Notice of Application for a Planning Permit

Cardinia

The land affected by the application is located at:	L2 LP149239 V9611 F718 106 Wattletree Road, Bunyip VIC 3815
The application is for a permit to:	Subdivision of Land into Two (2) Lots

A permit is required under the following clauses of the planning scheme:

32.08-3	Subdivide land
43.02-3	Subdivide land

APPLICATION DETAILS

The applicant for the permit is:	M.J.Reddie Surveys Pty Ltd
Application number:	T250169

You may look at the application and any documents that support the application at the office of the Responsible Authority:

Cardinia Shire Council, 20 Siding Avenue, Officer 3809.

This can be done during office hours and is free of charge.

Documents can also be viewed on Council's website at cardinia.vic.gov.au/advertisedplans or by scanning the QR code.

HOW CAN I MAKE A SUBMISSION?

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:	07 October 2025

WHAT ARE MY OPTIONS?

Any person who may be affected by the granting of the permit may object or make other submissions to the responsible authority.

If you object, the Responsible Authority will notify you of the decision when it is issued.

An objection must:

- be made to the Responsible Authority in writing;
- include the reasons for the objection; and
- state how the objector would be affected.

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.

Application is here

1 Application lodged — 2 Council initial assessment — 3 Notice — 4 Consideration of submissions — 5 Assessment — 6 Decision

Cardinia ePlanning

Application Summary

Portal Reference	A125968F

Basic Information

Proposed Use	2 lot land subdivision
Current Use	Existing Dwelling
Site Address	106 Wattletree Road Bunyip 3815

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

Type	Name	Address	Contact Details
Applicant	[redacted] M.J.Reddie Surveys Pty Ltd	PO BOX 268, berwick VIC 3806	W: 9707-4117 M: 0438-538-870 E: luke@reddiesurveys.com.au
Owner	[redacted]		
Preferred Contact	[redacted] M.J.Reddie Surveys Pty Ltd	PO BOX 268, berwick VIC 3806	W: 9707-4117 M: 0438-538-870 E: luke@reddiesurveys.com.au

Fees

Regulation	Fee Condition	Amount	Modifier	Payable
9 - Class 18	To subdivide land into two lots	$1,453.40	100%	$1,453.40
		Total		**$1,453.40**

Documents Uploaded

Date	Type	Filename
20-03-2025	Subdivision Plan	TITLE(Full).PDF
20-03-2025	Explanatory Letter	Form 1.pdf
20-03-2025	Additional Document	25-03-438 (PS V1) Model ().pdf
20-03-2025	Additional Document	25-03-438 (SA V1) Model (1).pdf
20-03-2025	Additional Document	Clause 56.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

Lodged By

Site User	[redacted] M.J.Reddie Surveys Pty Ltd	PO BOX 268, berwick VIC 3806	W: 9707-4117 M: 0438-538-870 E: luke@reddiesurveys.com.au
Submission Date	20 March 2025 - 01:09:PM		

Declaration

☑ By ticking this checkbox, I, [redacted], declare that all the information in this application is true and correct; and the Applicant and/or Owner (if not myself) has been notified of the application.

Civic Centre
20 Siding Avenue, Officer, Victoria

Council's Operations Centre (Depot)
Purton 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

Cardinia Shire Council

Request to amend a current planning permit application

This form is used to request an amendment to an application for a planning permit that has already been lodged with Council, but which has not yet been decided. This form can be used for amendments made before any notice of the application is given (pursuant to sections 50 / 50A of the *Planning and Environment Act 1987*) or after notice is given (section 57A of the Act).

PERMIT APPLICATION DETAILS

Application No.:	T250169 PA
Address of the Land:	106 Wattletree Road, Bunyip VIC 3815

APPLICANT DETAILS

Name:	[redacted]
Organisation:	M J Reddie Surveys
Address:	21 Olive Avenue, Harkaway VIC 3806
Phone:	97074117
Email:	luke@reddiesurveys.com.au

AMENDMENT TYPE

Under which section of the Act is this amendment being made? (select one)	
Section 50 – Amendment to application at request of applicant **before** notice:	☑
Section 50A - Amendment to application at request of responsible authority **before** notice:	☐
Section 57A – Amendment to application **after** notice is given:	☐

AMENDMENT DETAILS

What is being amended? (select all that apply)		
What is being applied for ☐	Plans / other documents ☑	Applicant / owner details ☐
Land affected ☐	Other ☐	

Describe the changes. If you need more space, please attach a separate page.
Amended Plan of subdivision and layout plan

Specify the estimated cost of any development for which the permit is required:		
Not applicable ☐	Unchanged ☑	New amount $

DECLARATION

I declare that all the information in this request is true and correct and the owner (if not myself) has been notified of this request to amend the application.

Name:	[redacted]	
Signature:		
Date:	19/09/2025	

LODGEMENT

Please submit this form, including all amended plans/documents, to mail@cardinia.vic.gov.au

You can also make amendments to your application via the Cardinia ePlanning Portal at https://eplanning.cardinia.vic.gov.au/

If you have any questions or need help to complete this form, please contact Council's Statutory Planning team on 1300 787 624.

IMPORTANT INFORMATION

It is strongly recommended that before submitting this form, you discuss the proposed amendment with the Council planning officer processing the application.

Please give full details of the nature of the proposed amendments and clearly highlight any changes to plans (where applicable). If you do not provide sufficient details or a full description of all the amendments proposed, the application may be delayed.

No application fee for s50/s50A requests unless the amendment results in changes to the relevant class of permit fee or introduces new classes of permit fees. The fee for a s57A request is 40% of the relevant class of permit fee, plus any other fees if the amendment results in changes to the relevant class (or classes) of permit fee or introduces new classes of permit fees. Refer to the *Planning and Environment (Fees) Regulations 2016* for more information.

The amendment may result in a request for more under section 54 of the Act and/or the application requiring notification (or re-notification). The costs associated with notification must be covered by the applicant.

Council may refuse to amend the application if it considers that the amendment is so substantial that a new application for a permit should be made.

Any material submitted with this request, including plans and personal information, will be made available for public viewing, including electronically, and copies may be made for interested parties for the purpose of enabling consideration and review as part of a planning process under the *Planning and Environment Act 1987*.

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

VOLUME 09611 FOLIO 718

Security no : 124122887427N
Produced 17/03/2025 01:55 PM

LAND DESCRIPTION

Lot 2 on Plan of Subdivision 149239W.
PARENT TITLE Volume 06779 Folio 792
Created by instrument LP149239W 28/05/1985

REGISTERED PROPRIETOR

[redacted]

ENCUMBRANCES, CAVEATS AND NOTICES

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

DIAGRAM LOCATION

SEE LP149239W 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: 106 WATTLETREE ROAD BUNYIP VIC 3815

DOCUMENT END

Imaged Document Cover Sheet

The document following this cover sheet is an imaged document supplied by LANDATA®, Secure Electronic Registries Victoria.

Document Type	**Plan**
Document Identification	**LP149239W**
Number of Pages (excluding this cover sheet)	**1**
Document Assembled	**17/03/2025 13:55**

149239W

LP149239
Edition 1
Approved 28/5/85

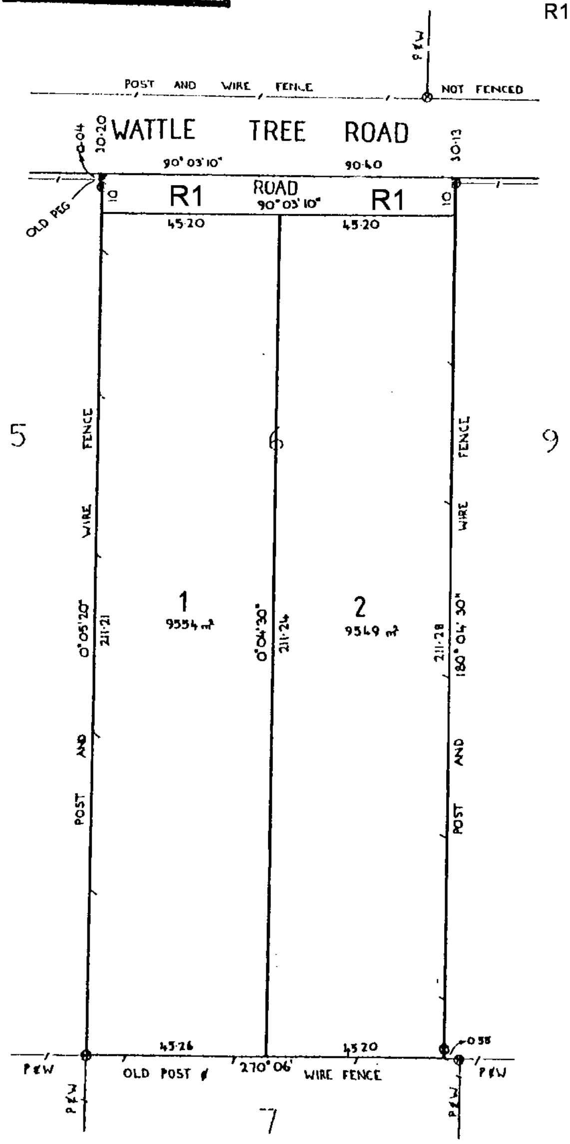
PLAN OF SUBDIVISION OF:	APPROPRIATIONS	ENCUMBRANCES & OTHER NOTATIONS
CROWN ALLOTMENT 6 OF SECTION 6 TOWNSHIP OF BUNYIP PARISH: BUNYIP COUNTY: MORNINGTON SCALE 1:1000 20 10 0 20 40 60 LENGTHS ARE IN METRES	BROWN — CARRIAGEWAY & DRAINAGE	ROAD WIDTH NOT SHOWN TO SCALE DEPTH LIMITATION: 15·24m

VOL. 6779 FOL. 792

TOWNSHIP SH. ——

COLOUR CONVERSION
R1 = BROWN

APPROVED
28 MAY 1985



WARNING: THE IMAGE OF THIS DOCUMENT OF THE REGISTER HAS BEEN DIGITALLY AMENDED.
NO FURTHER AMENDMENTS ARE TO BE MADE TO THE ORIGINAL DOCUMENT OF THE REGISTER.

M.J. REDDIE SURVEYS Pty. Ltd.

ABN 49 005 965 257

LICENSED SURVEYOR

ENGINEERING SURVEYOR

Office: 1 Horner St. Beaconsfield, 3807
Branch Office: 19 Evergreen Ave Inverloch, 3996
Email: luke@reddiesurveys.com.au

POSTAL ADDRESS:
P.O. BOX 268
BERWICK 3806
PHONE: 9707 4117
FAX: 9707 4428

31/7/2025
Address: **106 Wattletree Road, Bunyip**
Proposal: **Subdivision of the land into 2 lots**

To whom it may concern,
We refer to your letter requesting further information under section 54 of the *Planning and Environment Act,* 1987.

We will respond to each item in your letter below.

1. Land Capability Assessment
    i. See attached LCA below
2. Separate Plan showing building envelope, effluent disposal area, vegetation
    i. See attached plan below
3. Assessment against Clause 43.02-02
    i. See response below for response against Clause 43.02-02
4. Assessment against Clause 42.02-02
    i. See attached Arboricultural Impact Assessment
5. Demonstration of the availability and provision of utility services
    i. See attached asset plans from AusNet Electricity Services, NBN Co, South East Water Corporation and Telstra
    ii. See attached proposed Sewer Plans from Craig Civil Design

I trust that the information and documents provided satisfy Council's request for further information. Notwithstanding, should the above or enclosed be insufficient for Council to proceed to permit issuance, we respectfully request an extension of time to provide a response, in addition to written details regarding any additional information or further alterations required.

We look forward to your favourable consideration of this matter.
Please do not hesitate to contact our office should you have any questions regarding this matter.

Kind Regards

[redacted]
Licensed Surveyor

M.J. Reddie Surveys P/L
Email: luke@reddiesurveys.com.au
Website: www.reddiesurveys.com.au
Mobile: 0438 538 870
Office: 97074117

Response to Clause 43.02-2 – Design and Development Overlay
Site Address: 106 Wattletree Road, Bunyip

This submission addresses the planning permit trigger under Clause 43.02-2 (Design and Development Overlay – DDO) of the Cardinia Planning Scheme as it pertains to the proposed two-lot subdivision at the above-mentioned address.

1. Overview of Works

The proposed subdivision includes the identification of a future building envelope, effluent disposal zones, and an accessway for Lot 2. The proposed permeable driveway will be 3.5 meters wide, located with a 0.4 meter offset from the proposed subdivision boundary and the title boundary. While a crossover is not formally proposed as part of this application, it is acknowledged that vehicle access to Lot 2 will ultimately require a crossover from Wattletree Road.

2. Permit Trigger under Clause 43.02-2

Clause 43.02-2 requires a planning permit for buildings and works unless an exemption applies. In this instance, the proposed subdivision does not involve the immediate construction of buildings or works that would require a planning permit under the DDO provisions. The accessway and effluent areas are indicative and form part of the lot layout, with the design of crossovers to be addressed at the building permit stage or through a future dwelling application on Lot 2.

It is noted that the proposed driveway is to be permeable, consistent with rural character objectives, and will not result in significant vegetation removal or visual disruption. The crossover treatment remains undefined at this stage but is anticipated to be sympathetic to the surrounding area.

3. Building Envelopes and Setbacks

The building envelope on Lot 2 demonstrates a clear intent to protect the low-density and rural character of the area, with generous setbacks on all boundaries:

- 36.47 metres from the boundary with Lot 1
- 5.0 metres from the western title boundary
- 5.2 metres from the eastern title boundary
- 5.62 metres from the southern title boundary

These substantial setbacks ensure that any future development will be appropriately recessed from adjoining lots, mitigating visual bulk and preserving the landscape character, in line with the objectives of the DDO.

4. Contextual Precedent

It is also important to highlight that similar subdivisions have recently been approved and constructed within the immediate locality, notably at 102–104 Wattletree Road. These developments include comparable lot configurations and access treatments. Crossovers in the area range from gravel to concrete, establishing a precedent for a range of material responses, including informal access tracks in keeping with the semi-rural character.

5. Exemptions and Future Considerations

Given the nature of the current application – a subdivision without associated buildings or formalised works – we submit that the proposal does not currently trigger a permit under Clause 43.02-2 for buildings and works. Future development of Lot 2,

including construction of the crossover and driveway, would be subject to further assessment at the building or planning permit stage if applicable. At that time, the design and materiality of the crossover can be refined to ensure consistency with neighbourhood character and compliance with any relevant DDO schedules.

M.J. REDDIE SURVEYS PTY LTD
• Licensed Surveyors • Engineering Surveyors • Town Planners
Call 03 9707 4117
1 Horner Street, Beaconsfield 3807

CLAUSE 56 –SUBDIVISION ASSESSMENT

M.J Reddie Surveys

106 Wattletree Road, Bunyip

106 Wattletree Road

2 Lot Subdivision

1.0 Introduction

This submission has been prepared in support of an application to subdivide the land know as 106 Wattletree Road into 2 (two) lots.

In the course of preparing this report the proposal has been assessed against the relevant town planning controls and policies contained within the Cardinia Planning Scheme.

Parcel Details	Lot 2 on LP149239W		
Planning Controls	ZONE: OVERLAYS:	Low Density Residential Zone – Schedule 2 Design and Development Overlay – Schedule 1 Vegetation Protection Overlay – Schedule 1	
Development Proposal	TOTAL SITE AREA:	Approx. 9549 sq meters	
	SUBDIVISION AREA:	Proposed Lot 1	5549 sqm
		Proposed Lot 2	4000 sqm
Planning Permit Trigger	Subdivide Land - Clause 32.03-3, 43.02-3,		

2.0 SITE AND CONTEXT DESCRIPTION

Site Conditions

The site is located along Wattletree Road. Currently there is an existing single storey dwelling on proposed lot 1 and a existing asphalt crossover on Wattletree Road accessing proposed lot 1 which will remain for access.

Proposed lot 2 is currently vacant undeveloped land. A new crossover will need to be designed to the satisfaction of the responsible authority.

Surrounding Area

The surrounding area can be characterised as low density residential in all directions occupied by a mixture of single dwellings and associated outbuilding. Most surrounding lots are the same size as those proposed in this subdivision.

The 2 lot subdivision will suit the neighbourhood character well with multiple neighbouring properties completing the same subdivision.

3.0 PROPOSAL

The proposal seeks to subdivide the site into 2 lots, proposed lot 1 has an existing house on it while lot 2 is vacant undeveloped land. See Plan of Subdivision PS930752N prepared by M.J.Reddie Surveys Pty Ltd.

- Lot 1 (existing dwelling) would have a frontage to Wattletree Road with dimensions of 40.90m x 135.68m with an area of 5549 square meters
- Lot 2 is a would have vary dimensions yielding an overall site area of 4000sqm with road access of 4.30m.

A full set of plans showing the proposed Plan of Subdivision and Design Response is provided

4.0 PLANNING CONTROLS

The subject site is included in the Low Density Residential Zone and is affected by the Vegetation Protection Overlay and the Design and Development Overlay.

Low Density Residential Zone

The "purposes" of the Low Density Residential Zone are:

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

Pursuant to Clause 32.03 of the Cardinia Planning Scheme, a permit is required to subdivide land. The schedule to the zone specifies a minimum lot size of 4000sqm and must meet the requirements of Clause 56 and;

- Must meet all of the objectives included in the clauses specified below.
- Should meet all of the standards included in Clause 56 except for Clauses 56.02-1, 56.03-1 to 56.03-4, 56.05- 2, 56.06-1, 56.06-3 and 56.06-6.

The Decision Guidelines of the Low Density Residential Zone applicable to this proposal are:

General

- *The Municipal Planning Strategy and the Planning Policy*

Subdivision

- *The protection and enhancement of the natural environment and character of the area including the retention of vegetation and faunal habitat and the need to plant vegetation along waterways, gullies, ridgelines and property boundaries.*
- *The availability and provision of utility services, including sewerage, water, drainage, electricity, gas and telecommunications.*
- *In the absence of reticulated sewerage:*
    - *The capability of the lot to treat and retain all wastewater in accordance with the State Environment Protection Policy (Waters of Victoria) under the Environment Protection Act 1970.*
    - *The benefits of restricting the size of lots to the minimum required to treat and retain all wastewater in accordance with the State Environment Protection Policy (Waters of Victoria).*
    - *The benefits of restricting the size of lots to generally no more than 2 hectares to enable lots to be efficiently maintained without the need for agricultural techniques and equipment.*
- *The relevant standards of Clauses 56.07-1 to 56.07-4*

Compliance with Minimum Lot Size

The proposed subdivision includes Lot 1 (5549 sqm) and Lot 2 (4000 sqm). The minimum lot size of 4000 sqm, as required by the Cardinia Planning Scheme (Clause 32.03), is met.

Wastewater Treatment & Retention

As reticulated sewerage is unavailable, both lots are designed to accommodate on-site wastewater treatment in accordance with the State Environment Protection Policy. The lot sizes ensure sufficient space for wastewater retention without environmental impact.

Environmental & Character Considerations

The subdivision considers the protection of the natural environment, with provisions for vegetation retention and faunal habitat preservation.

Utility Services & Infrastructure

The proposed lots allow for the provision of essential services, including water, drainage, electricity, and telecommunications, ensuring functional and sustainable development.

Compliance with Clause 56

The subdivision complies with the objectives of Clause 56, with relevant stormwater management standards (Clause 56.07-1 to 56.07-4) being met.

Conclusion

The proposed subdivision meets all Low Density Residential Zone requirements, ensuring appropriate lot sizes, environmental protection, wastewater management, and service provision.

Design and Development Overlay

The "purposes" of the Design and Development Overlay are:

- *To implement the Municipal Planning Strategy and the Planning Policy Framework.*
- *To identify areas which are affected by specific requirements relating to the design and built form of new development.*

The "Building and Works" objective under the Schedule to the Overlay are:

- *Any building must be located within the building envelope if one is registered on the plan of subdivision.*
- *Any building must be set back at least 30 metres from a Road Zone Category 1, 20 metres from a Road Zone Category 2, 10 metres from any other road, and 5 metres from any other boundary unless the location of the building is within an approved building envelope.*
- *Any building or works must be set back at least 60 metres from a waterway.*
- *If the building is an extension to an existing dwelling. If the building is an outbuilding ancillary to a dwelling, the gross floor area of all outbuildings on the land must not exceed 120 square metres.*
- *Building materials must be non-reflective or subdued colours which complement the environment.*
- *The height of any building must not exceed 7 metres above natural ground level.*
- *The works must not involve the excavation of land exceeding 1 metre or filling of land exceeding 1 metre and any disturbed area must be stabilised by engineering works or revegetation to prevent erosion.*
- *The slope of the land on which the buildings and works are undertaken must not exceed 20%.*

- *The buildings and works must not result in the removal or destruction of native vegetation (including trees, shrubs, herbs, sedges and grasses) within an area of botanical or zoological significance as shown on the mapped information provided by the Department of Natural Resources and Environment, with the exception of Sweet Pittosporum (Pittosporum undulatum).*

Due to the large size lot 2, a building envelope has not been provided.

