exposure                 | Moderate                            | Low sun and wind exposure        |                         | 1                        | High exposure to sun and wind | N/A   |   |
| <b>Landform</b>   | Hill crests, convex side slopes and plains | Concave side slopes and foot slopes | Floodplains and incised channels |                         | 1                        | Hills                         | N/A   |   |
| <b>Vegetation Type (land application area)</b>                      | Turf or pasture                            |                                     | Dense Forest                     | 1                       | Open pasture / turf      |                               | N/A   |   |
| <b>Fill</b>   | No Fill present                            | Fill Present                        |                                  | 1                       | No fill encountered      |                               | N/A   |   |
| <b>Rainfall (mm/yr)<sup>2</sup></b>                                 | <450                                       | 450 - 650                           | 650 – 750                        | 750 - 1000              | >1000                    | 4                             | Annual average rainfall of 772 mm   | LAA size to be determined by water balance calculations |
| <b>Pan evaporation (mm/yr)<sup>3</sup></b>                          | >1500                                      | 1250 - 1500                         | 1000 – 1250                      | -                       | <1000                    | 2                             | Annual evaporation of 1251 mm   | LAA size to be determined by water balance calculations |

**Table 5.2 -Land capability assessment matrix - Soils**

| Soil Profile Characteristics                  |                        |                        |                        |                   |                |                  |                            |   |
|---|------------------------|------------------------|------------------------|-------------------|----------------|------------------|----------------------------|---|
| <b>Profile depth</b>                          | >2.0m                  | 1.5–2.0m               | -                      | 1.0–1.5m          | <1.0m          | 1                | Deep soil profile          | N/A   |
| <b>Shrinkage* (%)</b>                         | Low<br><4%             | Moderate<br>4-12%      | High<br>12-20%         | Very High<br>>20% |                | 2                | Medium plastic clay soils. | N/A   |
| <b>Permeability* (m/d)</b>                    | 0.15–0.30<br>0.30-0.60 | 0.08–0.15<br>0.60-1.50 | 0.06-0.08<br>1.50-2.00 | -                 | <0.06<br>>2.00 | 2                | Light clay soils           | LAA size to be determined by water balance calculations |
| <b>Soil Permeability Category<sup>1</sup></b> | 2 and 3                | 4                      | 5                      | 1 and 6           | 4              | Light clay soils |                            | LAA size to be determined by water balance calculations |
| <b>Coarse fragments* (%)</b>                  | <10                    | 10-20                  | 20-40                  |                   | >40            | 1                | None                       | N/A   |
| <b>Emerson Test* (dispersion / slaking)</b>   | 4,6,8                  | 5                      | 7                      | 2,3               | 1              | 1                | Non-dispersive             | N/A   |
| <b>Electrical Conductivity (Ece) (dS/m)</b>   | <0.3                   | 0.3-0.8                | 0.8-2.0                | 2.0-4.0           | >4.0           | 1                | Non-saline                 | N/A   |
| <b>pH</b>                                     | 6-8                    |                        | 4.5-6                  |                   | <4.5, >8       | 1                | Neutral soils              | N/A   |

<sup>1</sup> Source: AS1547-2012

<sup>2</sup> Source BOM station – Pakenham (086314)

<sup>3</sup> Source BOM station – Scoresby Research Institute (086104) 2019

\* Relevant to soil layer(s) associated with wastewater application

## 6. MANAGEMENT PROGRAM:

The onsite wastewater system design and management program must suit the capability of the site and will consider the proposed development. The following sections discuss the inputs used to assess the suitability and requirements of EPA approved land based systems. Detailed design for the system is beyond the scope of this assessment.

Septic systems with a valid EPA certificate can be found on the EPA website:

<https://www.epa.vic.gov.au/for-community/environmental-information/water/about-wastewater/onsite-wastewater-systems>

### 6.1 Treatment System:

Based on site conditions and constraints outlined in the previous sections, secondary treatment of effluent is considered necessary for sustainable management of wastewater.

Untreated domestic wastewater typically has values of 200-300mg/L biochemical oxygen demand (BOD5) and 200-300mg/L total suspended solids (TSS). Indicative target effluent quality for secondary treatment systems are < 20mg/L BOD5, < 30mg/L TSS and <10cfu/100mL E.Coli.

The two most common options capable of achieving the desired performance are Aerated Wastewater Treatment Systems (AWTS) and single-pass sand filters. A summary of these systems is provided below. In addition, a range of alternative systems, other than AWTS and sand filters, also hold EPA approval.

#### 6.1.1 Aerated Wastewater Treatment System (AWTS):

Aerated Wastewater Treatment Systems (AWTS) are pre-fabricated or pre-engineered treatment systems designed to treat small-scale wastewater flows. These tank-based systems typically incorporate the following processes:

- Primary treatment: Settling of solids and flotation of scum in an anaerobic primary chamber.
- Aerobic treatment: Oxidation and consumption of organic matter through aerobic biological processes.
- Secondary clarification: Settling of remaining solids.
- Disinfection: Treatment of effluent prior to disposal.