Vegetation Protection Overlay

Purpose

- *To implement the Municipal Planning Strategy and the Planning Policy Framework.*
- *To protect areas of significant vegetation. To ensure that development minimises loss of vegetation.*
- *To preserve existing trees and other vegetation.*
- *To recognise vegetation protection areas as locations of special significance, natural beauty, interest and importance.*
- *To maintain and enhance habitat and habitat corridors for indigenous fauna.*
- *To encourage the regeneration of native vegetation.*

Vegetation Protection Objective to be Achieved

- To protect and conserve existing vegetation as an important element of the character of low density residential areas.
- To maintain and enhance local habitat and biolinks, including hollow bearing trees.
- To avoid and minimise the removal of vegetation where it contributes to the management of environmental hazards such as erosion, salinity, siltation of creeks and watercourses, and stormwater runoff.
- To ensure that vegetation remains a significant part of the character and visual amenity of these areas, with the built form being located within a landscape, and vegetation being the predominant feature

Every effort will be maintained to protect the existing vegetation on the land. If required by council, an arborist report displaying tree protection zones can be supplied. No vegetation is proposed to be removed for the subdivision.

5.0 PLANNING POLICY FRAMEWORK

The locational attributes of the site support a modest increase in density, aligning with the strategic direction of the Planning Scheme as outlined in Clauses 11, 15, and 16 of the PPF. These policies encourage urban consolidation, providing diverse housing options to meet market demand. Achieving urban consolidation requires balancing existing neighbourhood character with government policies that promote sustainable

growth and efficient land use. Given its attributes, the site is well-suited for a moderate increase in density and a corresponding change in built form.

The proposal delivers a residential subdivision that facilitates appropriate family-sized housing in an area where incremental change is anticipated. The site is strategically positioned near key facilities, including retail centres, schools, major transport corridors, and public open space, supporting its suitability for additional residential development.

This location can accommodate a modest density increase in line with urban consolidation principles, while ensuring neighbourhood character, built form, and external amenity are preserved. The subdivision design reflects existing built form patterns in Bunyip while enhancing housing diversity and availability. Careful consideration has been given to maintaining amenity for adjoining properties, ensuring a well-integrated development within the established residential area.

The proposed subdivision represents an efficient and appropriate use of underdeveloped land, particularly when compared to surrounding residential lots. It supports additional housing in a well-serviced area with established infrastructure, including road networks, public transport, and open space.

Key Considerations:

- The proposal is consistent with the SPPF, as it promotes development in a well-serviced residential area with access to social and physical infrastructure, including transport, commercial areas, parkland, and schools.
- The subdivision optimizes land use, supporting growth within an established urban setting without negatively impacting surrounding properties or services.
- The development contributes to housing diversity by offering a range of lot sizes that respect neighbourhood character.
- The subdivision complies with Clause 56 - ResCode, ensuring a well-designed and efficient layout.
- The proposal enhances housing choice and makes more efficient use of existing infrastructure and services.

This development aligns with Planning Policy, promoting urban consolidation within an existing urban area to reduce greenfield expansion pressures. The subdivision's large lot sizes, exceeding the minimum LDRZ requirements, provide ample space for deep soil planting and vegetation enhancement, reinforcing the landscape character of the area.

Additionally, the proposal supports the objectives of the MSS by managing urban growth in a way that complements the existing residential character while enhancing the local landscape. The subdivision has been carefully designed to retain existing trees on neighbouring properties, contribute to housing diversity, and respond to increased housing demand within Cardinia.

This proposal aligns with the Cardinia Strategic Vision, balancing environmental considerations with housing supply needs to create a sustainable and well-integrated residential community.

6.0 GENERAL AND PARTICULAR PROVISIONS

Clause 52.01 — Public Open Space Contribution and Subdivision

This policy states that if a person wishes to subdivide land a contribution to the council for public open space in an amount specified schedule to this clause must be made. Clause 52.01 states that a public open space contribution may be made only once for any of the land to be subdivided.

It is acknowledged that a public open space contribution has not been made on the land previously and would not need to be made (in accordance with Clause 52.01) should a permit issue for the subdivision.

Clause 56 – Residential Subdivision

See **Appendix A** of this report for a full assessment against the relevant standards of Clause 56 (Residential Subdivision):

Clause 65.02 - Decision Guidelines

With regard to this clause, the following comments are made:

Approval of an application or plan, states that before deciding on an application to subdivide land, the responsible authority must also consider, as appropriate:

- *The suitability of the land for subdivision.*
- *The existing use and possible future development of the land and nearby land.*
- *The availability of subdivided land in the locality, and the need for the creation of further lots.*
- *The effect of development on the use or development of other land which has a common means of drainage.*
- *The subdivision pattern having regard to the physical characteristics of the land including existing vegetation.*
- *The density of the proposed development.*
- *The area and dimensions of each lot in the subdivision.*
- *The layout of roads having regard to their function and relationship to existing roads.*
- *The movement of pedestrians and vehicles throughout the subdivision and the ease of access to all lots.*
- *The provision and location of reserves for public open space and other community facilities.*
- *The staging of the subdivision.*
- *The design and siting of buildings having regard to safety and the risk of spread of fire.*
- *The provision of off-street parking.*
- *The provision and location of common property.*
- *The functions of any body corporate.*
- *The availability and provision of utility services, including water, sewerage, drainage, electricity and gas.*
- *If the land is not sewered and no provision has been made for the land to be sewered, the capacity of the land to treat and retain all sewage and sullage within the boundaries of each lot.*

- *Whether, in relation to subdivision plans, native vegetation can be protected through subdivision and siting of open space areas.*

Assessment Summary

Clause 65 does not introduce any additional decision making criteria that has not been considered as part of the applicable planning controls. The proposed subdivision is in accordance with all relevant decision guidelines of Clause 65 of the Cardinia Planning Scheme. With regard to this clause, the following comments are made:

- The land is suitable for subdivision.
- The proposed development and future use of the land is entirely consistent with the existing and proposed development of the land and nearby land.
- It is considered that the proposed subdivision design is responsive to the shape of the land and the natural constraints of the land including the retention of all significant vegetation on site.

Clause 66.01 – Referrals and Notice Provisions

The provisions of Clause 66.01 set out the types of applications which must be referred under Section 55 of the Act or for which notice must be given under Section 52(1) (c) of the Act.

Specifically, an application for a two-lot subdivision must include mandatory conditions as set out in Clause 66.01.

7.0 CONCLUSION

The applicable planning scheme provisions outlined above are supportive of the proposed residential subdivision. The subdivision has been designed in accordance with the Planning Policy Framework and in accordance with the requirements of the zoning and overlay controls which have been set out above. The proposed development will provide for additional allotments for the establishment of future housing within the municipality. The increase in the total number of allotments will assist in catering for those seeking to reside in the municipality, while providing for diversity to accommodate the varying housing needs. The proposed subdivision will ensure that the values of the area will not be compromised. The size of the allotments will not only provide for the establishment of residential dwellings but will also provide ample opportunities for the establishment of landscaping and revegetation which will complement the area.

For the reasons discussed above, we respectfully submit that the proposal should be supported and that a Planning Permit for this proposal be issued

Clause 56 Assessment

Clause 56.03 - Liveable and Sustainable Communities		
Clause 56.03-5 **Neighbourhood character objective** • To design subdivisions that respond to neighbourhood character.	**Standard C6** Subdivision should: • Respect the existing neighbourhood character or achieve a preferred neighbourhood character consistent with any relevant neighbourhood character objective, policy or statement set out in this scheme. • Respond to and integrate with the surrounding urban environment. • Protect significant vegetation and site features.	**Complies** A subdivision site and context description and design response plan have been provided as part of this application, as well as a detailed written description within the accompanying town planning submission, outlining the existing conditions of the subject site as well as its surrounding environs.
Clause 56.04-2 **Lot area and building envelopes objective** • To provide lots with areas and dimensions that enable the appropriate siting and construction of a dwelling, solar access, private open	**Standard C8** Lots of between 300 square metres and 500 square metres should: • Contain a building envelope that is consistent with a development of the lot approved under this scheme, or • If no development of the lot has been approved under this	**Complies** Due to the large lot size of lot 2 a building envelope has not been provided. Lot 1 has an existing dwelling on it.

space, vehicle access and parking, water management, easements and the retention of significant vegetation and site features.	scheme, contain a building envelope and be able to contain a rectangle measuring 10 metres by 15 metres, or 9 metres by 15 metres if a boundary wall is nominated as part of the building envelope. If lots of between 300 square metres and 500 square metres are proposed to contain dwellings that are built to the boundary, the long axis of the lots should be within 30 degrees east and 20 degrees west of north unless there are significant physical constraints that make this difficult to achieve.	
Clause 56.04-3 **Solar orientation of lots objective** • To provide good solar orientation of lots and solar access for future dwellings.	**Standard C9** Unless the site is constrained by topography or other site conditions, at least 70 percent of lots should have appropriate solar orientation. Lots have appropriate solar orientation when: • The long axis of lots are within the range north 20 degrees west to north 30 degrees east, or east 20 degrees north to east 30 degrees south. • Lots between 300 square metres and 500 square metres are proposed to contain dwellings that are built to the boundary, the long axis of the lots should be within 30 degrees east and 20 degrees west of north. • Dimensions of lots are adequate to protect solar access to the lot, taking into account likely dwelling size and the relationship of each lot to the	**Complies** Given the lot size, the site is considered to have appropriate solar orientation for the existing dwellings.

	street.	
Clause 56.04-5 **Common area objectives** • To identify common areas and the purpose for which the area is commonly held. • To ensure the provision of common area is appropriate and that necessary management arrangements are in place. • To maintain direct public access throughout the neighbourhood street network. •	**Standard C11** An application to subdivide land that creates common land must be accompanied by a plan and a report identifying: • The common area to be owned by the body corporate, including any streets and open space. • The reasons why the area should be commonly held. • Lots participating in the body corporate. • The proposed management arrangements including maintenance standards for streets and open spaces to be commonly held.	**Complies** No common property is proposed for the subdivision.
Clause 56.06-8 **Lot access objective** • To provide for safe vehicle access between roads and lots.	**Standard C21** Vehicle access to lots abutting arterial roads should be provided from service roads, side or rear access lanes, access places or access streets where appropriate and in accordance with the access management requirements of the relevant roads authority. Vehicle access to lots of 300 square metres or less in area and lots with a frontage of 7.5 metres or less should	**Complies** Access to lot 2 will need to be constructed to the satisfaction of the responsible authority. Lot 1 will utilize the existing crossover.

	be provided via rear or side access lanes, places or streets. The design and construction of a crossover should meet the requirements of the relevant road authority.	
Clause 56.07 - Integrated Water Management		
Clause 56.07-1 Drinking water supply objectives • To reduce the use of drinking water. • To provide an adequate, cost-effective supply of drinking water.	**Standard C22** The supply of drinking water must be: Designed and constructed in accordance with the requirements and to the satisfaction of the relevant water authority. Provided to the boundary of all lots in the subdivision to the satisfaction of the relevant water authority.	**Complies** The site currently enjoys access to reticulated water. The owner will enter into an agreement with South East Water for the provision of water supply to each lot.
Clause 56.07-2 **Reused and recycled water objective** • To provide for the substitution of drinking water for non-drinking purposes with reused and recycled water.	**Standard C23** Reused and recycled water supply systems must be: • Designed, constructed and managed in accordance with the requirements and to the satisfaction of the relevant water authority, Environment Protection Authority and Department of Human Services. • Provided to the boundary of all lots in the subdivision where	**Complies** The size of the subdivision and the number of lots involved is too small to implement any recycled water supply. The use of water tanks and other water saving measures can be implemented into any future development.

	required by the relevant water authority.	
Clause 56.07-3 **Waste water management objective** • To provide a waste water system that is adequate for the maintenance of public health and the management of effluent in an environmentally friendly manner.	**Standard C24** Waste water systems must be: • Designed, constructed and managed in accordance with the requirements and to the satisfaction of the relevant water authority and the Environment Protection Authority. • Consistent with any relevant approved domestic waste water management plan. Reticulated waste water systems must be provided to the boundary of all lots in the subdivision where required by the relevant sewerage authority.	**Complies** Reticulated waste water (sewer) is currently unavailable to the site. Septic systems will be used to treat wastewater.
Clause 56.07-4 **Urban run-off management objectives** • To minimise damage to properties and inconvenience to residents from urban run-off. • To ensure that the street operates adequately during major storm events and provides for public safety.	**Standard C25** The urban stormwater management system must be: • Designed and managed in accordance with the requirements and to the satisfaction of the relevant drainage authority. • Designed and managed in accordance with the requirements and to the satisfaction of the water authority where reuse of urban run-off is proposed.	**Complies** Stormwater management and outfall will be to the satisfaction of the Council as required via any permit conditions the Council implements. The storm water discharged from hard standing or impervious surfaces is minimal compared to the size of the property.

• To minimise increases in stormwater runoff and protect the environmental values and physical characteristics of receiving waters from degradation by urban runoff.	• Designed to meet the current best practice performance objectives for stormwater quality as contained in the Urban Stormwater – Best Practice Environmental Management Guidelines (Victorian Stormwater Committee 1999) as amended. • Designed to ensure that flows downstream of the subdivision site are restricted to predevelopment levels unless increased flows are approved by the relevant drainage authority and there are no detrimental downstream impacts. The stormwater management system should be integrated with the overall development plan including the street and public open space networks and landscape design. For all storm events up to and including the 20% Average Exceedence Probability (AEP) standard: • Stormwater flows should be contained within the drainage system to the requirements of the relevant authority. • Ponding on roads should not occur for longer than 1 hour after the cessation of rainfall. For storm events greater than 20% AEP and up to and including 1% AEP standard: • Provision must be made for the safe and effective passage of stormwater flows. • All new lots should be free from inundation or to a lesser standard of flood protection where agreed by the relevant floodplain management	

	authority. • Ensure that streets, footpaths and cycle paths that are subject to flooding meet the safety criteria da Vave < 0.35 m2/s (where, da = average depth in metres and Vave = average velocity in metres per second). The design of the local drainage network should: • Ensure run-off is retarded to a standard required by the responsible drainage authority. • Ensure every lot is provided with drainage to a standard acceptable to the relevant drainage authority. Wherever possible, run-off should be directed to the front of the lot and discharged into the street drainage system or legal point of discharge. • Ensure that inlet and outlet structures take into account the effects of obstructions and debris build up. Any surcharge drainage pit should discharge into an overland flow in a safe and predetermined manner. • Include water sensitive urban design features to manage runoff in streets and public open space. Where such features are provided, an application must describe maintenance responsibilities, requirements and costs. Any flood mitigation works must be designed and constructed in accordance with the requirements of the relevant floodplain management authority.	

Clause 56.08 - Site Management		
Clause 56.08-1 **Site management objectives** • To protect drainage infrastructure and receiving waters from sedimentation and contamination. • To protect the site and surrounding area from environmental degradation or nuisance prior to and during construction of subdivision works. • To encourage the re-use of materials from the site and recycled materials in the construction of subdivisions where practicable.	**Standard C26** A subdivision application must describe how the site will be managed prior to and during the construction period and may set out requirements for managing: • Erosion and sediment. • Dust. • Run-off. • Litter, concrete and other construction wastes. • Chemical contamination. • Vegetation and natural features planned for retention. Recycled material should be used for the construction of streets, shared paths and other infrastructure where practicable.	**Complies** The level of construction on site is considered minimal for the 2 lot subdivision other than the relocation of services that may be required. It is considered that the standard can be satisfied via a condition on permit requiring the submission of an Environmental Management Plan.
Clause 56.09 - Utilities		
Clause 56.09-1 **Shared Trenching Objective** • To maximise the opportunities for shared	**Standard C27** Reticulated services for water, gas, electricity and telecommunications should be provided in shared trenching to minimise construction costs and land allocation for	**Complies** Most of the infrastructure is existing, however, where possible shared trenching on the site will be conducted. Detailed design plans will be prepared prior to works

trenching. • To minimise constraints on landscaping within street reserves.	underground services.	commencing.

IMPORTANT NOTICE
This plan must be used only for the purpose for which it was intended.
Any uncertainty in this plan must be clarified with the author.

IMPORTANT NOTICE
This plan is prepared for --
from a field survey for the purpose of designing new constructions on the land and should not be used for any other purpose.
Services shown hereon have been located by field survey.
Prior to any demolition, excavation or construction on site, the relevant authority should be contacted for possible location of further underground services and detailed locations of all services.
This note is an integral part of this plan.

IMPORTANT NOTICE
This plan has been prepared for town planning purposes only and must not be used for any other purpose.

WARNING
TOWN PLANNING PLAN ONLY
NOT FOR DETAILED DESIGN
SEE IMPORTANT NOTICES

NEIGHBOURHOOD AND SITE DESCRIPTION PLAN

NOTATIONS

POSTAL ADDRESS:
No. 106 Wattletree Road
BUNYIP 3815

NOTE: See certificate of title for easement and Title details

NOTE: This plan has been created from aerial photography and should be used for Town Planning purposes only

No. OF SHEETS IN PLAN 1 No. OF THIS SHEET 1

SCALE 0 5 10 20 30 LENGTHS ARE IN METRES

ORIGINAL SCALE 1:500 SHEET SIZE A0

SURVEYORS REFERENCE 25-03-438
VERSION 1
FILE KMH941 GC 1

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Arboricultural Impact Assessment

for

Earthcut Constructions Pty Ltd

Assessment of trees at 106 Wattletree Road, Bunyip

Prepared by

Homewood Consulting Pty Ltd
Unit 10 / 350 Settlement Road
Thomastown VIC 3074

Prepared for

[redacted]

Consulting Arborist

Tim Oldfield

Post Graduate Certificate in Arboriculture
Bachelor of Applied Science (Planning)

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14 July 2025

Executive Summary

18 trees were assessed at 106 Wattletree Road, Bunyip in relation to the subdivision of land into two lots and retrospective driveway works. The table below summarises the impact of the proposed works on the assessed trees.

Table 1: Arboricultural Impact Summary

Arboricultural Impact	Retention Value				Total No. of Trees
	High	Medium	Low	Third Party	
Impact Major – viable	1	0	0	2	3
No Impact	3	1	1	10	15
Total	**4**	**1**	**1**	**12**	**18**

Of the 18 trees assessed:

- Three trees (ID 1, 10 & 11) **have a major Notional Root Zone (NRZ) encroachment** under the proposed design.
  - Tree 1 has an encroachment of 28% by the recently modified driveway. This tree is **expected to remain viable** as the driveway works were over an existing driveway footprint and excavation appears to have been minimal. There is significant room around Tree 1 for NRZ expansion and root growth to compensate for any surface roots lost during construction.
  - Trees 10 and 11 have a 17 % and 36% encroachment from the new gravel driveway down the western side of the property. These trees are **expected to remain viable** as this driveway appears to have been constructed at grade. Providing this driveway is maintained as a permeable surface, these two trees are expected to remain viable within the landscape. It is noted that both of these trees are weed species and have a good tolerance to development impacts.
- Proposed works have no NRZ encroachment on the remaining 15 trees. These trees are expected to remain viable with the establishment of a TPZ and adherence to tree protection measures below.

All retained trees require protection to ensure they remain viable throughout the works. The following is recommended:

1. Future Building Envelopes and Effluent Envelopes (where relevant) should be located outside of the NRZ of any tree to be retained. If this cannot be achieved, then the location of these envelopes must be assessed by a suitably qualified arborist.
2. Fill soil is removed from the NRZ of Trees 13 and 14 and returned to natural ground level.
3. Establish a Tree Protection Zone for all trees to be retained.
   - 3.1 Where works are permitted within the TPZ, fencing is to be taken in to only the minimum amount necessary to allow the works to be completed.
   - 3.2 Where access for vehicles or machinery is required within the TPZ of trees to be retained, ground protection measures will be required in lieu of fencing.
   - 3.3 Where vehicles or machinery will be working adjacent to trees to be retained, protection for the trunk and branches will be required.

Contents

Table 2: Table of Revisions

Rev No.	Report Date	Description	Author	Internal Review Date	Reviewed by
0	*10/07/2025*	*Report for Submission to client*	*TSO*	*09/07/2025*	*AMS*

1. Introduction

Homewood Consulting Pty Ltd has been engaged to provide an arboricultural impact assessment on trees at 106 Wattletree Road, Bunyip in relation to the subdivision of the land into two lots and the construction of an unsealed driveway.