Proper and regular maintenance of AWTS, including sludge removal, is essential to ensure consistent system performance. Under legislation, AWTS must be serviced quarterly by a licensed and approved maintenance contractor.

### **6.1.2 Sand Filters:**

Sand filters provide advanced secondary treatment for effluent that has already undergone primary treatment in a septic tank or equivalent system.

The filter typically consists of a lined excavation containing approximately 600 mm of filter media—commonly medium to coarse sand, although alternative media may also be used—overlying an underdrain system.

- Key design considerations include:
- Careful selection of filter media to achieve the required treatment performance.
- A well-designed distribution network to ensure even dosing across the filter surface.
- Incorporation of a dosing well and pump to allow periodic dosing of effluent.

Depending on the required effluent quality, sand filters may be designed as single-pass systems or include partial recirculation to enhance treatment efficiency.

## **6.2 Treatment System Location:**

In accordance with current EPA guidelines for onsite wastewater management , both above-ground and in-ground treatment systems must comply with the same setback requirements from building footings and boundary fences as those specified for land application systems.

### **6.2.1 Septic Tank Sizing:**

In accordance with the requirements of AS/NZS 1547:2012 – On-site Domestic Wastewater Management, the minimum capacity of a septic tank or secondary treatment plant must be sufficient to provide adequate retention time, settling, and biological treatment for the expected daily wastewater load.

For a design daily flow of 900 L/day, the minimum tank capacity should be 3,000 L, as recommended in Table J1 (AS/NZS 1547:2012). This capacity ensures effective solids separation, scum accumulation, and sludge storage, while maintaining compliance with the standard's performance objectives for primary treatment.

### 6.3 Land Application:

Based on the outcomes of the water balance modelling and consideration of site-specific constraints, a range of potential land application systems were evaluated to identify suitable options for sustainable onsite effluent disposal.

The systems considered include absorption trenches/beds, evapotranspiration/absorption (ETA) beds, mound systems, and subsurface irrigation.

AS/NZS 1547:2012 provides guidance on factors influencing the design, construction, and operation of these systems, and outlines criteria for system selection based on site features, subsurface soil conditions, and identified limitations.

The suitability of EPA-approved land-based disposal systems for the subject site is summarised in **Table 6.3**.

**Table 6.3 Land Application System**

| Land Application              | Description   | Site Suitability                    |
|-------------------------------|---|-------------------------------------|
| <b>Absorption Trenches</b>    | Trenches are the most common type of land application system and are generally used on lots which are reasonably flat and where water soaks into the soil readily in all weather conditions. Commonly, distribution pipes, self-supporting arch trenching or box trenching are laid in trenches filled with aggregate/rock. Effluent then soaks into the surrounding soil.                  | Not suitable                        |
| <b>ETA Beds</b>               | Beds are shallower forms of trenches. Because beds have smaller sidewall area compared with trenches, the absorption provided by sidewall loading is reduced. This is compensated for by reducing the design loading rate.  | Suitable – soil renovation required |
| <b>Wick trench</b>            | Wick trenches consists of an absorption trench with an adjoining shallow wicking bed. This system promotes high evaporation and transpiration by having a larger surface area than other trench / bed systems.  | Suitable – soil renovation required |
| <b>Mound System</b>           | A mound system permits the absorption area to be sited in a location where the natural water table or impermeable rock approaches the ground surface. The mound is filled with medium-grade sand to provide suitable filtering before intercepting the natural soils. A pump/siphon dosing system distributes effluent uniformly through a bed of aggregate placed at the top of the mound. | Suitable                            |
| <b>Sub-surface Irrigation</b> | Subsurface drip irrigation requires secondary treated effluent dosing lines buried in the topsoil at shallow depth. Irrigation systems operate by both soil absorption and evapotranspiration from plants/trees   | Suitable                            |

### 6.3.1 Disposal systems:

A water balance assessment was undertaken to determine the minimum required size of the Land Application Area (LAA). The model accounts for key site and design parameters, including average annual rainfall, evaporation data, daily effluent load, design irrigation/loading rates for secondary treated effluent, seasonal crop factors, and retained rainfall.

The water balance is designed to ensure that the LAA operates within the upper limits of soil saturation, based on indicative soil porosity, for the selected land application method. This approach ensures adequate soil moisture storage capacity while preventing excessive surface or subsurface ponding.

Additionally, the model ensures the soil profile can sustain plant growth and evapotranspiration demand during the summer months, when irrigation and nutrient uptake requirements are highest.

The design parameters adopted for the water balance calculations are summarised in **Table 6.3.1**.

**Table 6.3.1 Design System Parameter**

| Treatment system           | Application System     | DIR / DLR | Runoff coefficient  | Maximum depth | storage |
|----------------------------|------------------------|-----------|---------------------|---------------|---------|
| <b>Primary treatment</b>   | Absorption trenches    |           | <u>Not suitable</u> |               |         |
|                            | Wick trench            |           | <u>Not suitable</u> |               |         |
| <b>Secondary treatment</b> | ETA Beds               | 10        | 25%                 | 0 mm          |         |
|                            | Wick trench            | 10        | -                   | -             |         |
|                            | Mound System           | 5         | 25%                 | 0 mm          |         |
|                            | Sub-surface irrigation | 3         | 25%                 | 0 mm          |         |

### 6.4 Land Application Outputs:

The minimum Land Application Area (LAA) required for each disposal method was determined using water balance modelling. Detailed sizing calculations are provided in **Appendix D**, and a summary of the minimum disposal area requirements for each system is presented in **Table 6.4**.