Cardinia Shire Council has issued a Request for Further Information (RFI) in relation to the subdivision application and has identified the following issues in relation to vegetation on the site:

> *The subject site is subject to vegetation protection controls pursuant to Clause 42.02 (Vegetation Protection Overlay) and Clause 52.17 (Native Vegetation). As such, the town planning report must sufficiently demonstrate that the vegetation removal occurred was otherwise exempt from the considerations of both aforementioned clauses and that the vegetation in proximity to the works are not impacted by the development.*

This report addresses the requirements outlined above and has been prepared in accordance with Australian Standard 4970: 2025 *Protection of Trees on Development Sites*. It provides an assessment of the trees with regard to their health, structure and retention value in the landscape and identifies the impact of the proposed development on the future longevity of the trees.

The report recommends design and construction methods to minimise impacts on retained trees where there is encroachment into the Notional Protection Zone (NRZ).

A Tree Protection Plan has been prepared which depicts Tree Protection Zones for trees to be retained and specifies the measures necessary to protect the trees throughout all stages of the proposed works.

2. Method

On Wednesday, 25 June 2025 Tim Oldfield conducted a site inspection.

Data collected for the trees includes:

- Botanical Name
- Canopy Dimensions
- Diameter at Standard Height (DSH)
- Diameter above basal root flare (DARF)
- Health
- Structure
- Useful Life Expectancy (ULE)
- Landscape Contribution
- Retention Value.

A ‘Visual Tree Assessment’ (VTA) was conducted for each tree. A VTA consists of a detailed visual inspection of a tree and its surrounding site, including a complete walk around the tree, looking at the buttress roots, trunk, branches and leaves. The tree is observed from a distance and close up to consider crown shape, landscape context and surroundings.

The assessment was conducted from ground level with no instruments used other than a diameter tape to measure trunk diameter. Any assessments of decay are qualitative only.

Tree location was recorded using differentially corrected GPS (generally +/- 1.0m accuracy). Location should be verified by a surveyor if decision making requires greater accuracy.

Arboricultural impact is determined based on the level of encroachment into the Notional Root Zone of a tree as specified in AS 4970:2025 Protection of Trees on Development Sites

Table 4 shows the data collected for the trees (page 9). For definitions and descriptors of the data collected on site see Appendix 1.

3. Protection of Trees on Development Sites

All retained trees require protection and the best way to protect trees is to establish a Tree Protection Zone (TPZ). The TPZ starts with a Notional Root Zone (NRZ).

The **NRZ** is a circular area around a tree that represents the theoretical root zone required for the tree's health and long-term viability. The NRZ encompasses the **Structural Root Zone (SRZ)**, a smaller circular area around the tree critical for tree stability. The woody root growth and soil cohesion in the SRZ are necessary to hold the tree upright. Both the NRZ and SRZ radius are calculated from trunk diameter measurements.

The **Tree Protection Zone (TPZ)** is the area designated on site that is isolated from construction impact or managed so that the tree remains viable. Determined by the Project Arborist, it begins with the NRZ and is adjusted based on the tree, site and encroachment characteristics that influence what area should, and can, be protected and managed on site.

Further description of the NRZ, SRZ and TPZ, and methods used for their calculation can be seen in Appendix 2

3.1 Arboricultural Impact

Arboricultural impact is determined based on the level of encroachment into the Notional Root Zone of a tree as specified in AS 4970:2025 Protection of Trees on Development Sites.

Table 3: Arboricultural Impact categories and descriptors

Category	Description
Major: Not viable	The proposed design has a NRZ area encroachment greater than 20%, and/or is inside the SRZ. Proposed works either require removal of the tree or are expected to have a significant detrimental impact on tree health, structure or longevity. The Project Arborist shall be engaged to explore alternative designs and/or construction methods with the design team, and/or conduct a root investigation for those trees that require retention.
Major: Viable	The proposed design has a NRZ area encroachment greater than 20%, and/or is inside the SRZ. The Project Arborist can demonstrate that the tree will remain viable through one, or a combination of the following: • A non-destructive root exploration has demonstrated limited root distribution within the proposed area of works • Root/tree sensitive construction methods are specified which adequately reduce the impact on the tree • Investigation of relevant factors adequately demonstrates limited root distribution within the proposed area of works
Moderate: Not viable	The proposed design has a NRZ area encroachment of greater than 10% and less than or equal to 20%, and is outside the SRZ. There is no recent NRZ encroachment. Proposed works are expected to have a significant detrimental impact on tree health, structure or longevity. The Project Arborist shall be engaged to recommend suitable design measures and construction controls to adequately reduce impact to those trees that require retention.

Category	Description
Moderate: Viable	The proposed design has a NRZ area encroachment of greater than 10% and less than or equal to 20%, and is outside the SRZ. There is no recent NRZ encroachment. The Project Arborist shall review the proposed impact, and demonstrate how the tree will remain viable, by addressing relevant tree, site or encroachment factors, and/or through the implementation of suitable design measures and construction controls to mitigate impacts.
Minor	The proposed design has a NRZ area encroachment of less than 10%, and is outside the SRZ. There are no recent NRZ encroachments. It is unlikely that there will be a significant impact to tree health, structure or longevity, providing tree protection measures are implemented on site.
No impact	The proposed design does not enter the NRZ. There should be no impact to tree health, structure or longevity, providing tree protection measures are implemented on site.
Remove tree (poor condition)	The tree is in such poor condition that it is recommended for removal, regardless of the proposed design. The tree does not warrant retention and protection throughout the proposed works.

For all levels of encroachment, retained trees will require a Tree Protection Zone to be established and tree protection measures implemented. To avoid a net loss of soil area and volume, an area equivalent to the NRZ encroachment shall be incorporated into the TPZ, unless the Project Arborist otherwise demonstrates that the tree will remain viable

4. Design Proposal

4.1 Existing Conditions

The site is a rectangular residential lot to the south of Wattletree Road, in Bunyip. The site contains a single-story dwelling and driveway to the northern half of the lot. The dwelling is currently under renovation, which has included the replacement of the existing central driveway and turning area.

Figure 1: Subject site, Wattletree Rd frontage looking south

4.2 Proposed Works

It is proposed to subdivide the land into two lots, lot 1 will contain the existing dwelling and central driveway. Lot two will be vacant with a proposed building and effluent envelope and a driveway proposed down the western side of the site. This driveway has been constructed (Figure 2). Details of proposed building/effluent envelope locations or sizes has not been provided for this assessment.

Figure 2: New driveway down the western boundary constructed

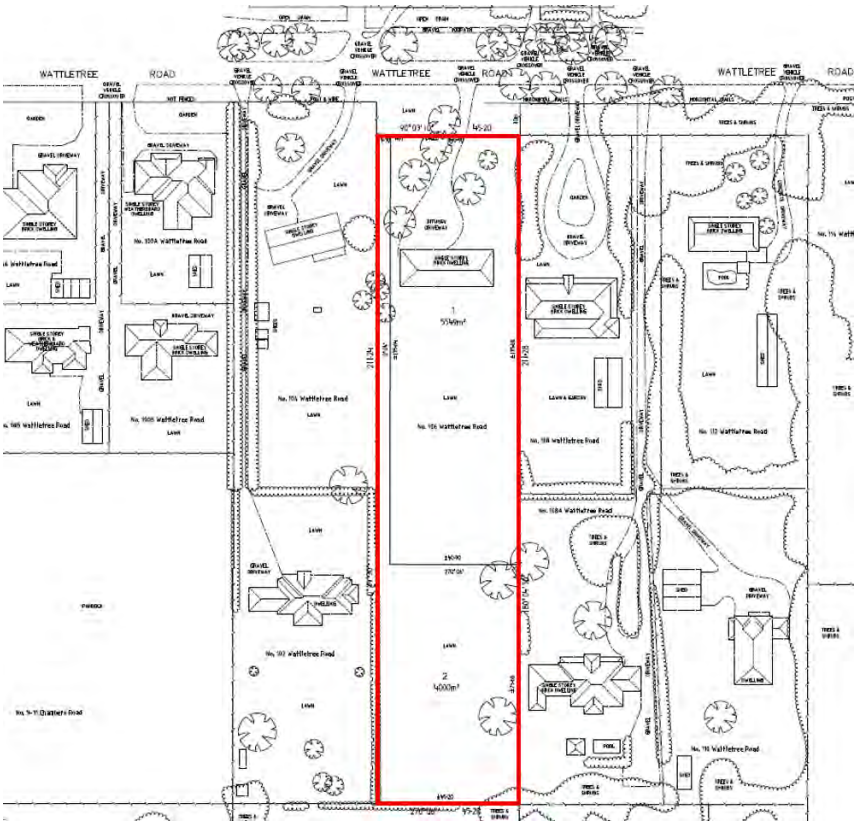


Figure 3: Proposed two lot subdivision

Table 4 displays the assessment data for all trees, as well as the dimensions of the TPZs, SRZs and the arboricultural impact from the proposed design.

Section 7 shows the Arboricultural Impact Assessment Plan. TPZs and SRZs for the assessed trees are depicted to scale and the construction footprint of the proposed works is indicated.

5. Planning Controls

5.1 Vegetation Protection Overlay (Schedule 1)

The site is subject to the Vegetation Protection Overlay (VPO1), which convers the whole site. The purpose of this overlay is to protect and conserve existing vegetation for low density residential character, to maintain and enhance local habitat and bio-links, to avoid and minimise the removal of vegetation where it contributes to the management of erosion, salinity, siltation of creeks and watercourses, and stormwater runoff and to ensure that vegetation remains a significant part of the character and visual amenity of these areas. Pursuant to this overlay, a permit is required to remove, destroy or lop any vegetation unless an exemption applies. Of the trees located on the subject site, all require a planning permit for their removal pursuant to this overlay.

5.2 Clause 52.17 – Native Vegetation

As the land exceeds 4000 square metres in area, Clause 52.17 applies. The purpose of this control is to ensure no net loss to biodiversity by requiring the purchase of offsets to compensate for removal of vegetation. Pursuant to this over, a permit is required to remove, destroy or lop any *native* vegetation, Native in this context meaning vegetation that are of a species with a native range that encompasses any part of Victoria, irrespective of size/maturity. This does not apply to:

- Planted specimens (not self-sown)
- Dead trees with DBH <40cm
- Maintenance pruning (max one third crown removal)
- To enable safe function of a road or crossover.
- Removal of vegetation identified within the schedule to this clause. Under this clause, *Pittosporum undulatum* (Sweet Pittosporum) is exempt from planning permit requirements for all land in Cardinia Shire.

It is noted both lots will have a total area of 400 square metres or more and therefore, Clause 52.17 will still apply to both lots after the land is subdivided.

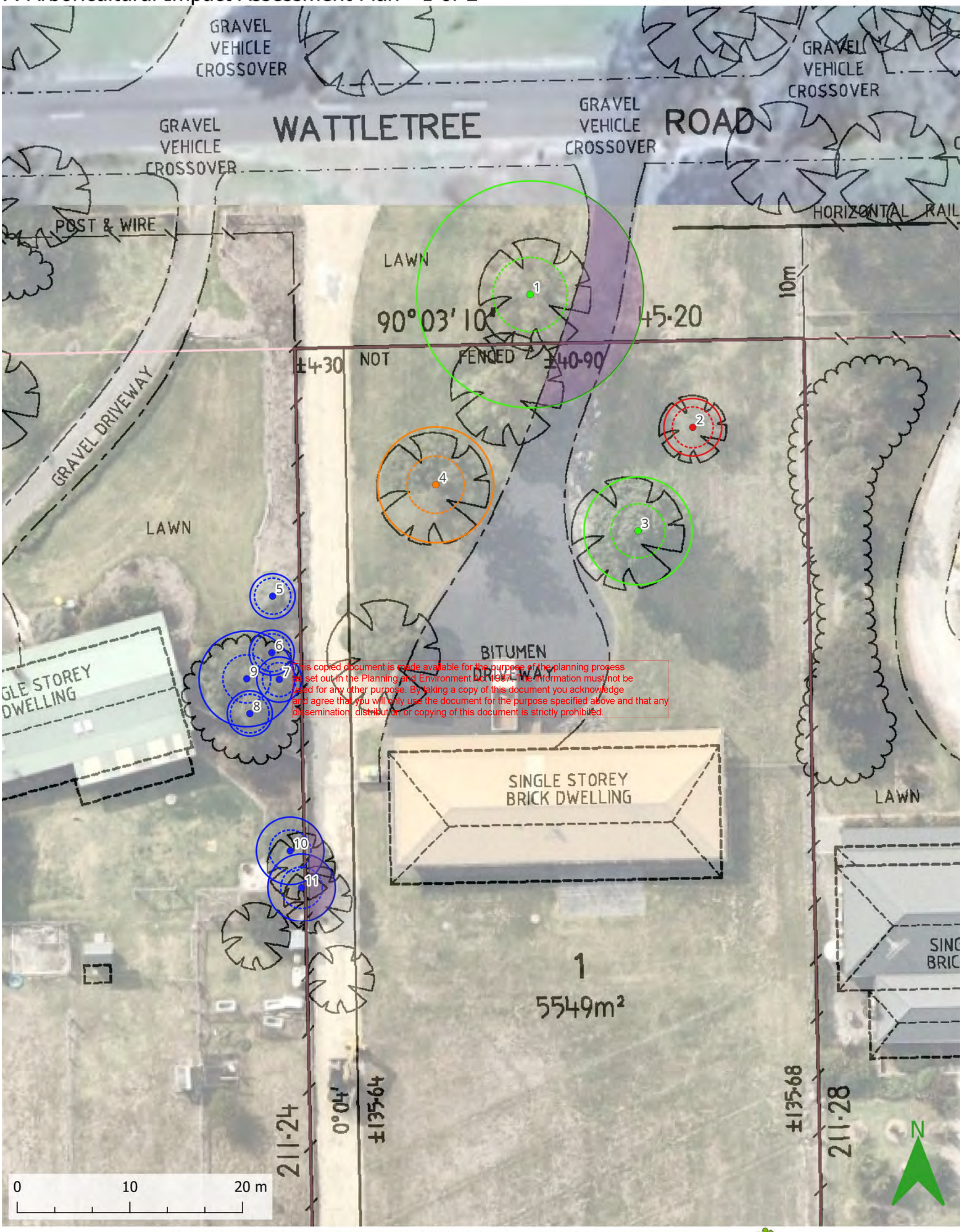
6. Tree Assessments

Table 4: Summary of tree assessments and arboricultural impact from the proposed design.

Tree ID	Botanical Name	Origin	Height and Width (m)	DBH (cm)	Age Class	Health	Structure	Useful Life Expectancy	Retention value	TPZ Radius (m)	SRZ Radius (m)	Impact (%)	Impact
1	*Eucalyptus viminalis* subsp. *pryoriana*	Victorian Native	12 x 11	84	Mature	Fair	Fair	20-40 years	High	10.1	3.3	28	Impact Major - viable
3	*Liquidambar formosana*	Exotic	11 x 7	40	Mature	Good	Good	20-40 years	High	4.8	2.4	None	No Impact
4	*Grevillea robusta*	Australian Native	13 x 7	43	Mature	Good	Fair	10-20 years	Medium	5.2	2.5	None	No Impact
5	*Leucophyllum frutescens*	Exotic	2 x 2	9.17	Mature	Good	Fair	10-20 years	Third Party Ownership	2.0	1.6	None	No Impact
6	*Prunus cerasifera* 'Nigra'	Exotic	5 x 3	15.23	Mature	Good	Fair	10-20 years	Third Party Ownership	2.0	1.7	None	No Impact
7	*Pittosporum undulatum*	Victorian Native	3 x 2	7	Semi mature	Good	Fair	20-40 years	Third Party Ownership	2.0	1.5	None	No Impact
8	*Pittosporum undulatum*	Victorian Native	5 x 5	16.03	Semi mature	Good	Fair	20-40 years	Third Party Ownership	2.0	1.7	None	No Impact
9	*Pittosporum undulatum*	Victorian Native	5 x 5	35.36	Mature	Fair	Fair	20-40 years	Third Party Ownership	4.2	2.1	None	No Impact
10	*Prunus sp.*	Exotic	4 x 3	25	Mature	Good	Fair	10-20 years	Third Party Ownership	3.0	1.9	17	Impact Major - viable

Tree ID	Botanical Name	Origin	Height and Width (m)	DBH (cm)	Age Class	Health	Structure	Useful Life Expectancy	Retention value	TPZ Radius (m)	SRZ Radius (m)	Impact (%)	Impact
11	*Pittosporum undulatum*	Victorian Native	6 x 4	25	Mature	Fair	Fair	10-20 years	Third Party Ownership	3.0	1.9	36	Impact Major - viable
12	*Pinus radiata*	Exotic	17 x 9	76	Mature	Good	Good	20-40 years	Third Party Ownership	9.1	3.0	None	No Impact
13	*Eucalyptus viminalis subsp. pryoriana*	Victorian Native	8 x 10	72	Mature	Fair	Fair	20-40 years	High	8.6	3.0	None	No Impact
14	*Eucalyptus viminalis subsp. pryoriana*	Victorian Native	12 x 10	60	Mature	Fair	Fair	20-40 years	High	7.2	2.8	None	No Impact
15	*Acacia floribunda*	Australian Native	5 x 6	32.02	Mature	Good	Fair	20-40 years	Third Party Ownership	3.8	2.3	None	No Impact
16	*Prunus sp.*	Exotic	4 x 4	17.92	Mature	Fair	Fair	20-40 years	Third Party Ownership	2.2	1.9	None	No Impact
17	*Hesperocyparis macrocarpa*	Exotic	10 x 6	55	Mature	Good	Good	20-40 years	Third Party Ownership	6.6	2.8	None	No Impact
18	*Hesperocyparis macrocarpa*	Exotic	10 x 5	47	Mature	Good	Good	20-40 years	Third Party Ownership	5.6	2.7	None	No Impact

7. Arboricultural Impact Assessment Plan - 1 of 2



Assessment of Trees at 106 Wattletree Road, Bunyip

Legend

Trees / SRZ / NRZ

- High
- Low
- Medium
- Third Party Ownership

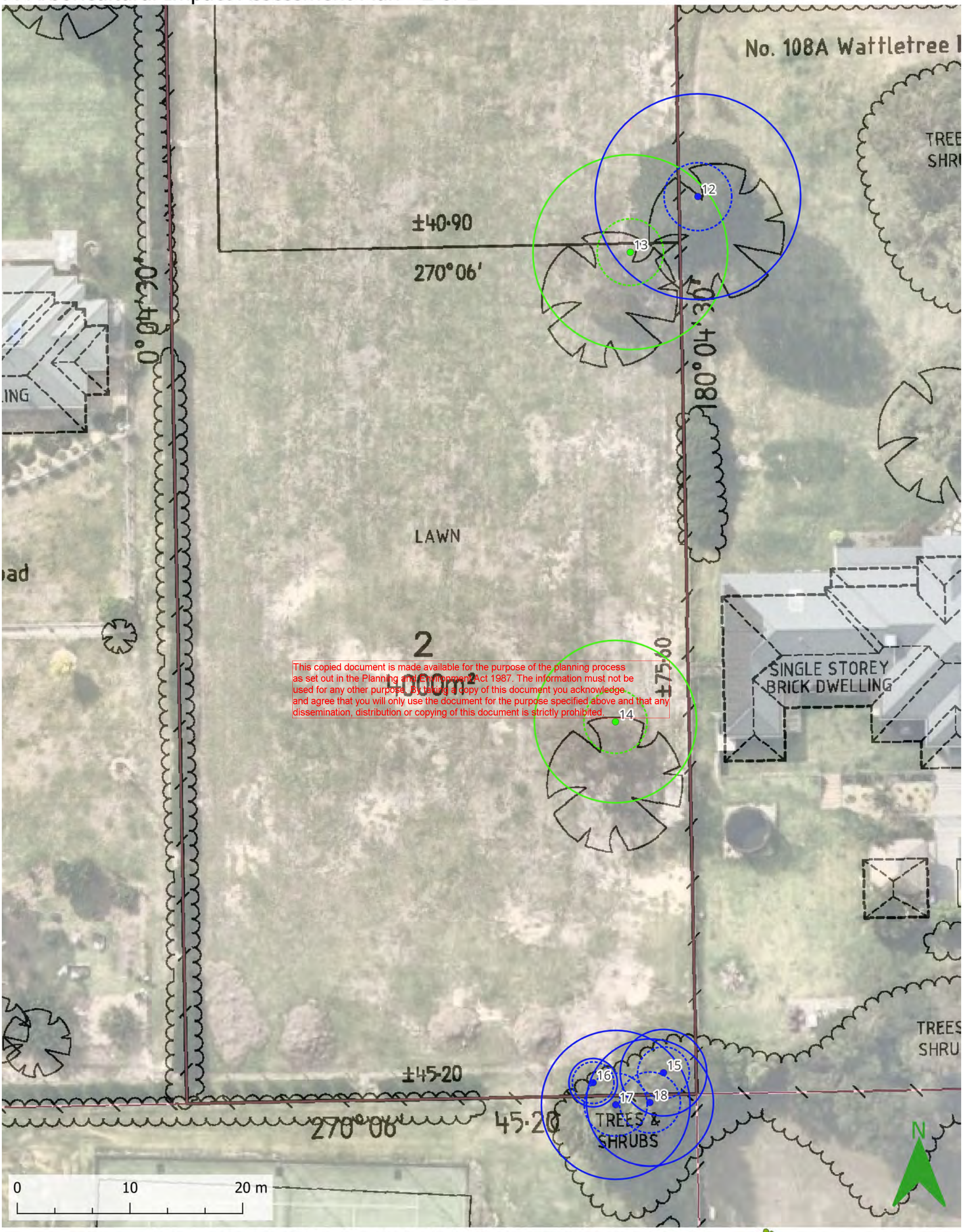
Development Encroachment

- Major (>=20%)
- Moderate (>=10% or SRZ)
- Minor (<10% and no SRZ)
- Removal
- No impact

Base Information Supplied By:
M.J. Reddie Surveys 25-03-438
Date: 10/07/2025
Plotted: TSO
CRS: GDA2020 / MGA zone 55

HOMEWOOD CONSULTING PTY LTD
Unit 10/350 Settlement Rd
Thomastown VIC 3074
Ph: 1300 404 558
ABN: 39 531 880 706

7. Arboricultural Impact Assessment Plan - 2 of 2



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Legend

Trees / SRZ / NRZ

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Development Encroachment

- Major (>=20%)
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HOMEWOOD CONSULTING PTY LTD
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Ph: 1300 404 558
ABN: 39 531 880 706

8. Arboricultural Impact Assessment Summary

Table 5: Summary of impact from the proposed design

Arboricultural Impact	High	Medium	Low	Third Party	Total No. of Trees
Impact Major – viable	1	0	0	2	**3**
No Impact	3	1	1	10	**15**
Total	**4**	**1**	**1**	**12**	**18**

- Three trees (ID 1, 10 & 11) **have a major TPZ encroachment** under the proposed design.
  - Tree 1 has an encroachment of 28% by the recently modified driveway. This tree is **expected to remain viable** as the driveway works were over an existing driveway footprint and excavation appears to have been minimal. There is significant room around Tree 1 for TPZ expansion and root growth to compensate for any surface roots lost during construction.
  - Trees 10 and 11 have a 17 % and 36% encroachment from the new gravel driveway down the western side of the property. These trees are **expected to remain viable** as this driveway appears to have been constructed at grade. Providing this driveway is maintained as a permeable surface, these two trees should remain viable within the landscape. It is noted that both of these trees are weed species and have a good tolerance to development impacts.