**Table 6.4 Required Land Application Area (LAA)**

|  |                             |
|--|-----------------------------|
| Dwelling Size                              | 4 Bedroom Dwelling          |
| Wastewater output                          | 900 L / day                 |
| Disposal System                            | <b>Minimum LAA required</b> |
| Wick trench (Secondary treated wastewater) | 68 m (1.6 m wide trenches)  |
| Subsurface irrigation                      | 430 m <sup>2</sup>          |
| ETA Beds                                   | 100 m <sup>2</sup>          |
| Mound                                      | 220 m <sup>2</sup>          |

## 6.5 Preferred System:

All disposal methods outlined in **Table 6.4** are considered suitable for the sustainable disposal of secondary treated wastewater on this site. Subsurface irrigation is the preferred option, as there are negligible constraints on the available land area for the Land Application Area (LAA).

## 6.6 Designated Area:

The Land Application Area (LAA) shall be located in a designated area to enhance evapotranspiration and shall:

- Not be used for purposes that compromise the effectiveness of the system or access for maintenance.
- Be used only for effluent application.
- Have boundaries clearly delineated by appropriate vegetation or other type of border.
- Have no run-off seepage or effluent beyond the designated area.

The site plan in **Appendix A** presents several potential areas suitable for LAA placement as well as setback areas from site features which must be maintained. Please note that the final LAA placement is the responsibility of the owner and should be included in a detailed design providing the minimum LAA and setback distances are maintained.

The required LAA will be smaller than that marked on the site plan. An appropriately sized LAA, as discussed in **Section 6.4**, must be located entirely within the area nominated on the site plan.

Setback distances for secondary treated wastewater disposal are included in **Section 6.6.1**.

### 6.6.1 Setback Distances:

The minimum setback distances for secondary treated wastewater are summarised in **Table 6.6.1**. The proposed LAA must adhere to these minimum setback distances.

**Table 6.6.1 Minimum Setback Distances**

| Landscape feature or structure                            | Setback distance (m) (secondary treated wastewater) |
|---|---|
| <u>Building</u>   |   |
| Wastewater field up-slope of building                     | 3   |
| Wastewater field down-slope of building                   | 1.5   |
| Wastewater field up-slope of cutting/escarpment           | 15  |
| <u>Allotment boundary</u>                                 |   |
| Wastewater field up-slope of allotment boundary           | 3   |
| Wastewater field down-slope of allotment boundary         | 1.5   |
| <u>Services</u>   |   |
| Water supply pipe   | 1.5   |
| Wastewater field up-slope of potable supply channel       | 150   |
| Wastewater field down-slope of potable supply channel     | 10  |
| Gas supply pipe   | 1.5   |
| In-ground water tank                                      | 7.5   |
| Stormwater drain  | 30  |
| <u>Recreational areas</u>                                 |   |
| Children's grassed playground                             | 3   |
| In-ground swimming pool                                   | 3   |
| <u>Surface water – up-slope of</u>                        |   |
| Waterway, Potable channels                                | 150   |
| Waterway – Dams, waterways, recreation reservoir          | 30  |
| Dam, lake or reservoir, within a special supply catchment | 300   |
| Drainage line   | 20  |
| <u>Groundwater bores</u>                                  |   |
| Category 2b to 6 soils                                    | 20  |

### 6.7 LAA – Tree Protection Zone (TPZ):

Trench and bed disposal systems must not be located within the Tree Protection Zone (TPZ) of any retained trees.

Where effluent dispersal is proposed within a TPZ, only a covered surface drip irrigation system installed at natural ground level is permitted. This approach minimises disturbance and prevents damage to tree root systems, in accordance with the requirements of the Responsible Authority.

Any fill material used to cover the drip irrigation system must be lightly spread and placed no closer than 2 metres from the trunk of any retained tree to ensure root protection and maintain adequate soil aeration.

## 6.8 Soil Renovation:

Due to the **low-permeability clay soils** encountered at the site, **soil renovation** is required at the base of all trench or bed disposal systems to improve infiltration capacity and promote even effluent distribution. The following procedure should be adopted:

### Excavation Management

- Excavation of trenches or beds should be undertaken using a toothed bucket to reduce smearing and compaction of the trench base and sidewalls.
- Works should be avoided when soils are wet or saturated, as excavation under these conditions can cause structural damage to the soil and reduce infiltration performance.

### Base Preparation

- The trench or bed base should be lightly scarified to a depth of approximately 50 mm using hand tools or machinery to break up any compacted layers.
- Avoid walking or driving machinery on the prepared surface to prevent re-compaction.

### Gypsum Application

- Apply gypsum uniformly across the base of each trench or bed at a rate of 1 kg/m<sup>2</sup> to assist with flocculation and improve soil structure and permeability.