Figure 4: Gravel driveway adjacent to Trees 10 & 11

- **The remaining trees (ID 2-9 & 12-18) have no TPZ encroachment** from the proposed works and is/are expected to remain viable with standard TPZ provisions and exclusions.

All retained trees require protection to ensure they remain viable throughout demolition and construction.

9. Tree Removal and soil fill

Council has raised concerns in regard to tree removal that has occurred on the site. One tree has been removed from the front of the property (Figure 5).

Figure 5: Tree removed at front of the site (red dashed line)

Google Street View, captured in August 2023 (Figure 6), shows a tree within that location. From the images shown, the tree appears to be a Melaleuca species, However, no foliage was available for ID to species level on the day of the site visit.

Figure 6: Melaleuca sp. recently removed from the site (Google Street View, August 2023)

There is fill soil piles located around the subject site, some of which are within the NRZ of trees, specifically Trees 13 and 14 (Figure 7). Excessive fill soils inhibit soil water infiltration and gas exchange between the atmosphere and soil surface, which is vital for root health.

It is recommended that fill soils are removed from around these trees, Soils should be manually removed from against the trunk and root collar to avoid mechanical damage to the trees. Soil should be returned to natural grade with no excavation beyond natural grade.

Figure 7: Fill soil within the NRZ of Tree 14

10. Recommended Tree Protection Measures

In order to protect retained trees and ensure they remain viable, the following is recommended:

1. Future Building Envelopes and Effluent Envelopes (where relevant) should be located outside of the NRZ of any tree to be retained. If this cannot be achieved, then the location of these envelopes must be assessed by a suitably qualified arborist.
2. Fill soil is removed from the NRZ of Trees 13 and 14 and returned to natural ground level.
3. Establish a Tree Protection Zone for all trees to be retained as shown on the Tree Protection Plan.
   - 3.1 Where works are permitted within the TPZ, fencing is to be taken in to only the minimum amount necessary to allow the works to be completed.
   - 3.2 Where access for machinery is required within the TPZ of trees to be retained, ground protection measures will be required.
   - 3.3 Where machinery will be working adjacent to trees to be retained, protection for the trunk and branches will be required.

Further description of the tree protection measures listed can be seen in Appendix 3.

11. References

AS 4970 - 2009, *Australian Standard, Protection of Trees on Development Sites*, Standards Australia.

AS 4373 – 2007, *Australian Standard, Pruning of Amenity Trees*, Standards Australia.

Biddle, P.G., 1998, *Tree root damage to buildings, Causes, Diagnosis and Remedy,* Willowmead Publishing Ltd., Wantage, UK.

Mattheck, C. and Breloer, H. 1994, *The body language of trees: a handbook for failure analysis*, London: HMSO.

Appendix 1. Data Collection Definitions & Descriptors

Tree assessments are based on the assessor's experience and opinion of the tree.

1.1 Botanical name

The scientific name identifying the genus and species of the tree. Each species has only one scientific name.

1.2 Common name

The colloquial name for a tree species, usually in plain English. Common names for a species are often local or regional and each species can have multiple common names.

1.3 Tree dimensions

Tree height and canopy width in metres (estimated unless stated otherwise).

1.4 DSH

Diameter of the trunk at standard height (1.4m above ground level) measured using a diameter tape. Used to calculate the Tree Protection Zone radius.

1.5 Basal diameter (DAB)

Diameter of the trunk above the root buttress, measured using a diameter tape. Used to calculate the Structural Root Zone radius.

1.6 Health

Category	Description
Very Good	The tree is demonstrating excellent or exceptional growth. The tree exhibits a full canopy of foliage and is free of pest and disease problems.
Good	The tree is demonstrating good or exceptional growth. The tree exhibits a full canopy of foliage and has only minor pest or diseases problems.
Fair	The tree is in reasonable condition and growing well. The tree exhibits an adequate canopy of foliage. There may be some deadwood present in the crown. Some grazing by insects or possums may be evident.
Poor	The tree is not growing to its full capacity; extension growth of the laterals is minimal. The canopy may be thinning or sparse. Large amounts of deadwood may be evident throughout the crown. Significant pest and disease problems may be evident or there may be symptoms of stress indicating tree decline.
Very Poor	The tree appears to be in a state of decline. The tree is not growing to its full capacity. The canopy may be very thin and sparse. A significant volume of deadwood may be present in the canopy or pest and disease problems may be causing a severe decline in tree health.
Dead	The tree is dead.

1.7 Structure

Category	Description
Good	The tree has a well-defined and balanced crown. Branch unions appear to be sound, with no significant defects evident in the trunk or the branches. Major limbs are well defined. The tree is considered a good example of the species.
Fair	The tree has some minor problems in the structure of the crown. The crown may be slightly out of balance, and some branch unions may be exhibiting minor structural faults. If the tree has a single trunk, it may be on a slight lean or exhibiting minor defects.
Poor	The tree may have a poorly structured crown. The crown may be unbalanced or exhibit large gaps. Major limbs may not be well defined. Branches may be rubbing or crossing over. Branch unions may be poor or faulty at the point of attachment. The tree may have suffered root damage.
Very Poor	The tree has a poorly structured crown. The crown is unbalanced or exhibits large gaps with possibly large sections of deadwood. Major limbs may not be well defined. Branches may be rubbing or crossing over. Branch unions may be poor or faulty at the point of attachment. Branches may exhibit large cracks that are likely to fail in the future. The tree may have suffered major root damage.
Has Failed	A section of the tree has failed or is in imminent danger of failure and the tree is no longer a viable specimen.

1.8 Age Class

Category	Description
Mature	Tree has reached the expected size for the species at the site.
Semi-mature	Established tree that has not yet reach the expected size for the species at the site.
Young	Recently planted tree or juvenile self-sown tree (generally less than 5 years old).

1.9 Useful Life Expectancy (ULE)

Category	Description
40+ years	The tree is in excellent condition and under normal conditions and with appropriate management is expected to continue as a viable landscape component in excess of 40 years.
20 - 40 years	The tree is in good condition and under normal conditions and with appropriate management is expected to continue as a viable landscape component for 20-40 years.
10 - 20 years	The tree is in fair condition and under normal conditions and with appropriate management is expected to continue as a viable landscape component for 10-20 years.
5 - 10 years	The tree is in fair to poor condition or it is not a long lived species. Removal and replacement may be required within the next 10 years.
1 - 5 years	The tree is in poor condition due to advanced decline or structural defect. Removal and replacement may be required within the next 5 years.
0 years	The tree is dead or is considered hazardous in the location. Removal may be required.

1.10 Tree Origin

Category	Description
Exotic	The species originates in a country other than Australia.
Australian Native	The species originates within Australia.
Indigenous	The species originates within the local environs.

1.11 Contribution to the Landscape

Category	Description
High	Generally, a large tree which is a significant component of the local landscape and provides canopy cover to the site. May offer shade and other amenities such as screening. The tree may assist with erosion control, offer a windbreak or perform a vital function in the location (e.g.: Habitat, shade, flowers or fruit).
Medium	Generally, a medium sized tree or group of small-medium trees which provide a moderate contribution to the local landscape and canopy cover. The tree may offer screening in the landscape or serve a particular function in the location.
Low	The tree offers little in the way of screening, amenity or canopy cover.
Negligible	The tree offers extremely little to nothing in the way of screening, amenity or canopy cover.

1.12 Tree Retention Value

Term	Description
Very High	Tree of exceptional quality in good condition. A prominent landscape feature and/or of historic, cultural, ecological or other significance. Has the potential to be a long-term landscape component where managed appropriately. All efforts should be made to retain the tree and protect from arboricultural impact.
High	Tree of high quality in good to fair condition. Generally, a prominent landscape feature. Has the potential to be a medium to long-term landscape component where managed appropriately. All efforts should be made to retain the tree and protect from arboricultural impact.
Medium	Tree of moderate quality in fair condition. Generally, a modest landscape feature. May have a health or structural issue that can be resolved with arboricultural input or may refer to a medium to small tree in good condition. Has the potential to be a medium to long-term landscape component where managed appropriately. Where practical, design modifications should be considered in order to retain and protect from arboricultural impact.
Low	Either: Tree of low quality in poor condition. Generally, provides little amenity value. Unlikely to be a long or medium term landscape component. The tree may be considered a weed species, structurally unsound, dead/dying/diseased, nearing the end of its ULE or may not be suitable for the site. Or: small tree of good or fair condition which is easily replaced in the landscape through planting of advanced stock.
Third party ownership	The tree is located outside of the subject site and is owned by a third party. It may be owned by a private entity (residential) or public body (council). Third party owned trees must be retained and protected from arboricultural impact, unless a mutually acceptable outcome is negotiated with the tree owner and relevant authorities.

Appendix 2. Tree Protection Zones & Structural Root Zones

Injury to any part of the tree can detrimentally affect its health or structural stability.

Root damage is the most common cause of damage to trees on development sites. Root damage can cause decline and death of a tree. Roots may be directly damaged when removed, wounded, crushed or torn during grading, excavation or trenching. Roots may be indirectly damaged through changes to the soil environment including soil compaction and soil build up – both of which limit water and gas exchange, using impermeable materials over the soil surface, chemical contamination and changes in soil moisture levels through alteration of drainage patterns and surface water flow.

Trunks of trees may be wounded mechanically during demolition and construction work. This not only predisposes a tree to potential decay, but it also interferes with the transport of water, nutrients and sugars throughout the tree. Over time, large wounds can decay and structurally weaken the tree.

The canopy of trees can be damaged through incorrect pruning techniques or mechanical injury caused by construction equipment. The removal of leaves reduces the level of photosynthesis and reduces the tree's capacity to function normally and to withstand stresses imposed by a change in its environment. Incorrect pruning and mechanical damage can produce wounds that are susceptible to infection by wood decay organisms.

It is impossible to reverse injury to a tree, and reversing stress is difficult. Procedures for tree protection should be in place at every stage of the development process to successfully retain trees of value. These procedures should be established at the earliest planning stage of any outdoor event or design of a development project where there are trees.

The Australian Standard for the Protection of Trees on Development Sites (AS 4970:2025) uses the Notional Root Zone, the Structural Root Zone and the Tree Protection Zone to ensure trees are adequately protected from construction impact.

2.1 Notional Root Zone (NRZ)

The Notional Root Zone (NRZ) is a notional area (circular) around the tree which encompasses the theoretical root zone required for the tree's health and long-term viability. A larger area is required to maintain a viable tree.

The radius of the NRZ is calculated for each tree by multiplying its Diameter at Standard Height (DSH) by 12.

NRZ radius = DSH x 12

where

DSH = trunk diameter measured at 1.4m above ground

The radius of the NRZ is measured from the centre of the trunk. Any NRZ radius shall not be less than 2.0m or greater than 15.0m. The NRZ for palms, cycads, tree ferns and the like is not calculated but shall not be less than 2.0m.

2.2 Structural Root Zone (SRZ)

The Structural Root Zone (SRZ) is a notional area (circular) around the tree required for stability. A larger area is required to maintain a viable tree. The woody root growth and soil cohesion in the SRZ are necessary to hold the tree upright.

The radius of the SRZ is calculated as:

SRZ radius – $(D \times 50)^{0.42} \times 0.64$

where

D = trunk diameter measured above the root buttress flare

The radius of the SRZ is measured from the centre of the trunk. Any SRZ radius shall not be less than 1.5m. The SRZ calculation does not apply to palms, cycads, tree ferns and the like.

2.3 Tree Protection Zone (TPZ)

The Tree Protection Zone (TPZ) is the area on site that is isolated from construction impact or managed so that the tree remains viable. The TPZ is determined by the Project Arborist starting with the NRZ and considering the tree, site and encroachment factors that determine what area should, and can, be isolated and managed on site to ensure the tree remains viable.

This may include consideration of:

- Location and distribution of roots
- Potential loss of root mass
- Species tolerance to root disturbance
- Age, health and size of tree
- Lean and stability of the tree
- Tree canopy protection requirements
- Soil characteristics
- The nature of the encroachment
- Existing encroachments in the NRZ
- Proposed staging of root disturbance
- Root sensitive construction methods
- Proposed tree maintenance and tree care

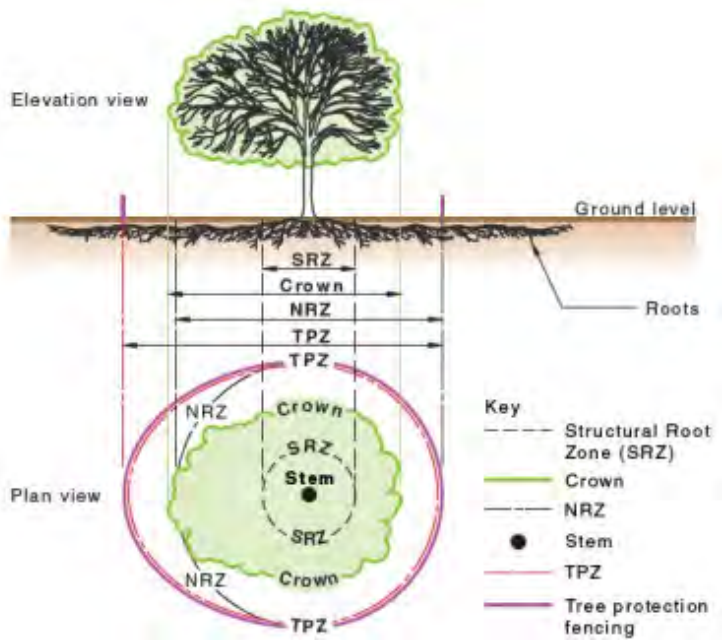


Figure 8: An example of the NRZ, SRZ and TPZ where there is no development in the NRZ. The TPZ – the area on site that is isolated from construction impact – has been modified to ensure the canopy is adequately protected.

2.4 NRZ and SRZ encroachment

It may be possible to encroach into the NRZ. Encroachment is defined as works or change of use (temporary or permanent) proposed to occur within an NRZ, either above or below ground, regardless of work method or construction type.

Encroachment can occur throughout all stages of development, including demolition, site preparation, civil works, installation of utilities and services, construction and landscaping.

Table 6: Levels of TPZ encroachment as defined by AS 4970:2025

Level of Encroachment	Description/ Definition	Requirements
Minor	• Encroachment of less than or equal to 10% of the area of the NRZ • Has not had recent NRZ encroachments • Is outside the SRZ	Generally unlikely that there will be a significant impact to tree health, structure or longevity.
Moderate	• Encroachment of greater than 10% and less than or equal to 20% of the area of the NRZ • Has not had recent NRZ encroachments • Is outside the SRZ	The Project Arborist shall review the proposed impact and determine if the tree will remain viable. This may be through consideration of relevant tree, site or encroachment factors, and/or through the implementation of suitable design measures and construction controls to mitigate impact. If trees designated for retention are not viable, The Project Arborist shall be engaged to recommend suitable design measures and construction controls to adequately reduce impact.
Major	• Greater than 20% of the area of the of the NRZ; and/or • Is inside the SRZ	The Project Arborist shall review the proposed impact and determine if the tree will remain viable. This may require root investigation by non-destructive methods and/or a detailed investigation of relevant factors of tree health, vigour, stability, species sensitivity and soil characteristics. If trees designated for retention are not viable, The Project Arborist shall be engaged to explore alternative designs and/or construction controls with the design team.

For all levels of encroachment:

- Tree protection measures should be implemented during site works.
- To avoid a net loss of soil area and volume, a compensatory area, being equivalent to the encroachment, shall be incorporated into the TPZ, unless the Project Arborist otherwise demonstrates that the tree will remain viable (Figure 9).

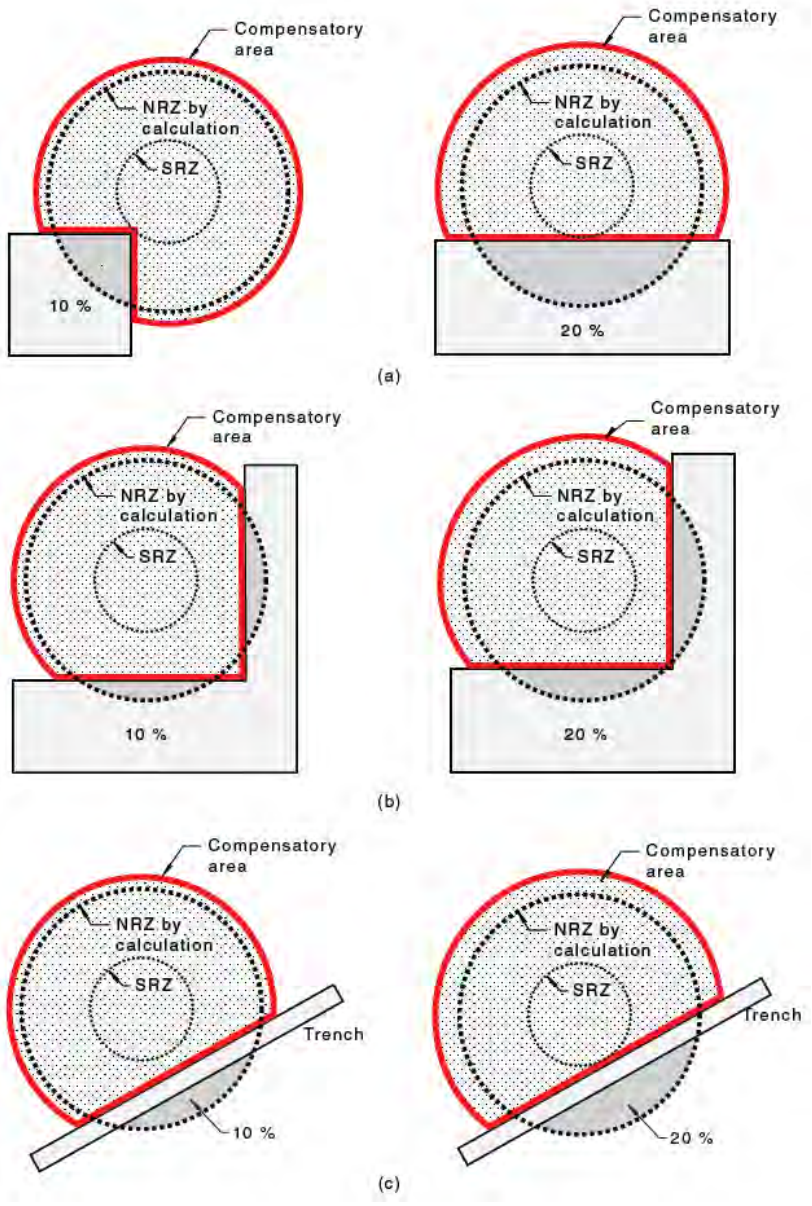


Figure 9: Example of minor and moderate encroachments and compensatory offsets (image from AS 4970:2025).