### Soil Amendment (if required)

- In areas with particularly dense or dispersive clays, a blended topsoil or coarse sand layer (approximately 50–100 mm thick) may be incorporated into the base following gypsum application to enhance infiltration.

### Placement of Distribution Media

- Once renovation is complete, place the distribution media (aggregate, sand, or proprietary product) carefully over the prepared surface to the design thickness, ensuring even coverage and avoiding disturbance of the renovated base.

## 6.9 Septic Tank Operation and Maintenance Requirements

Proper operation and routine maintenance of the septic tank are essential to ensure effective wastewater treatment and to protect the surrounding environment and public health. Regular inspection, desludging, and responsible household practices will help maintain system performance, extend service life, and reduce the risk of failure or environmental contamination.

### 6.9.1 Desludging Frequency

The septic tank should be de-sludged every three (3) years, or in accordance with the manufacturer's recommendations. This frequency may vary depending on the following factors:

- The capacity of the tank relative to the daily wastewater flow.
- The composition of household and personal care products.
- The amount of organic matter, fats, oils and grease discharged to sinks.
- The use of harsh cleaning agents such as degreasers.
- Excessive use of disinfectants and bleaches.

The use of antibiotics and other pharmaceuticals (particularly dialysis and chemotherapy drugs).

The flushing of plastics or other non-organic materials into the tank.

After desludging, tanks must not be washed out or disinfected. The tank should be refilled with clean water to minimise odours and maintain the stability of plumbing fixtures. A small amount of sludge will remain, which assists in the immediate re-establishment of bacterial activity within the system.

### 6.9.2 General Maintenance Guidelines:

To ensure the system functions effectively and continues to meet performance requirements, residents should adhere to the following maintenance practices:

- Use natural cleaning products such as soapy water (from natural, unscented soap), vinegar and water, or bicarbonate of soda and water for cleaning toilets and fixtures.
- Check product labels to confirm suitability for septic systems. Plain, non-coloured, unscented, and unbleached products are generally preferable.
- Use low-salt detergents, with low sodium absorption ratio, phosphorus, and chlorine levels (see [www.lanfaxlabs.com.au](http://www.lanfaxlabs.com.au) for guidance).
- Wipe excess oils and fats from dishes and cookware before washing, and dispose of these in the compost bin.
- Fit a sink strainer to prevent food scraps from entering the system.
- Avoid constructing structures such as pavements, driveways, patios, sheds or playgrounds over the tank or absorption trench area.
- Ensure the absorption trench area remains undisturbed by vehicles, machinery, or livestock.
- Engage a licensed service technician annually to check sludge and scum levels, pumps, and alarms.
- Maintain accurate records of the system, including tank and trench locations, maintenance reports, desludging dates, inspections, and access points. Ensure a copy of each maintenance report is submitted to the local Council.
- Arrange desludging when the combined depth of scum and sludge equals the depth of the middle clarified liquid layer.

**6.9.3 Indicators of Septic System Failure:**

The following signs may indicate a failing septic tank or soil absorption system:

- Seepage visible along effluent absorption trench lines.
- Lush green vegetation growth downslope of the trenches or tank.
- Persistent high water levels within inspection pits or trenches.
- Trench waterlogging following rainfall events.
- General surface waterlogging in the land application area.
- Dead or dying vegetation (particularly native species) downslope of disposal areas.
- Noxious odours around the tank or disposal field.
- Blocked internal plumbing fixtures and sewage overflow from the relief point.
- Sludge accumulation within 150 mm of the tank inlet pipe.
- Obstruction of flow past the internal baffle.
- Scum layer blocking the effluent outlet.

**6.9.4 Storm Water Management:**

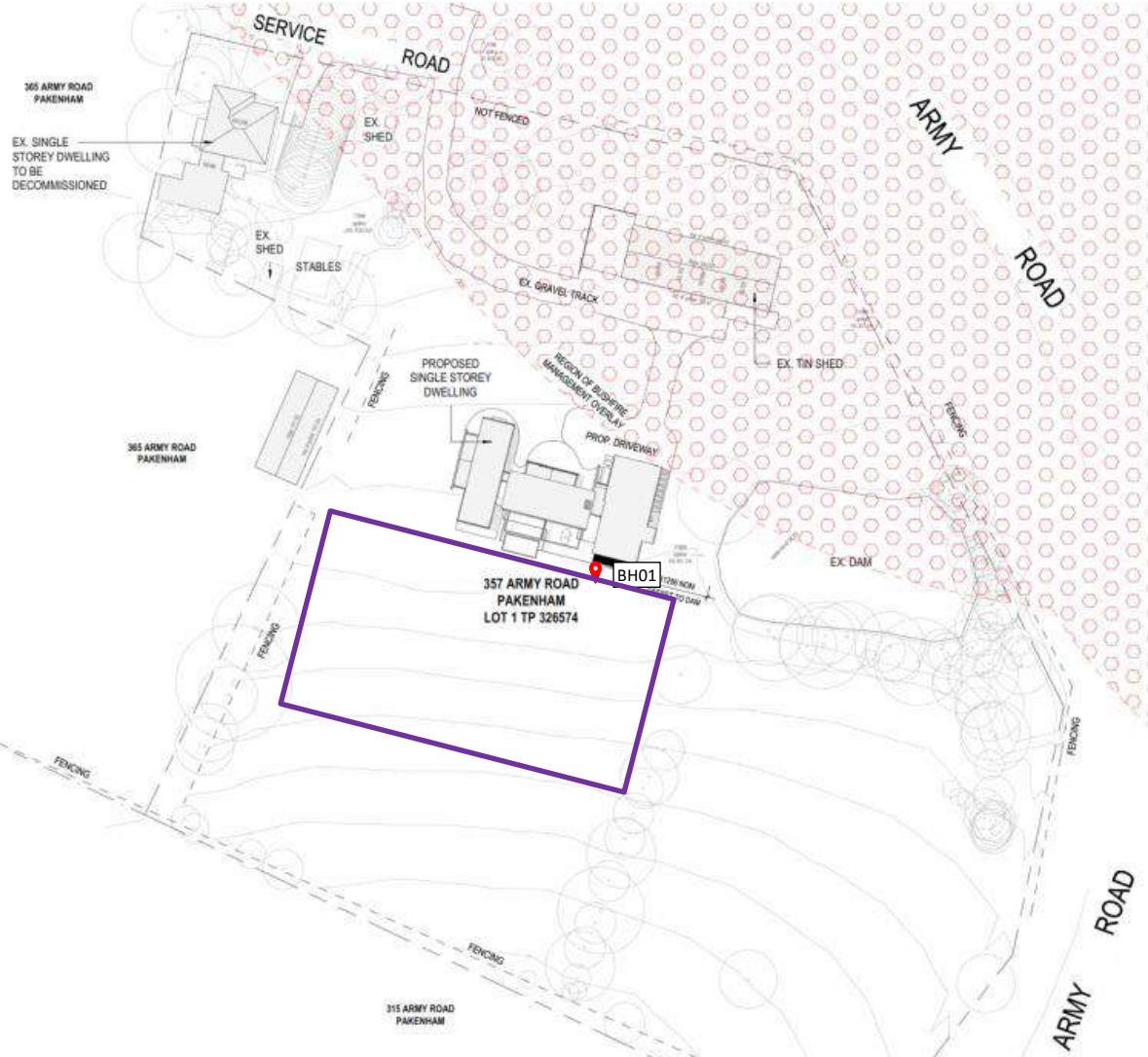
All stormwater must be disposed of to the legal point of discharge.

**7. CONCLUSIONS:**

Based on the findings of this assessment, the subject site is considered suitable for the sustainable management of onsite wastewater, provided the design, installation, and maintenance recommendations outlined in this report are implemented. The proposed system, incorporating secondary treatment and land application via appropriately sized disposal fields, is consistent with the performance objectives and design principles of AS/NZS 1547:2012 – On-site Domestic Wastewater Management. Adherence to these requirements will ensure protection of public health, groundwater, and the surrounding environment.

## 8. REFERENCES:

- Environmental Protection Authority – Guideline for onsite wastewater management, May 2024.
- Environmental Protection Authority – Guideline for onsite wastewater effluent dispersal and recycling systems, May 2024
- Municipal Association Victoria (MAV) January 2014, Model Land Capability Assessment Framework
- Australian/New Zealand Standard AS/NZS 1547-2012 – On-site domestic wastewater management.
- A.C. Geotechnical Pty Ltd - Field and Laboratory data (where applicable) collected and recorded.
- Environmental Protection Authority - “Code of Practice - Septic Tanks”, March 1996” ~ Publication 451.
- Environmental Protection Authority, Information Bulletin- “Land Capability Assessment for onsite Domestic Wastewater Management”, March 2003 ~ Publication 746.1.



**Notes**

1. LAA must be setback a minimum of 3.0 m from all boundaries
2. LAA area must be setback a minimum of 1.5 m from the low side of the proposed dwelling.
3. LAA area must be located downslope of the existing dam,
4. Minimum setback distances are outlined in **Section 6.6.1**.
5. The actual disposal system will be significantly smaller than the LAA indicated.
6. The disposal system must be located entirely within the indicated LAA.

# INSITU CONSTANT HEAD PERMEABILITY



|                          |             |                 |                          |
|--------------------------|-------------|-----------------|--------------------------|
|                          |             | Project Number: | 25384_002                |
|                          |             | Date:           | 10/10/2025               |
| INPUT DATA               |             |                 |                          |
| Borehole                 |             | Reservoir       |                          |
| Borehole diameter        | 100 cm      | Diameter        | 97 mm                    |
| Borehole Depth           | 500 cm      | Base area       | 295.4426 mm <sup>2</sup> |
| Water level from surface | 250 cm      |                 |                          |
| Depth of water in hole   | 250 cm      |                 |                          |
| FIELD DATA               |             |                 |                          |
|                          |             |                 |                          |
| Time Intervals (min)     |             |                 |                          |
| Initial Depth            |             |                 |                          |
| 5                        | 200         | 200             | 200                      |
| 10                       |             |                 |                          |
| 15                       |             |                 |                          |
| 20                       | 193         | 194             | 194                      |
|                          |             |                 | 193                      |
|                          |             |                 | Average                  |
| Q (cm <sup>2</sup> /min) | 10.340491   | 8.863278        | 8.863278                 |
|                          |             |                 | 10.340491                |
|                          |             |                 | 9.6018845                |
| Ksat (cm/min)            | 0.006645917 | 0.0056965       | 0.0056965                |
|                          |             |                 | 0.006645917              |
|                          |             |                 | 0.006171208              |
| Ksat (m/d)               | 0.095701199 | 0.082029599     | 0.082029599              |
|                          |             |                 | 0.095701199              |
|                          |             |                 | 0.088865399              |