2.5 Root Investigation

A root investigation may be required to assess the impact of proposed works on trees to be retained when there is a major encroachment. The location and distribution of the roots should be determined through minimally destructive investigation methods (pneumatic, hydraulic, hand digging or ground penetrating radar). The Project Arborist should prepare a report, including photographs. Root damage must be minimised during this process and roots should only be exposed for as long as required to meet the purposes of the investigation.

Appendix 3. Tree Protection Measures

3.1 Tree Protection Measures

3.1.1 Tree protection fencing

Tree protection fencing should be erected before any machinery or materials are brought onto the site and before the commencement of works, including demolition. The fence should restrict access to the TPZ, and semi-permanent fences or options that make it difficult to move the fence should be considered where appropriate. Tree protection fencing shall not be removed or altered without approval by the Project Arborist.

If temporary fencing panels are used, they must comply with AS 4687:2022 which specifies the requirements for fence strength, durability, height, stability, bracing and anchoring.

Existing perimeter fences and other structures may be used as part of the tree protection fencing if suitable.

3.1.1 TPZ Signs

Signs identifying the TPZ should be placed around the edge of the TPZ and be clearly visible from within the development site. The TPZ sign provides clear and readily accessible information to indicate that a TPZ has been established. Figure 11 provides an example of a suitable sign. The sign should be minimum A3 size.

Figure 10: Tree protection fencing is erected around retained trees prior to site works

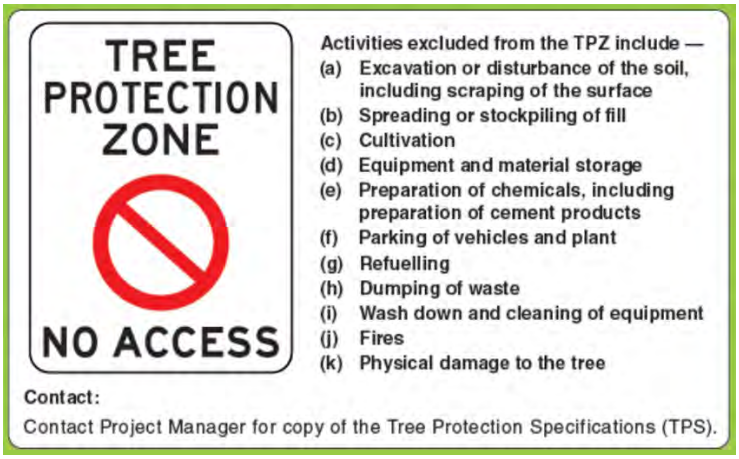


Figure 11: Tree Protection Zone sign (Source: AS 4970:2025)

Where tree protection fences cannot be installed, require temporary removal or where fencing is impractical - e.g. if site access is required through the TPZ, other tree protection measures should be used, including ground protection and/or trunk and branch protection.

3.2 Activities restricted within the TPZ

Activities restricted within the TPZ include but are not limited to:

- machine excavation including trenching
- excavation for silt fencing
- cultivation and landscaping
- storage of materials
- preparation of chemicals, including preparation of cement products
- parking of vehicles and plant
- refuelling
- dumping of waste
- wash down and cleaning of equipment
- placement of fill
- lighting of fires
- soil level changes
- temporary or permanent installation of utilities and signs
- physical damage to the tree

3.3 TPZ Maintenance

The fenced TPZ area should be mulched to retain soil moisture throughout the period of works. The mulch must be maintained to a depth of 50-100mm. Where the existing landscape within the TPZ is to remain unaltered (e.g. garden beds or turf) mulch may not be required.

Soil moisture levels should be regularly monitored by the Project Arborist. Temporary irrigation or watering may be required within the TPZ. An above-ground irrigation system should be installed and maintained by a competent individual.

All weeds should be removed by hand without soil disturbance or should be controlled with appropriate use of herbicide.

3.4 Working within the TPZ

Some works and activities within the TPZ may be permitted by the determining authority. These must be directly supervised on site by the Project Arborist. Any additional

encroachment that becomes necessary as the site works progress must be reviewed by the Project Arborist and be acceptable to the determining authority before being carried out.

3.5 Landscaping

Soft and hard landscaping within Tree Protection Zones should be assessed by the Project Arborist at the design stage, and prior to the commencement of works. In general:

- There should be no grade changes within the TPZ of trees to be retained. If a level surface is required, no more than 100mm of fill (e.g. topsoil or crushed rock) should be used.
- There should be no soil preparation for landscaping (cultivation, replacement of existing substrate or compaction) within the TPZ of trees to be retained.
- Excavation for planting holes, fence posts, garden edging, etc. should be undertaken manually within the TPZ of trees to be retained. If significant roots (greater than 30mm diameter) are encountered these are to be retained unscathed and the location of the landscape component shifted. Any small roots are to be cleanly pruned by the Project Arborist, at right angles, using sharp, clean tools.

3.6 Underground services

Underground services within Tree Protection Zones should be assessed by the Project Arborist at the design stage, and prior to the commencement of works.

- All underground services (including water, sewage, electricity, gas and communications) should be located outside of the TPZ of trees to be retained.
- If underground services are to be routed within an established TPZ, they should be installed by directional boring with the top of the bore to be a minimum depth of 800mm below the existing grade.
- Bore pits should be located outside of the TPZ or manually excavated under the direct supervision of the Project Arborist.

3.7 Ground Protection

If temporary access for machinery is required within the TPZ, ground protection measures will be required. The purpose of ground protection is to prevent root damage and soil compaction within the TPZ. Examples of ground protection include track mats (Figure 12) and rumble boards strapped over mulch or crushed rock (Figure 13). Depending on weather conditions, geotextile fabric may be required to prevent mulch and crushed rock mixing into the site soils.

Figure 12: Track mats.

Figure 13: Rumble boards over crushed rock.

3.8 Trunk and Branch Protection

Where trees cannot be isolated from vehicles or machinery by TPZ fencing, trunk and branch protection may be required to prevent mechanical damage. Protection may consist of padding surrounding the trunk or branch, held in place with batons strapped together, or similar (Figure 14). Boards are to be strapped to trees, not nailed or screwed.

Crown protection may also include pruning, tying-back of branches or other measures. If pruning is required, it must be undertaken by a qualified arborist and as per the specifications of AS 4373-2007 *Pruning of Amenity Trees* and should be undertaken before the establishment of the TPZ.

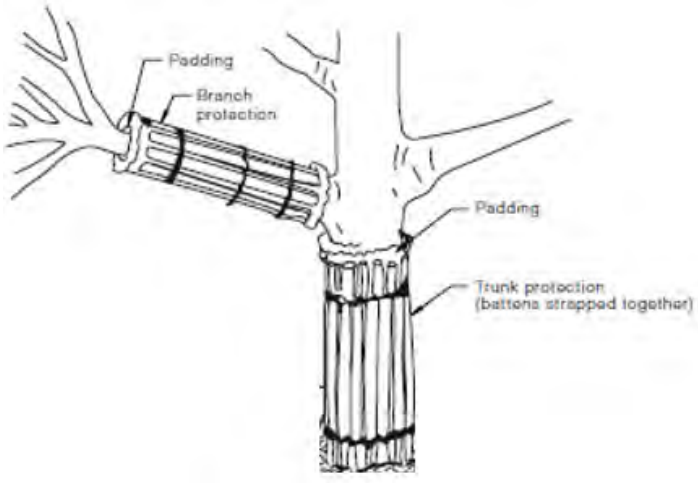
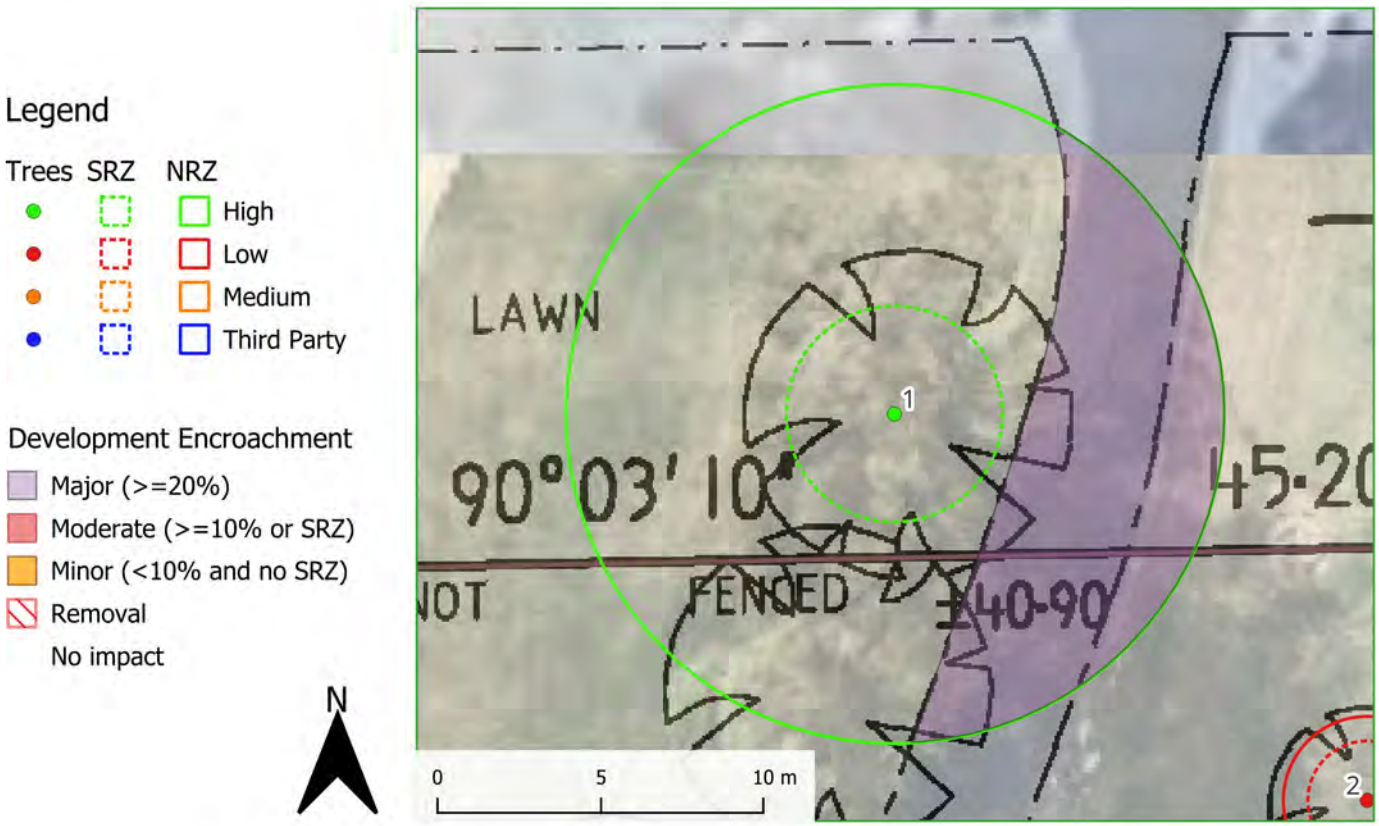


Figure 14: Example of trunk and branch protection (Source: AS 4970-2009).

Appendix 4. Individual Tree Data

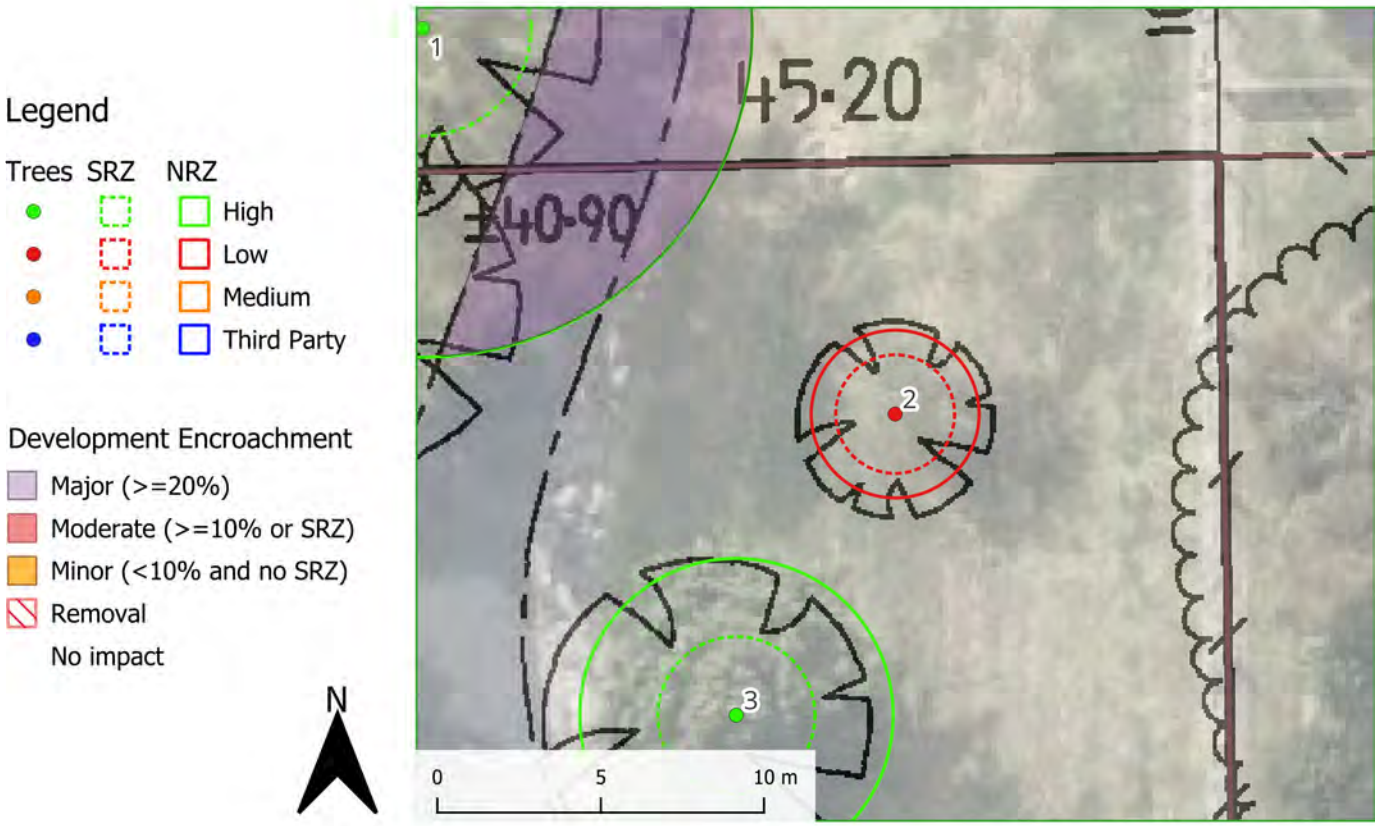
Tree Number: 1

Botanical Name:	*Eucalyptus viminalis subsp. pryoriana*
Common Name:	Gippsland Manna Gum
Origin:	Victorian Native
Height and Width (m):	12 x 11
DBH (cm):	84
Health:	Fair
Structure:	Fair
ULE:	20-40 years
Age Class	Mature
Retention Value	High
TPZ Encroachment:	28%
TPZ Impact Category:	Impact Major - viable
TPZ Radius (m):	10.1
SRZ Radius (m)	3.3
AIA Comment:	
Comment:	



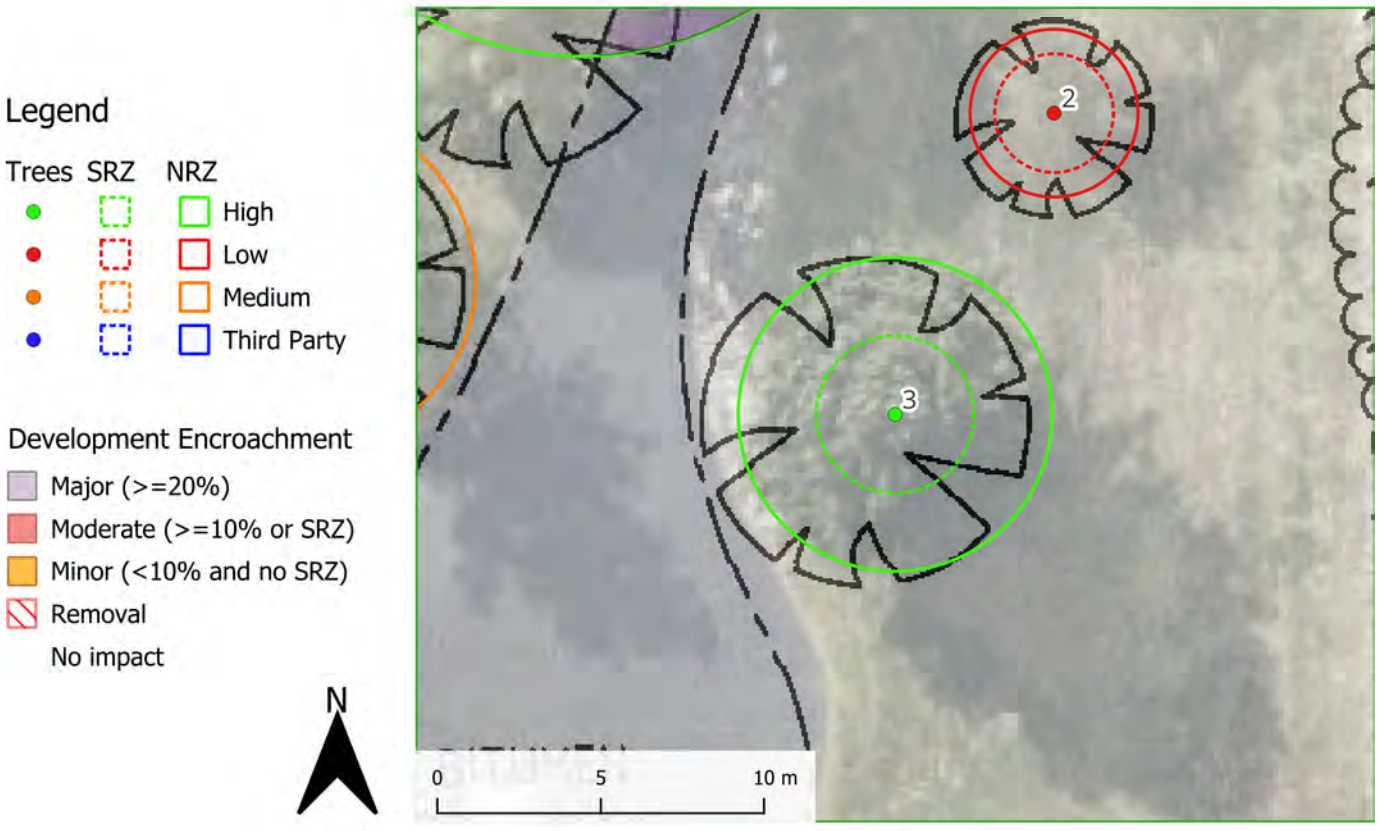
Tree Number: 2

Botanical Name:	*Malus sp.*
Common Name:	Apple
Origin:	
Height and Width (m):	5 x 3
DBH (cm):	21.4
Health:	Good
Structure:	Fair
ULE:	20-40 years
Age Class	Mature
Retention Value	Low
TPZ Encroachment:	None
TPZ Impact Category:	No Impact
TPZ Radius (m):	2.6
SRZ Radius (m)	1.8
AIA Comment:	
Comment:	