# WICK TRENCH SIZE CALCULATIONS



# A.C. Geotechnical.

## (Secondary treated Wastewater)

|                                   |                |                 |            |
|-----------------------------------|----------------|-----------------|------------|
| Project Name:                     |                | Project Number: | 25384_002  |
| Location:                         |                | Date:           | 10/10/2025 |
| Client:                           |                |                 |            |
| INPUT DATA                        |                |                 |            |
| Daily flow allowance (per person) | 180 L          |                 |            |
| Daily wastewater volume           | 900 L          |                 |            |
| Effluent quality                  | Secondary      |                 |            |
| Soil texture                      | Light clay     |                 |            |
| Soil structure                    | Moderate       |                 |            |
| Soil category                     | 5b             |                 |            |
| Indicative Permeability           | 0.06-0.12 Ksat |                 |            |
| Design Loading Rate               | 10 mm/d        |                 |            |
| Factor of Safety                  | 1.2            |                 |            |
| ABSORPTION TRENCHES               |                |                 |            |
| $L = Q / (DLR \times (W/F))$      |                |                 |            |
| Where:                            |                |                 |            |
| L = length of trench              |                |                 |            |
| Q = Design daily flow in L/day    |                |                 |            |
| DLR = Design Loading rate in mm/d |                |                 |            |
| W = width of trench in m          |                |                 |            |
| F = Factor of safety              |                |                 |            |
| Width of trench                   | 1.6 m          | Width of trench | 2.5 m      |
| Length =                          | 68 m           | Length =        | 43.2       |

# WATER BALANCE ETA BEDS



|                                   |                                      |        |        |        |        |        |        |        |        |       |        |        |                 |            |      |      |  |  |  |
|-----------------------------------|--------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|-------|--------|--------|-----------------|------------|------|------|--|--|--|
| Project Address:                  | 357 Army Road                        |        |        |        |        |        |        |        |        |       |        |        | Project Number: | 25384_002  |      |      |  |  |  |
| Location:                         |                                      |        |        |        |        |        |        |        |        |       |        |        | Date:           | 10/10/2025 |      |      |  |  |  |
| Client:                           |                                      |        |        |        |        |        |        |        |        |       |        |        | INPUT DATA      |            |      |      |  |  |  |
|                                   |                                      |        |        |        |        |        |        |        |        |       |        |        |                 |            |      |      |  |  |  |
| Daily flow allowance (per person) | 180 L                                |        |        |        |        |        |        |        |        |       |        |        |                 |            |      |      |  |  |  |
| Daily wastewater volume           | 900 L                                |        |        |        |        |        |        |        |        |       |        |        |                 |            |      |      |  |  |  |
| Effluent quality                  | Secondary                            |        |        |        |        |        |        |        |        |       |        |        |                 |            |      |      |  |  |  |
| Effective rainfall                | 0.75 %                               |        |        |        |        |        |        |        |        |       |        |        |                 |            |      |      |  |  |  |
| Soil texture                      | Light clay                           |        |        |        |        |        |        |        |        |       |        |        |                 |            |      |      |  |  |  |
| Soil structure                    | Moderate                             |        |        |        |        |        |        |        |        |       |        |        |                 |            |      |      |  |  |  |
| Soil category                     | 0.06-0.12                            |        |        |        |        |        |        |        |        |       |        |        |                 |            |      |      |  |  |  |
| Indicative Permeability           | 0.06-0.1 Ksat                        |        |        |        |        |        |        |        |        |       |        |        |                 |            |      |      |  |  |  |
|                                   |                                      |        |        |        |        |        |        |        |        |       |        |        |                 |            |      |      |  |  |  |
| ETA BEDS                          |                                      |        |        |        |        |        |        |        |        |       |        |        |                 |            |      |      |  |  |  |
| DLR                               | 10 mm/d                              |        |        |        |        |        |        |        |        |       |        |        |                 |            |      |      |  |  |  |
| Porosity                          | 40 %                                 |        |        |        |        |        |        |        |        |       |        |        |                 |            |      |      |  |  |  |
| Maximum Storage Depth             | 0 mm                                 |        |        |        |        |        |        |        |        |       |        |        |                 |            |      |      |  |  |  |
| Crop Factor - standard pasture    | 0.85                                 | 0.85   | 0.85   | 0.6    | 0.6    | 0.6    | 0.6    | 0.6    | 0.6    | 0.6   | 0.85   | 0.85   | 0.85            | 0.85       | 0.85 | 0.85 |  |  |  |
| crop factors -Lucene              | 0.95                                 | 0.9    | 0.85   | 0.8    | 0.7    | 0.55   | 0.55   | 0.65   | 0.75   | 0.85  | 0.95   | 1      |                 |            |      |      |  |  |  |
| Crop factor - Shade               | 0.4                                  | 0.4    | 0.4    | 0.4    | 0.4    | 0.4    | 0.4    | 0.4    | 0.4    | 0.4   | 0.4    | 0.4    | 0.4             | 0.4        | 0.4  | 0.4  |  |  |  |
| Crop factor - woodlot             | 1                                    | 1      | 1      | 1      | 1      | 1      | 1      | 1      | 1      | 1     | 1      | 1      | 1               | 1          | 1    | 1    |  |  |  |
| Rainfall Data                     | Pakenham (086314)                    |        |        |        |        |        |        |        |        |       |        |        |                 |            |      |      |  |  |  |
| Evaporation Data                  | Scoresby Research Institute (086104) |        |        |        |        |        |        |        |        |       |        |        |                 |            |      |      |  |  |  |
| Parameter                         | Unit                                 | Jan    | Feb    | Mar    | Apr    | May    | Jun    | Jul    | Aug    | Sep   | Oct    | Nov    | Dec             | Total      |      |      |  |  |  |
| Days in month                     |                                      | 31     | 28     | 31     | 30     | 31     | 30     | 31     | 31     | 30    | 31     | 30     | 31              | 31         | 365  |      |  |  |  |
| Rainfall (mm)                     |                                      | 47     | 44.1   | 47.6   | 65     | 72.7   | 63.3   | 69.8   | 77.5   | 79.6  | 75.3   | 66.7   | 63              | 771.6      |      |      |  |  |  |
| Evaporation (mm)                  |                                      | 191    | 165    | 133    | 78     | 52     | 36     | 45     | 59     | 79    | 106    | 131    | 176             | 1251       |      |      |  |  |  |
| Output                            |                                      |        |        |        |        |        |        |        |        |       |        |        |                 |            |      |      |  |  |  |
| Evapotranspiration (mm)           |                                      | 162.35 | 140.25 | 113.05 | 46.8   | 31.2   | 21.6   | 27     | 35.4   | 47.4  | 90.1   | 111.35 | 149.6           | 976.1      |      |      |  |  |  |
| Percolation (mm)                  |                                      | 310    | 280    | 310    | 300    | 310    | 300    | 310    | 310    | 300   | 310    | 300    | 310             | 3650       |      |      |  |  |  |
| Total Output (mm)                 |                                      | 472.35 | 420.25 | 423.05 | 346.8  | 341.2  | 321.6  | 337    | 345.4  | 347.4 | 400.1  | 411.35 | 459.6           | 4626.1     |      |      |  |  |  |
| Inputs                            |                                      |        |        |        |        |        |        |        |        |       |        |        |                 |            |      |      |  |  |  |
| Effective Rainfall (mm)           |                                      | 35.25  | 33.075 | 35.7   | 48.75  | 54.525 | 47.475 | 52.35  | 58.125 | 59.7  | 56.475 | 50.025 | 47.25           | 578.7      |      |      |  |  |  |
| Application Rate (mm)             |                                      | 279    | 252    | 279    | 270    | 279    | 270    | 279    | 279    | 270   | 279    | 270    | 279             | 3285       |      |      |  |  |  |
| Total Inputs (mm)                 |                                      | 314.25 | -420.3 | 314.7  | 318.75 | 333.53 | 317.48 | 331.35 | 337.13 | 329.7 | 335.48 | 320.03 | 326.25          | 3863.7     |      |      |  |  |  |
| Storage Calculations              |                                      |        |        |        |        |        |        |        |        |       |        |        |                 |            |      |      |  |  |  |
| Waste Loading (mm)                |                                      | 437.1  | 387.18 | 387.35 | 298.05 | 286.68 | 274.13 | 284.65 | 287.28 | 287.7 | 343.63 | 361.33 | 412.35          |            |      |      |  |  |  |
| Volume of Wastewater (mm)         |                                      | 27900  | 25200  | 27900  | 27000  | 27900  | 27000  | 27900  | 27900  | 27000 | 27900  | 27000  | 27900           | 328500     |      |      |  |  |  |
| Cumulative Storage (mm)           |                                      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0     | 0      | 0      | 0               | 0          |      |      |  |  |  |
| Area                              |                                      |        |        |        |        |        |        |        |        |       |        |        |                 | 100 m2     |      |      |  |  |  |
| Bed Width                         |                                      |        |        |        |        |        |        |        |        |       |        |        |                 | 3 m        |      |      |  |  |  |
| Length - total of all beds.       |                                      |        |        |        |        |        |        |        |        |       |        |        |                 | 25 m       |      |      |  |  |  |

Bed length and width are example only. Minimum disposal area include base area of bed and 0.5 m either side of bed.