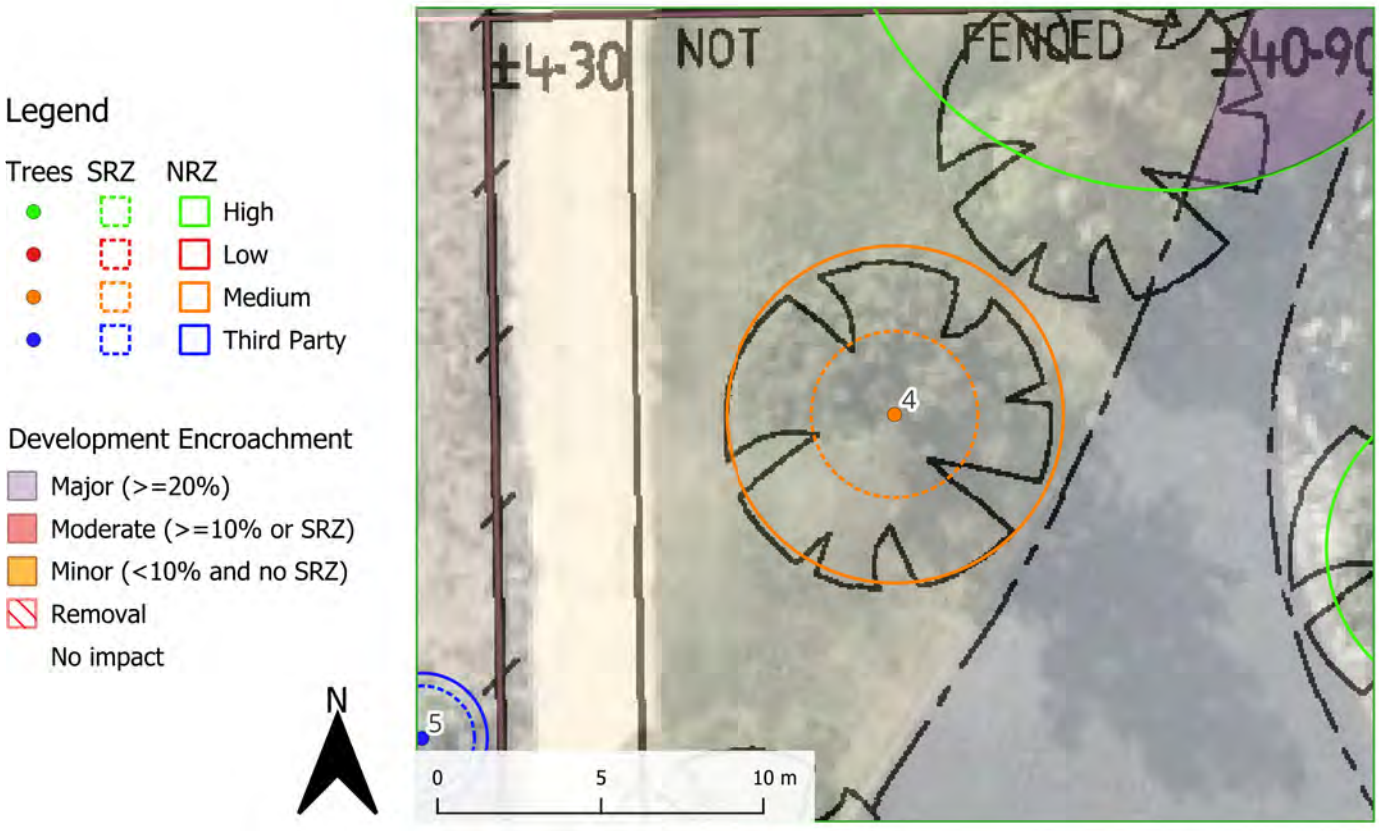
Tree Number: 3

Botanical Name:	*Liquidambar formosana*
Common Name:	Chinese Liquidamber
Origin:	Exotic
Height and Width (m):	11 x 7
DBH (cm):	40
Health:	Good
Structure:	Good
ULE:	20-40 years
Age Class	Mature
Retention Value	High
TPZ Encroachment:	None
TPZ Impact Category:	No Impact
TPZ Radius (m):	4.8
SRZ Radius (m)	2.4
AIA Comment:	
Comment:	Small hanger to north over lawn



Tree Number: 4

Botanical Name:	*Grevillea robusta*
Common Name:	Silky Oak
Origin:	Australian Native
Height and Width (m):	13 x 7
DBH (cm):	43
Health:	Good
Structure:	Fair
ULE:	10-20 years
Age Class	Mature
Retention Value	Medium
TPZ Encroachment:	None
TPZ Impact Category:	No Impact
TPZ Radius (m):	5.2
SRZ Radius (m)	2.6
AIA Comment:	
Comment:	Two larger stem failure wounds to south, not recent

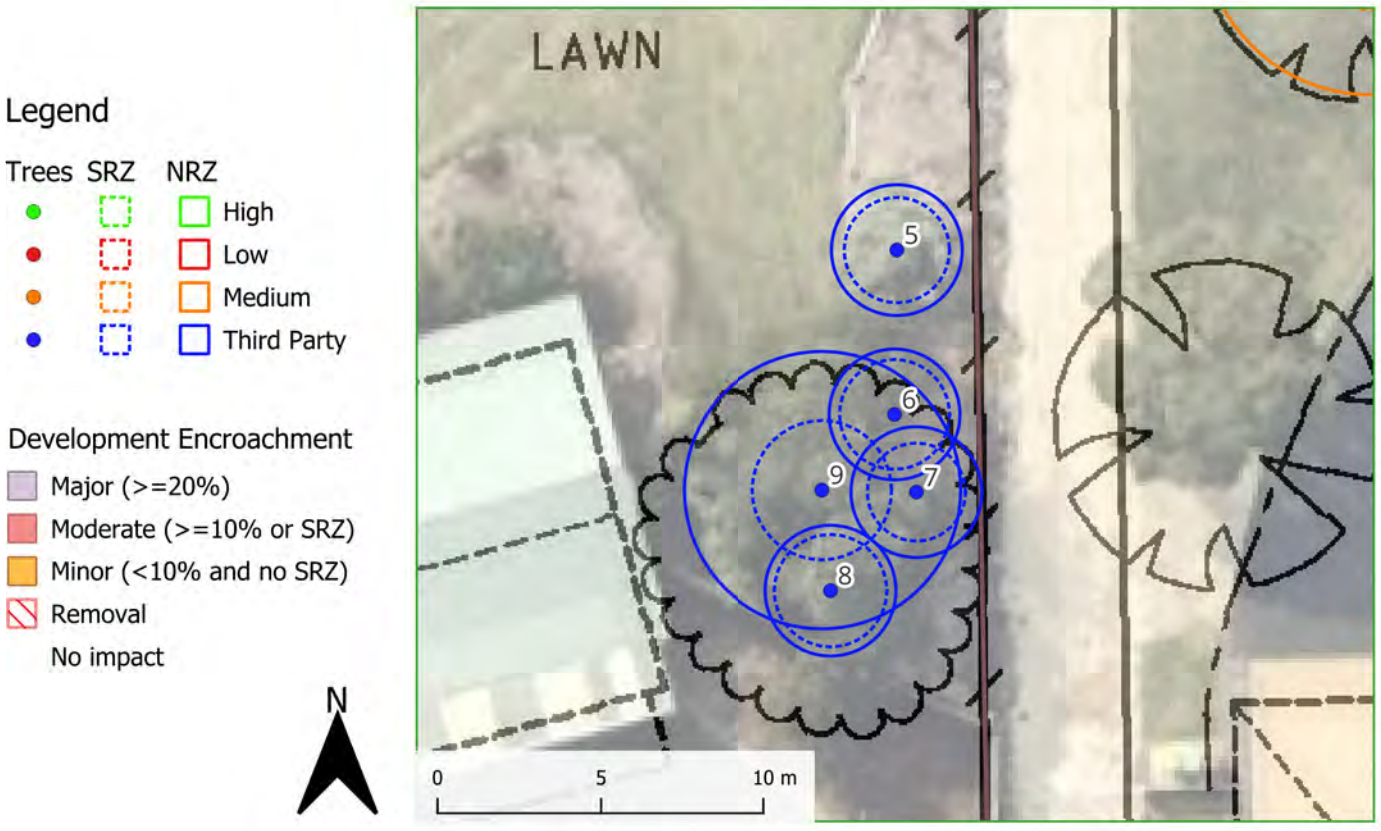


Tree Number: 5

Botanical Name:	*Leucophyllum frutescens*
Common Name:	Texas Ranger
Origin:	
Height and Width (m):	2 x 2
DBH (cm):	9.17
Health:	Good
Structure:	Fair
ULE:	10-20 years
Age Class	Mature
Retention Value	Third Party Ownership
TPZ Encroachment:	None
TPZ Impact Category:	No Impact
TPZ Radius (m):	2
SRZ Radius (m)	1.6
AIA Comment:	
Comment:	DSH and DARF estimated. 2.7m from boundary

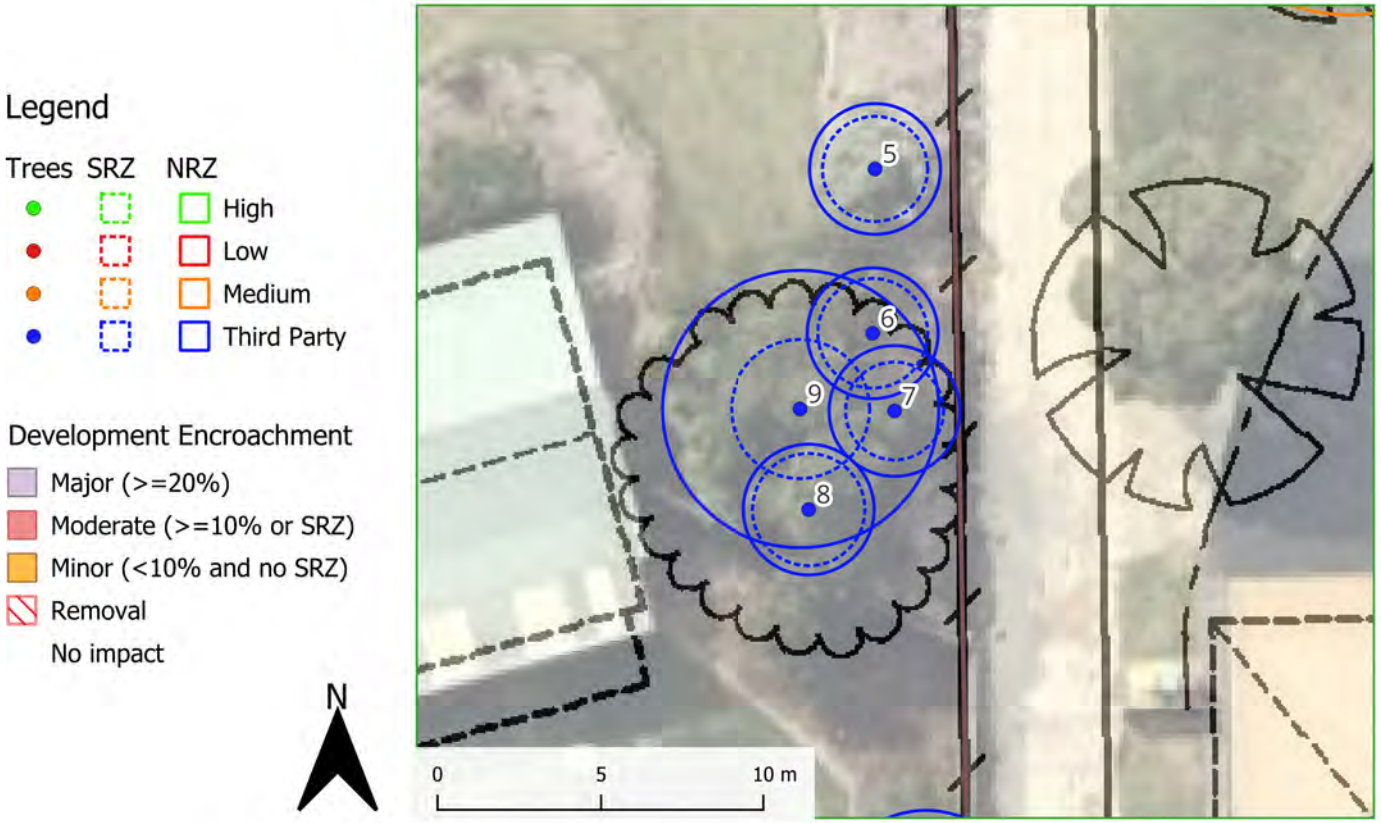
Tree Number: 6

Botanical Name:	*Prunus cerasifera 'Nigra'*
Common Name:	Purple Cherry Plum
Origin:	Exotic
Height and Width (m):	5 x 3
DBH (cm):	15.23
Health:	Good
Structure:	Fair
ULE:	10-20 years
Age Class	Mature
Retention Value	Third Party Ownership
TPZ Encroachment:	None
TPZ Impact Category:	No Impact
TPZ Radius (m):	2
SRZ Radius (m)	1.7
AIA Comment:	
Comment:	DSH and DARF estimated, 2.7m from boundary



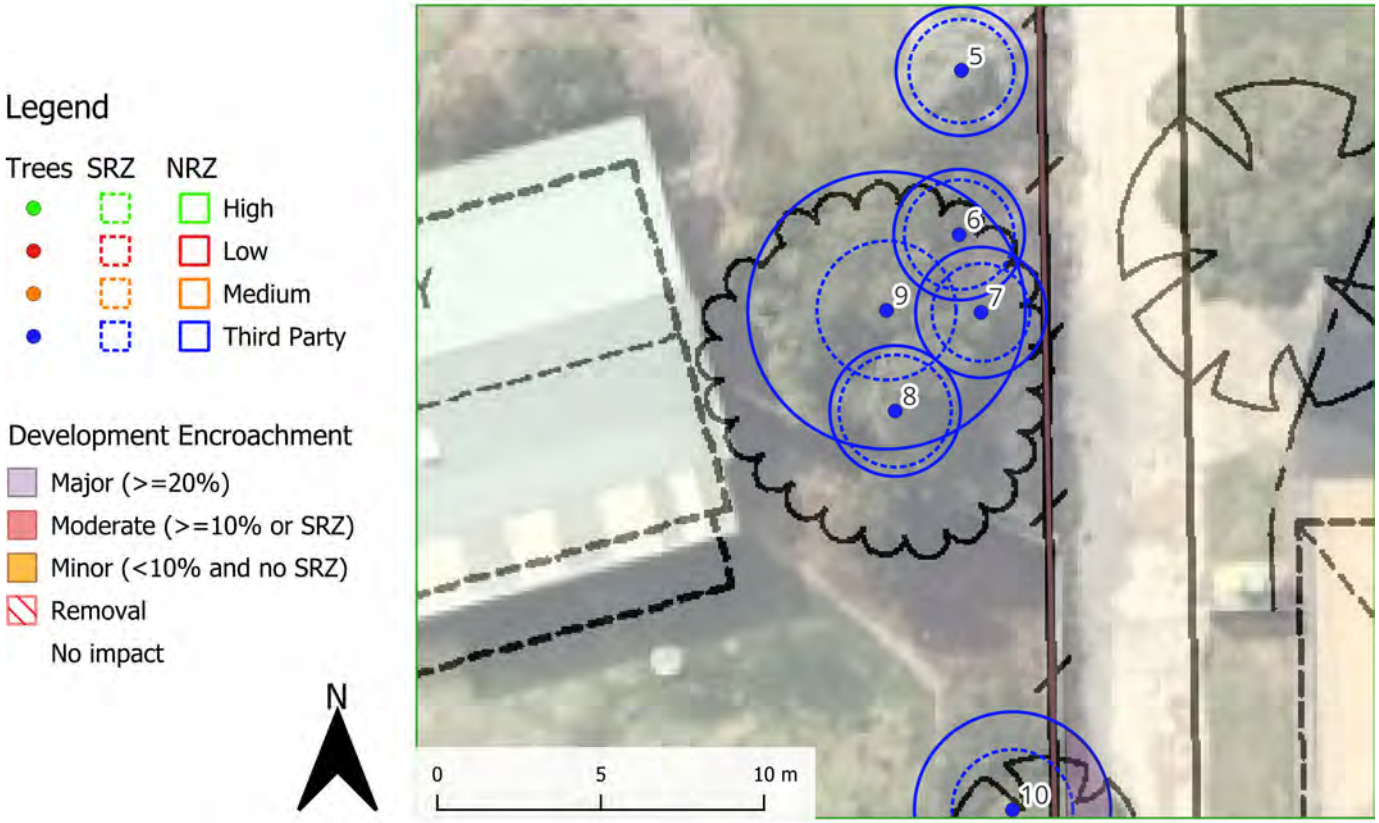
Tree Number: 7

Botanical Name:	*Pittosporum undulatum*
Common Name:	Sweet Pittosporum
Origin:	Victorian Native
Height and Width (m):	3 x 2
DBH (cm):	7
Health:	Good
Structure:	Fair
ULE:	20-40 years
Age Class	Semi mature
Retention Value	Third Party Ownership
TPZ Encroachment:	None
TPZ Impact Category:	No Impact
TPZ Radius (m):	2
SRZ Radius (m)	1.5
AIA Comment:	
Comment:	DSH and DARF estimated. 2.25m from boundary



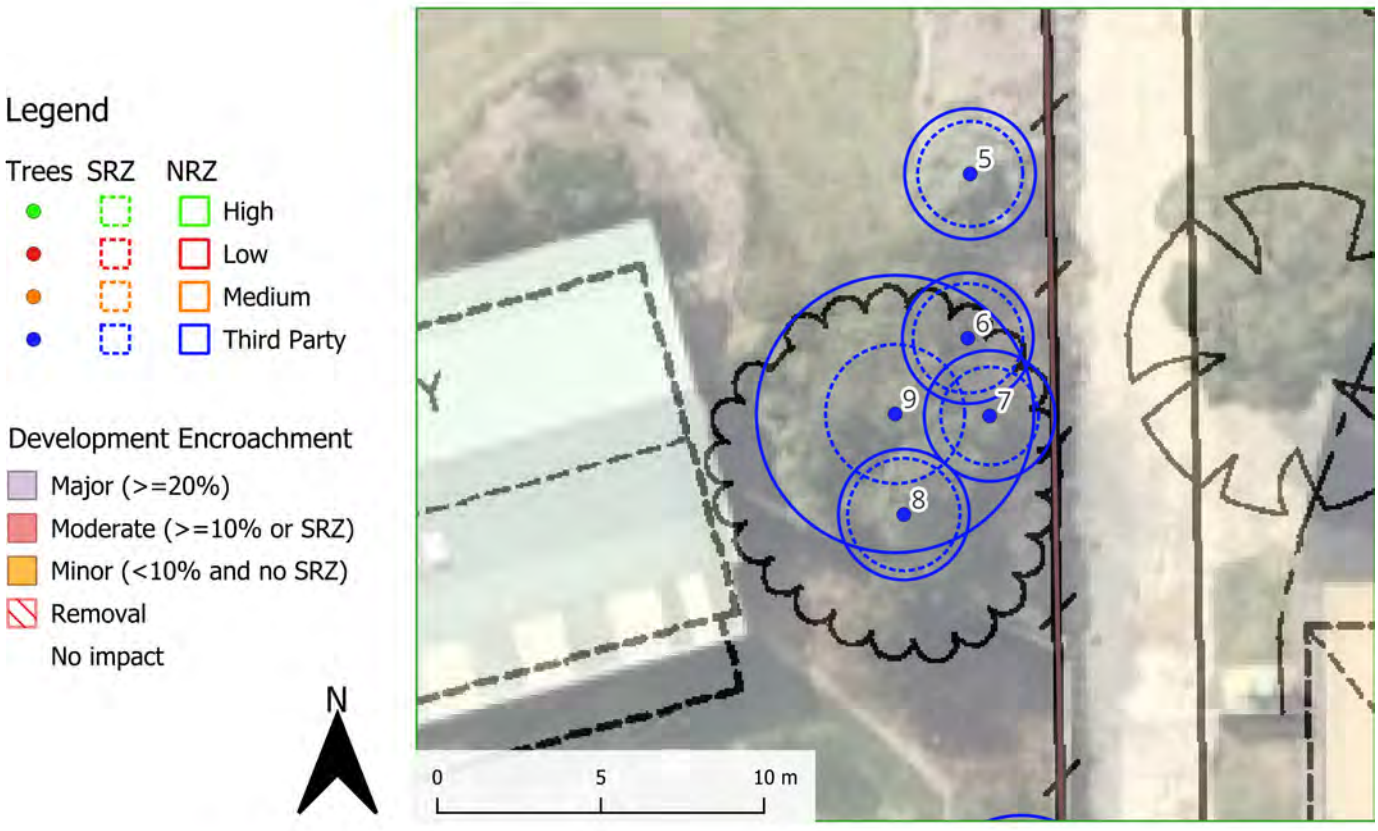
Tree Number: 8

Botanical Name:	*Pittosporum undulatum*
Common Name:	Sweet Pittosporum
Origin:	Victorian Native
Height and Width (m):	5 x 5
DBH (cm):	16.03
Health:	Good
Structure:	Fair
ULE:	20-40 years
Age Class	Semi mature
Retention Value	Third Party Ownership
TPZ Encroachment:	None
TPZ Impact Category:	No Impact
TPZ Radius (m):	2
SRZ Radius (m)	1.7
AIA Comment:	
Comment:	DSH and DARF estimated, 4.5m from boundary