## WATER BALANCE SUBSURFACE IRRIGATION



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## WATER BALANCE MOUND SYSTEM



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## NUTRIENT BALANCE



|                                 |               |                                   |            |
|---------------------------------|---------------|-----------------------------------|------------|
| <b>Project Address:</b>         | 357 Army Road | <b>Project Number:</b>            | 25384_002  |
| <b>Location:</b>                | [REDACTED]    | <b>Date:</b>                      | 10/10/2025 |
| <b>Client:</b>                  | [REDACTED]    | <b>Nitrogen Balance -Nitrogen</b> |            |
| <b>Hydraulic Loading</b>        |               |                                   |            |
|                                 | 900           | l/day                             |            |
| <b>Effluent N concentration</b> | 25            | mg/l                              |            |
| <b>Daily N loading</b>          | 22500         | mg/day                            |            |
| <b>Annual N loading</b>         | 8212500       | mg/year                           |            |
| <b>Denitrification loss</b>     | 20            | %                                 |            |
| <b>Denitrification loss</b>     | 6570000       | mg/year                           |            |
| <b>Total annual N loading</b>   | 6.57          | kg/year                           |            |
| <b>Plant uptake</b>             | 220           | kg/ha/year                        |            |
| <b>Minimum area for uptake</b>  | 299           | m <sup>2</sup>                    |            |

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**LAND DESCRIPTION**

Lot 1 on Title Plan 326574S.  
PARENT TITLE Volume 08164 Folio 349  
Created by instrument A262436 07/12/1956

**REGISTERED PROPRIETOR**



MORTGAGE AW245944K 08/11/2022  
COMMONWEALTH BANK OF AUSTRALIA

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

**DIAGRAM LOCATION**

SEE TP326574S 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: 357 ARMY ROAD PAKENHAM VIC 3810

**ADMINISTRATIVE NOTICES**

NIL

eCT Control 15940N COMMONWEALTH BANK OF AUSTRALIA  
Effective from 08/11/2022

DOCUMENT END

|   |                        |  |            |                             |  |  |  |   |  |  |  |                                   |  |  |  |
|---|------------------------|--|------------|-----------------------------|--|--|--|---|--|--|--|-----------------------------------|--|--|--|
| TITLE PLAN  |                        | EDITION 1  | TP 326574S |                             |  |  |  |   |  |  |  |                                   |  |  |  |
| Location of Land<br>Parish: NAR-NAR-GOON<br>Township:<br>Section:<br>Crown Allotment: 5B(PT) & 5J(PT)<br>Crown Portion:<br><br>Last Plan Reference: LP 32094<br>Derived From: VOL 8164 FOL 350<br>Depth Limitation: 50 FEET (CA 5J)   |                        | Notations<br><br>ANY REFERENCE TO MAP IN THE TEXT MEANS THE DIAGRAM SHOWN ON THIS TITLE PLAN   |            |                             |  |  |  |   |  |  |  |                                   |  |  |  |
| Description of Land / Easement Information  |                        | THIS PLAN HAS BEEN PREPARED FOR THE LAND REGISTRY, LAND VICTORIA, FOR TITLE DIAGRAM PURPOSES AS PART OF THE LAND TITLES AUTOMATION PROJECT<br>COMPILED: 22/02/2000<br>VERIFIED: P.C. |            |                             |  |  |  |   |  |  |  |                                   |  |  |  |
|   |                        |  |            |                             |  |  |  |   |  |  |  |                                   |  |  |  |
| <table border="1"> <tr> <td colspan="4">TABLE OF PARCEL IDENTIFIERS</td> </tr> <tr> <td colspan="4">WARNING: Where multiple parcels are referred to or shown on this Title Plan this does not imply separately disposable parcels under Section 8A of the Sale of Land Act 1962</td> </tr> <tr> <td colspan="4">PARCEL 1 = LOT 3 (PT) ON LP 32094</td> </tr> </table> |                        |  |            | TABLE OF PARCEL IDENTIFIERS |  |  |  | WARNING: Where multiple parcels are referred to or shown on this Title Plan this does not imply separately disposable parcels under Section 8A of the Sale of Land Act 1962 |  |  |  | PARCEL 1 = LOT 3 (PT) ON LP 32094 |  |  |  |
| TABLE OF PARCEL IDENTIFIERS   |                        |  |            |                             |  |  |  |   |  |  |  |                                   |  |  |  |
| WARNING: Where multiple parcels are referred to or shown on this Title Plan this does not imply separately disposable parcels under Section 8A of the Sale of Land Act 1962   |                        |  |            |                             |  |  |  |   |  |  |  |                                   |  |  |  |
| PARCEL 1 = LOT 3 (PT) ON LP 32094   |                        |  |            |                             |  |  |  |   |  |  |  |                                   |  |  |  |
| LENGTHS ARE IN LINKS  | Metres = 0.3048 x Feet | Sheet 1 of 1 sheets  |            |                             |  |  |  |   |  |  |  |                                   |  |  |  |
| Metres = 0.201168 x Links.  |                        |  |            |                             |  |  |  |   |  |  |  |                                   |  |  |  |