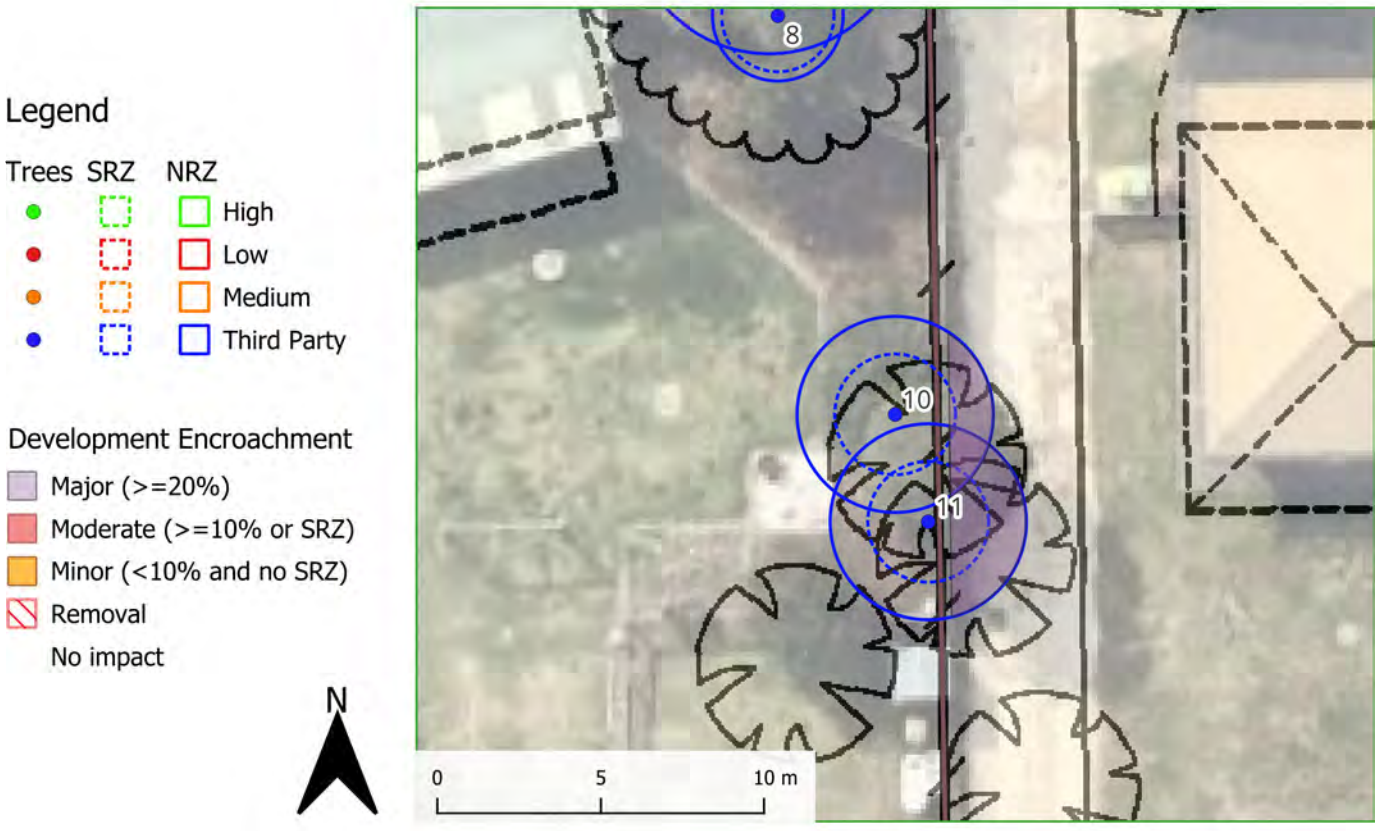
Tree Number: 9

Botanical Name:	*Pittosporum undulatum*
Common Name:	Sweet Pittosporum
Origin:	Victorian Native
Height and Width (m):	5 x 5
DBH (cm):	35.36
Health:	Fair
Structure:	Fair
ULE:	20-40 years
Age Class	Mature
Retention Value	Third Party Ownership
TPZ Encroachment:	None
TPZ Impact Category:	No Impact
TPZ Radius (m):	4.2
SRZ Radius (m)	2.1
AIA Comment:	
Comment:	DSH and DARF estimated, 4.5m from boundary



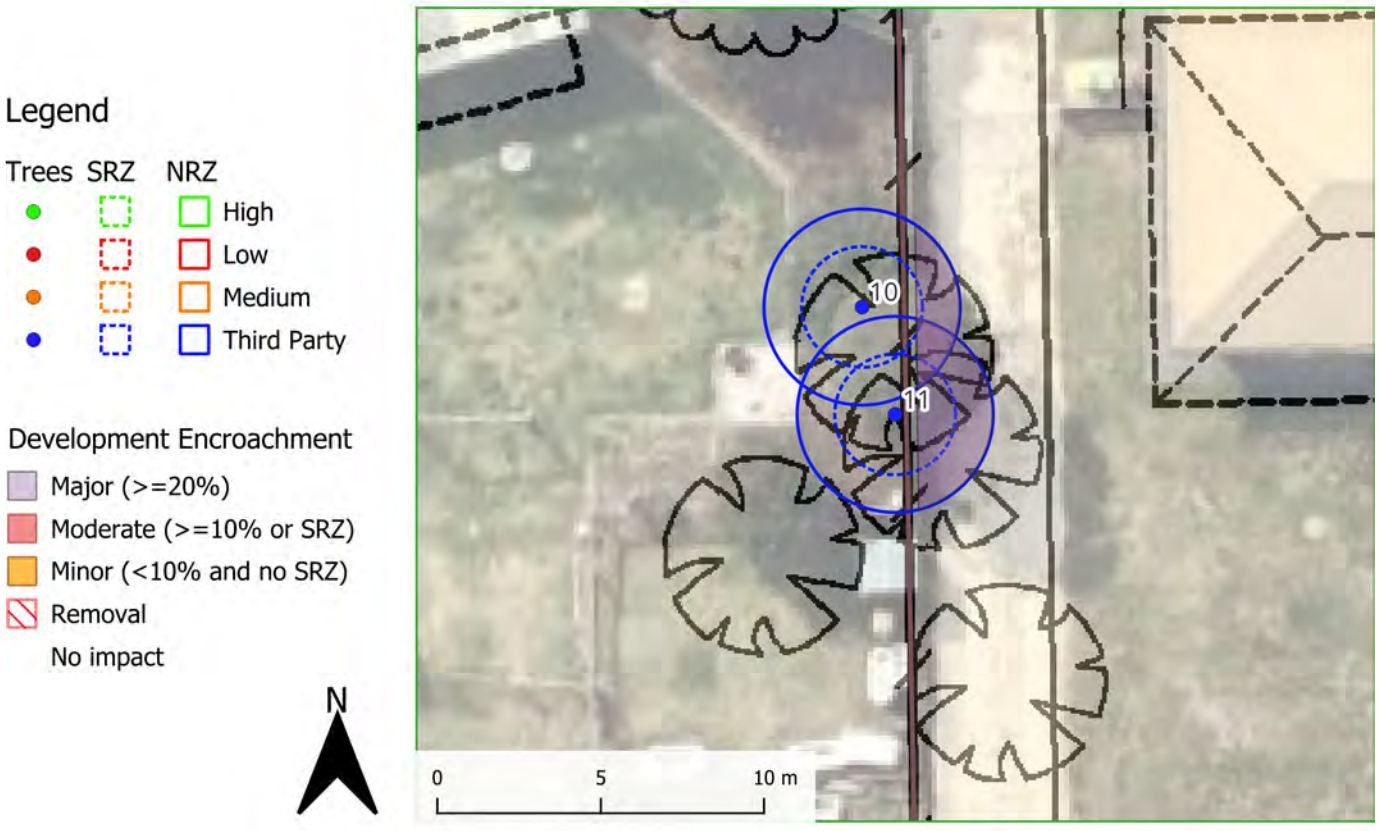
Tree Number: 10

Botanical Name:	*Prunus sp.*
Common Name:	Plum
Origin:	Exotic
Height and Width (m):	4 x 3
DBH (cm):	25
Health:	Good
Structure:	Fair
ULE:	10-20 years
Age Class	Mature
Retention Value	Third Party Ownership
TPZ Encroachment:	17%
TPZ Impact Category:	Impact Moderate - viable
TPZ Radius (m):	3
SRZ Radius (m)	1.9
AIA Comment:	
Comment:	DSH and DARF estimated, 1m from boundary



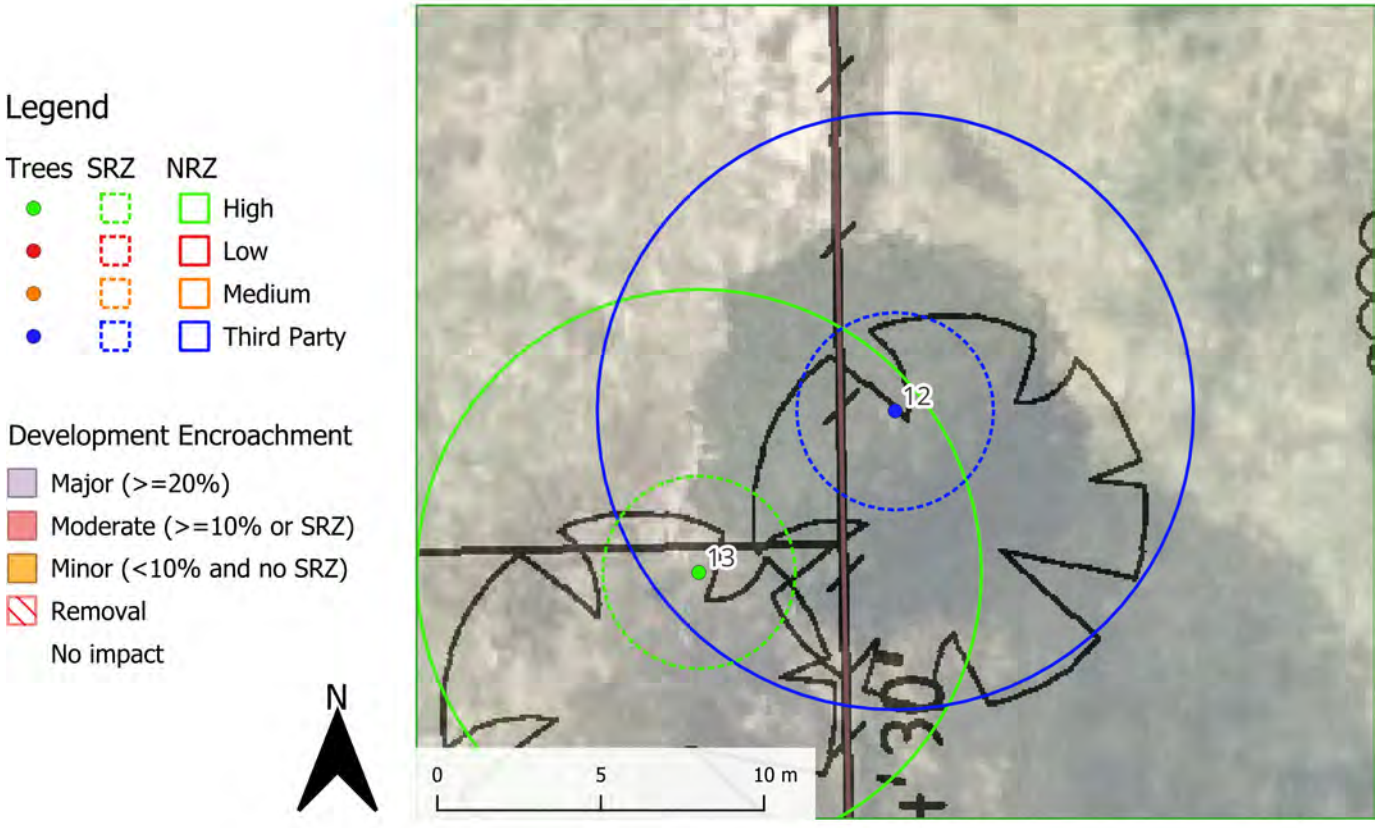
Tree Number: 11

Botanical Name:	*Pittosporum undulatum*
Common Name:	Sweet Pittosporum
Origin:	Victorian Native
Height and Width (m):	6 x 4
DBH (cm):	25
Health:	Fair
Structure:	Fair
ULE:	10-20 years
Age Class	Mature
Retention Value	Third Party Ownership
TPZ Encroachment:	36%
TPZ Impact Category:	Impact Major - viable
TPZ Radius (m):	3
SRZ Radius (m)	1.9
AIA Comment:	
Comment:	200-300mm off boundary DSH and DARF estimated



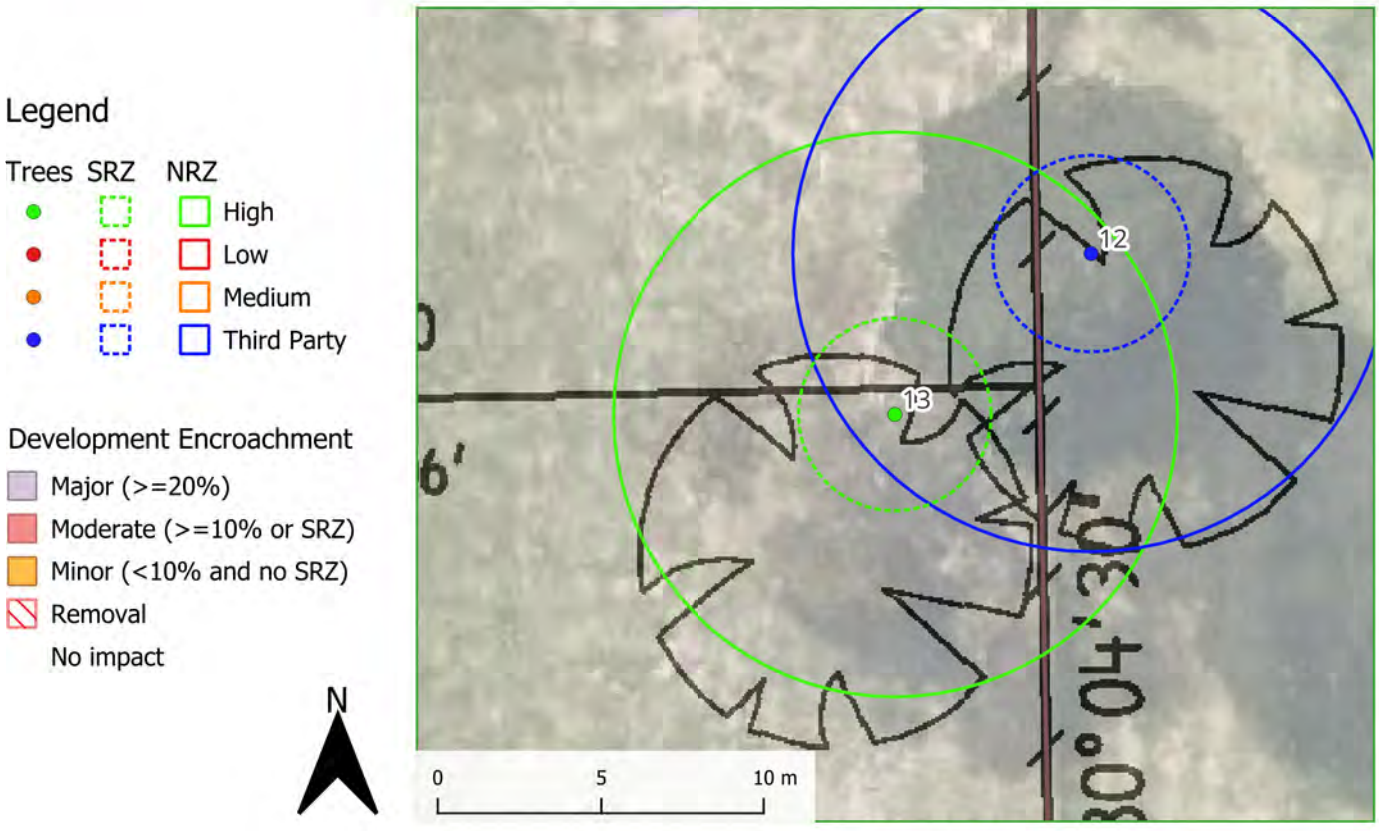
Tree Number: 12

Botanical Name:	*Pinus radiata*
Common Name:	Monterey Pine
Origin:	Exotic
Height and Width (m):	17 x 9
DBH (cm):	76
Health:	Good
Structure:	Good
ULE:	20-40 years
Age Class	Mature
Retention Value	Third Party Ownership
TPZ Encroachment:	None
TPZ Impact Category:	No Impact
TPZ Radius (m):	9.1
SRZ Radius (m)	3
AIA Comment:	
Comment:	DSH and DARF estimated, 1.1m from boundary



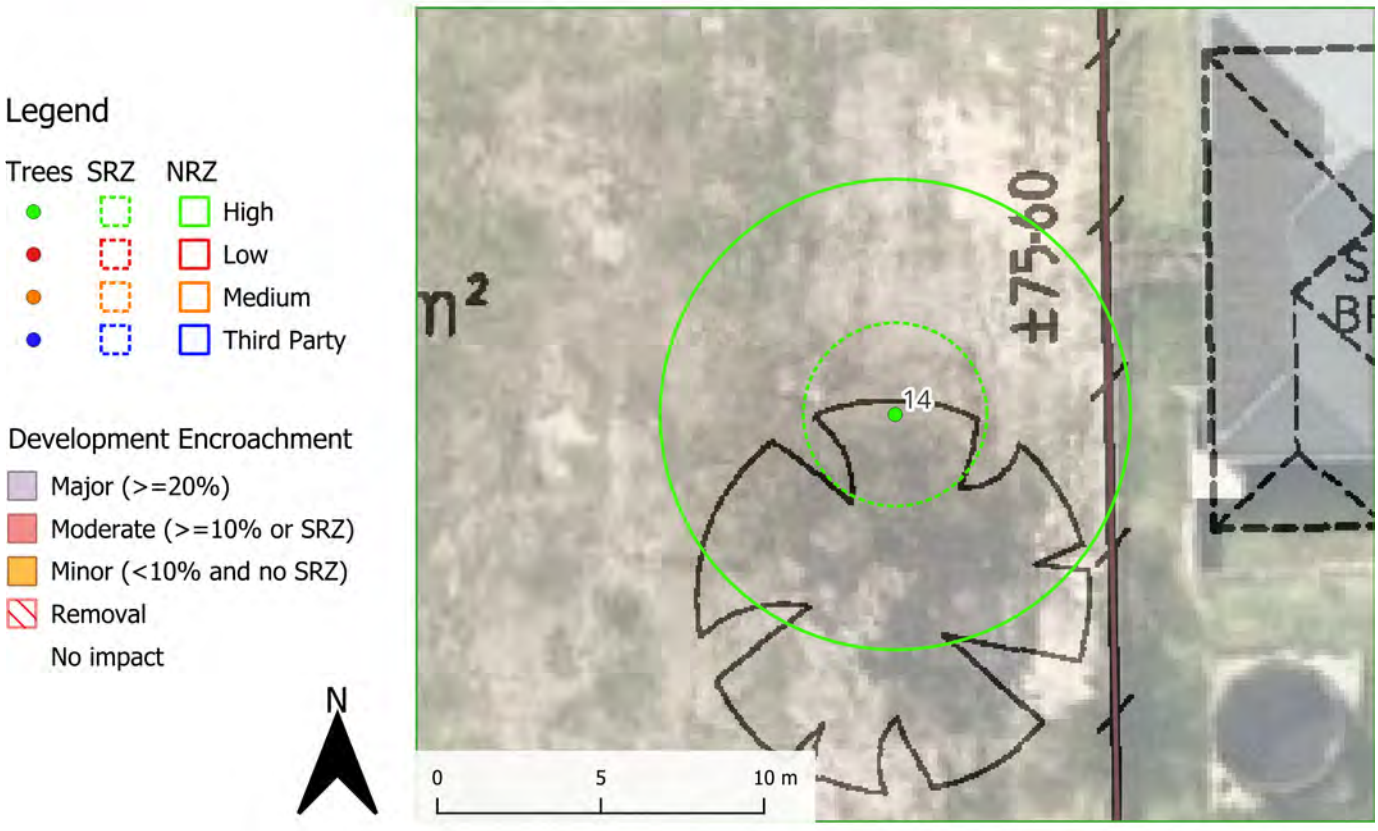
Tree Number: 13

Botanical Name:	*Eucalyptus viminalis subsp. pryoriana*
Common Name:	Gippsland Manna Gum
Origin:	Victorian Native
Height and Width (m):	8 x 10
DBH (cm):	72
Health:	Fair
Structure:	Fair
ULE:	20-40 years
Age Class	Mature
Retention Value	High
TPZ Encroachment:	None
TPZ Impact Category:	No Impact
TPZ Radius (m):	8.6
SRZ Radius (m)	3
AIA Comment:	
Comment:	Remove fill from around trunk



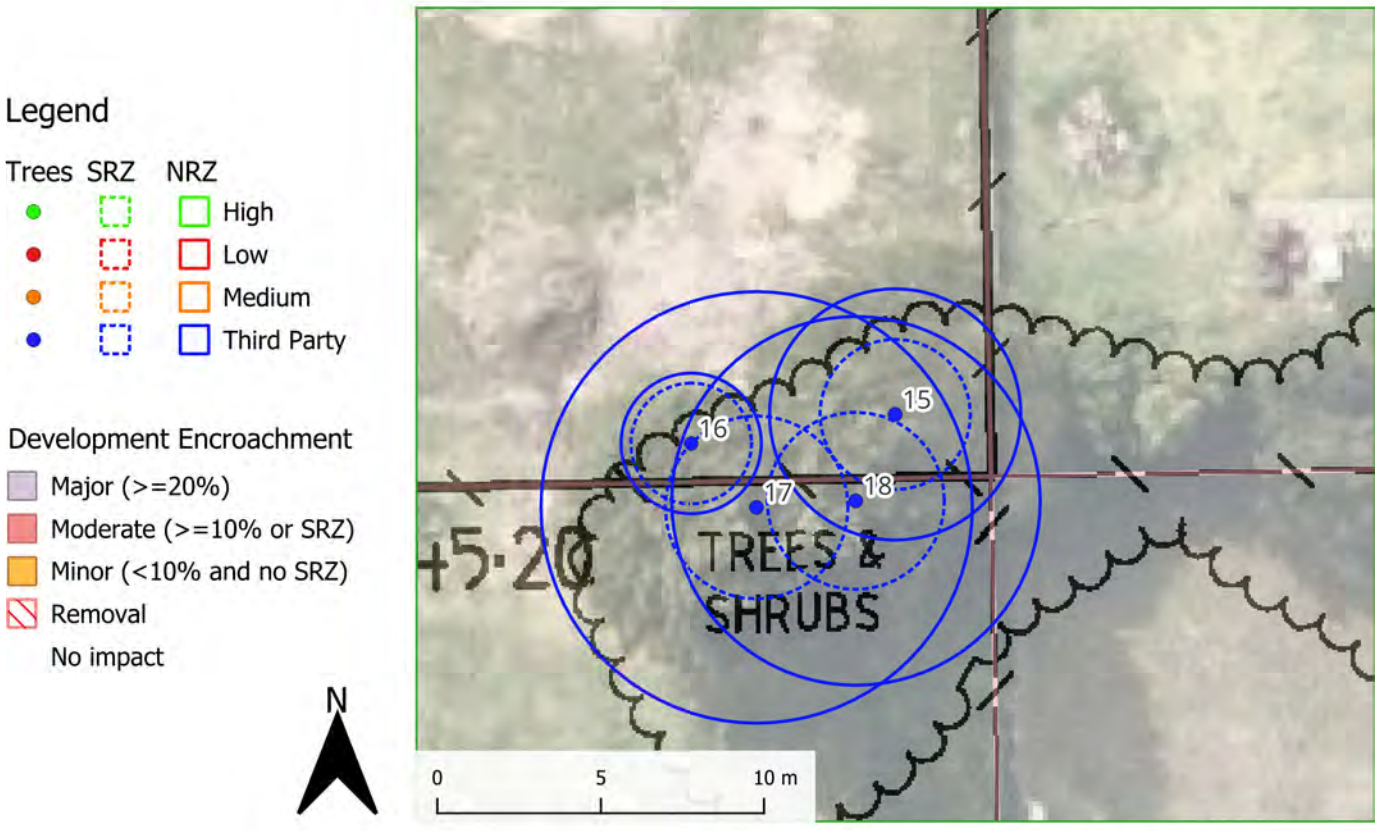
Tree Number: 14

Botanical Name:	*Eucalyptus viminalis subsp. pryoriana*
Common Name:	Gippsland Manna Gum
Origin:	Victorian Native
Height and Width (m):	12 x 10
DBH (cm):	60
Health:	Fair
Structure:	Fair
ULE:	20-40 years
Age Class	Mature
Retention Value	High
TPZ Encroachment:	None
TPZ Impact Category:	No Impact
TPZ Radius (m):	7.2
SRZ Radius (m)	2.8
AIA Comment:	
Comment:	Remove fill from around trunk



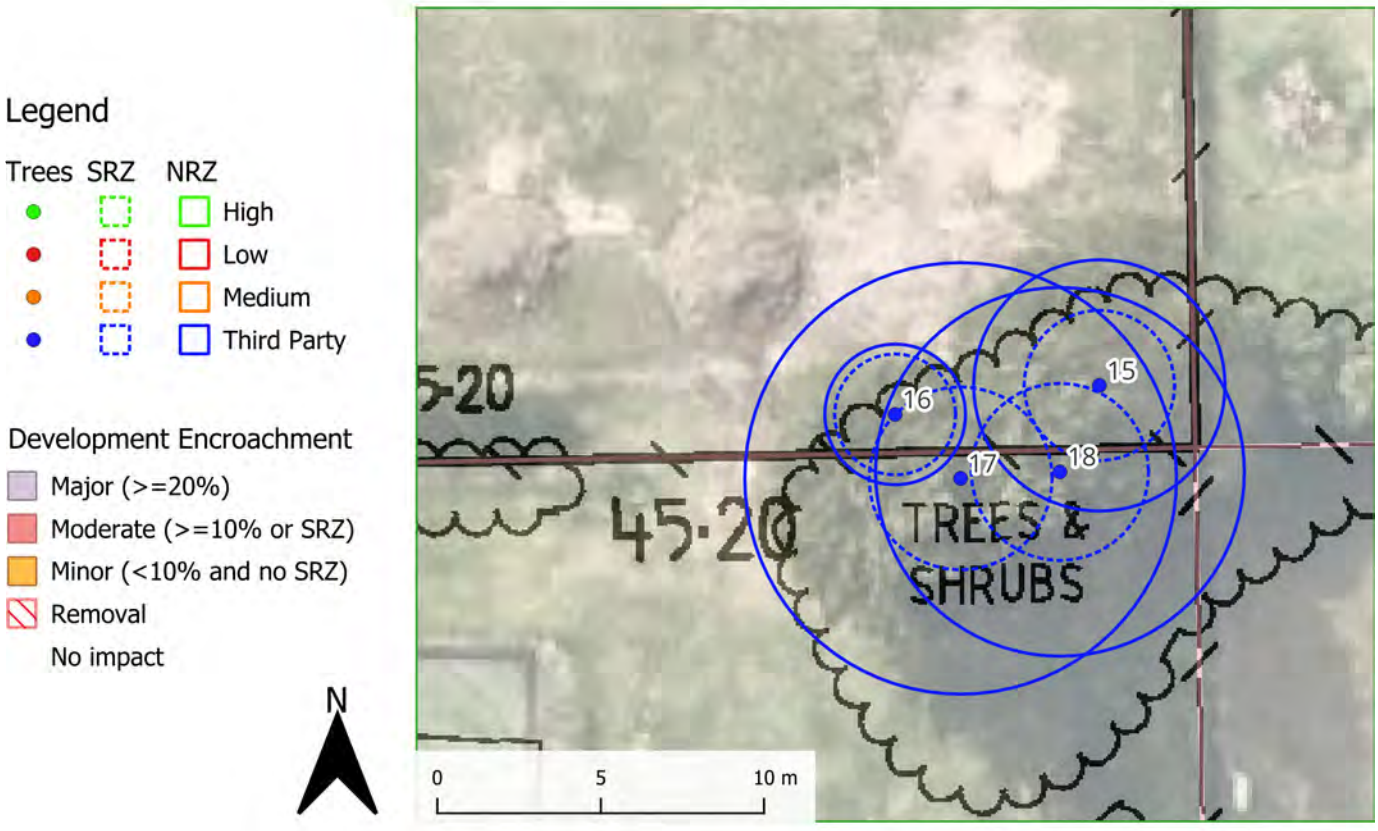
Tree Number: 15

Botanical Name:	*Acacia floribunda*
Common Name:	Catkin Wattle
Origin:	Australian Native
Height and Width (m):	5 x 6
DBH (cm):	32.02
Health:	Good
Structure:	Fair
ULE:	20-40 years
Age Class	Mature
Retention Value	Third Party Ownership
TPZ Encroachment:	None
TPZ Impact Category:	No Impact
TPZ Radius (m):	3.8
SRZ Radius (m)	2.3
AIA Comment:	
Comment:	DSH and DARF estimated, 1.46m from boundary



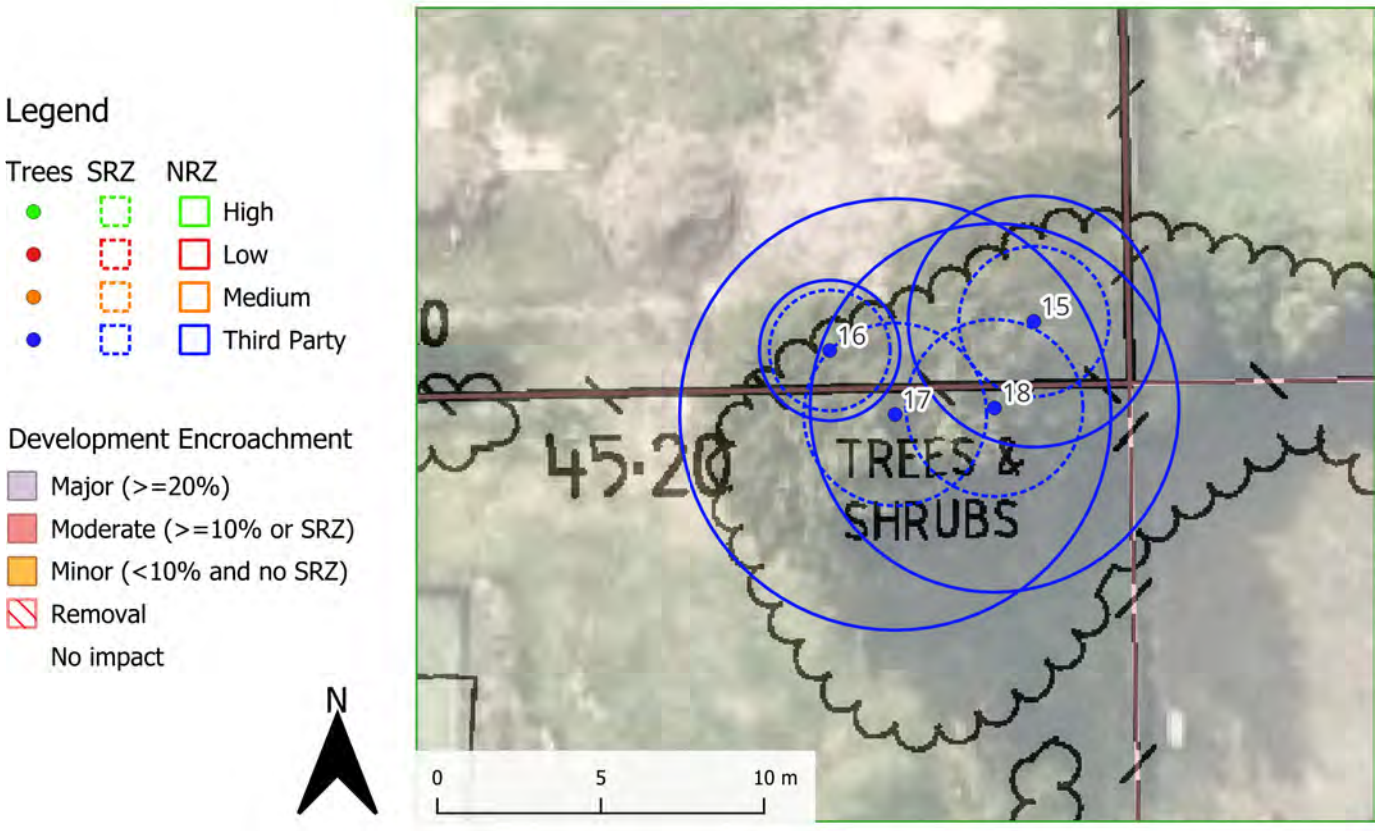
Tree Number: 16

Botanical Name:	*Prunus sp.*
Common Name:	Plum
Origin:	Exotic
Height and Width (m):	4 x 4
DBH (cm):	17.92
Health:	Fair
Structure:	Fair
ULE:	20-40 years
Age Class	Mature
Retention Value	Third Party Ownership
TPZ Encroachment:	None
TPZ Impact Category:	No Impact
TPZ Radius (m):	2.2
SRZ Radius (m)	1.9
AIA Comment:	
Comment:	DSH and DARF estimated, 930mm from boundary



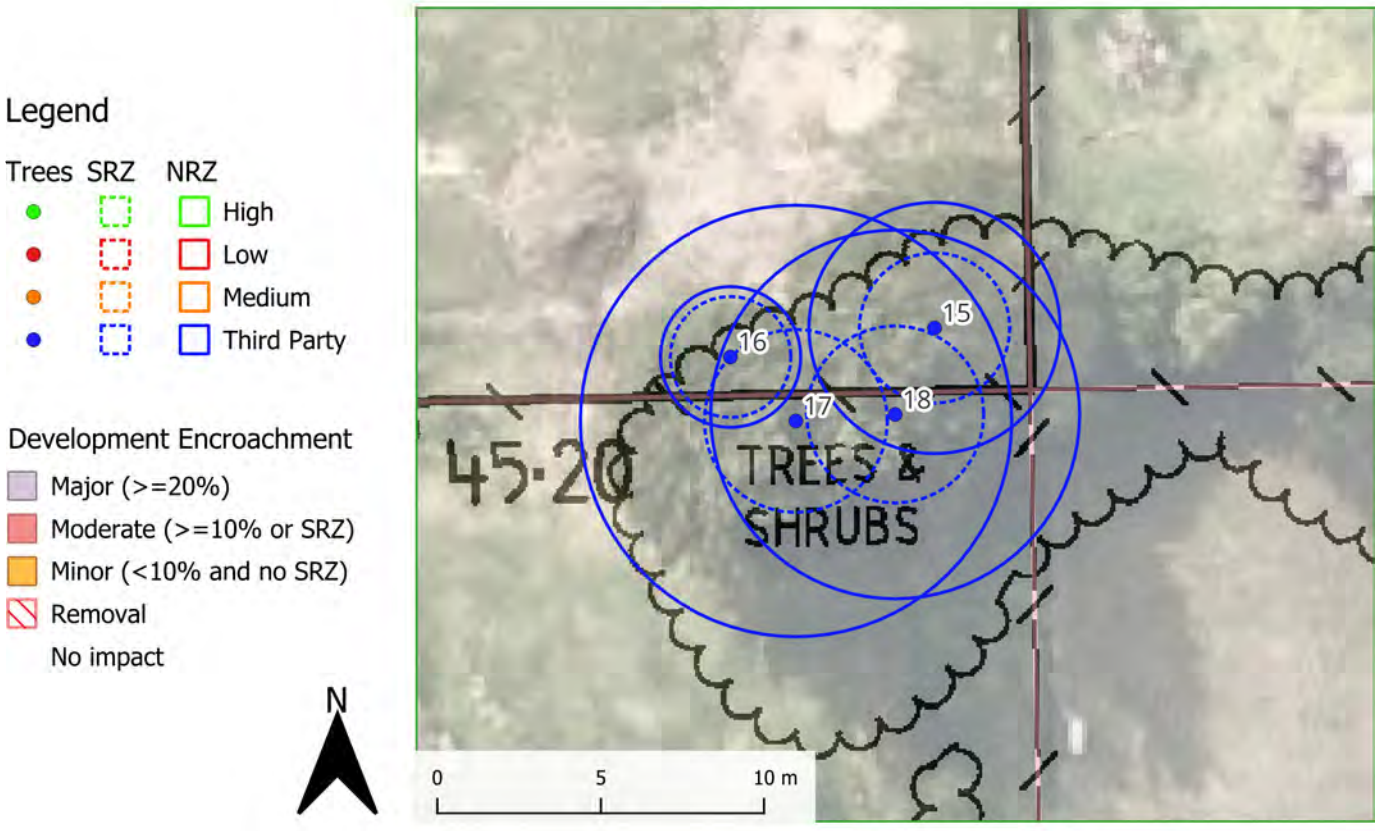
Tree Number: 17

Botanical Name:	*Hesperocyparis macrocarpa*
Common Name:	Monterey Cypress
Origin:	Exotic
Height and Width (m):	10 x 6
DBH (cm):	55
Health:	Good
Structure:	Good
ULE:	20-40 years
Age Class	Mature
Retention Value	Third Party Ownership
TPZ Encroachment:	None
TPZ Impact Category:	No Impact
TPZ Radius (m):	6.6
SRZ Radius (m)	2.8
AIA Comment:	
Comment:	DSH and DARF estimated, 2.6m from boundary



Tree Number: 18

Botanical Name:	*Hesperocyparis macrocarpa*
Common Name:	Monterey Cypress
Origin:	Exotic
Height and Width (m):	10 x 5
DBH (cm):	47
Health:	Good
Structure:	Good
ULE:	20-40 years
Age Class	Mature
Retention Value	Third Party Ownership
TPZ Encroachment:	None
TPZ Impact Category:	No Impact
TPZ Radius (m):	5.6
SRZ Radius (m)	2.7
AIA Comment:	
Comment:	DSH and DARF estimated, 2.8m from boundary



EARTHCUT CONSTRUCTIONS

LAND CAPABILITY ASSESSMENT
FOR
ON-SITE WASTEWATER MANAGEMENT
AT
106 WATTLETREE ROAD, BUNYIP VIC 3815

REPORT No. LCA03072025 JULY 2025

By

[redacted] M.Agricultural Sc.
Land Capability Assessment Victoria
CONSULTANTS IN THE AGRICULTURAL SCIENCES

IMPORTANT NOTE

The land capability assessment report consists of this cover sheet, two written sections, three drawings and four appendices.
The report elements are not to be read or interpreted in isolation.

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ASSESSOR'S ACADEMIC & PROFESSIONAL QUALIFICATIONS

Zoltan Lorincz is the principal Soil Scientist at Land Capability Assessment Victoria.
He has a Masters Degree in Applied Science (General Agriculture) (awarded in 2002) and completed his studies in a two-year Postgraduate Specialist Training Programme in Soil Science (awarded in 2012).

All fieldwork and analyses are undertaken by Zoltan Lorincz.

ASSESSOR'S PROFESSIONAL INDEMNITY INSURANCE

Policy Number:	118U813797BPK
Period of Cover:	24/8/2024 – 24/8/2025
Geographical Coverage:	Australia
Retro-active Date:	Unlimited
Limit of Indemnity:	$2,000,000

EXECUTIVE SUMMARY

The proposed development at 106 Wattletree Road, Bunyip VIC is suitable for sustainable on-site effluent disposal.

The site is located in the Low Density Residential Zone and is not in a Special Water Supply Catchment. It is proposed to subdivide the existing block into 2 lots. The Land Capability Assessment report has been completed to demonstrate the viability of on-site effluent disposal for a 5-bedroom (equivalent) residence for the new lot of 4000m^2.

The site is not sewered.

Our field testing which included soil profile logging and sampling, a differential level survey, laboratory testing and subsequent reporting including water and nutrient balance modelling has revealed that on-site effluent disposal is rational and sustainable.

The assessment has been made in the context of prioritising public and environmental health with a design compromise between rational wastewater reuse and sustainable wastewater disposal.

Effluent shall be treated to at least the septic standard and distributed by absorption trenches utilising the processes of evapotranspiration and deep seepage.

The trench lengths have been determined for the mean wet year and satisfies the requirements of *SEPPs (Waters of Victoria)* in that the effluent disposal system cannot have any detrimental impact on the beneficial use of surface waters or groundwater.

For the proposed development the available area is not limiting and continuous or long-term increases in effluent volume above 900 litres/day (5-bedroom (equivalent) residence) are possible.

With regard to density of development and cumulative risk the assessment has considered risk associated with subsurface flows and surface flows.

In regard to subsurface flows, it is clear that provided the on-site system is adequately designed, constructed, operated and maintained the risk to surface and ground waters is negligible. Once the effluent is placed underground, the extraordinary long travel times via ground water to surface waters ensures adequate nutrient attenuation.

In regard to surface flows, it is clear that provided the on-site system is adequately designed, constructed, operated and maintained, the risk to surface and ground waters is no greater than for a sewered development.

Proposed use requires a primary treatment system and absorption trenches.

The LCA recommends a conservative, scientifically based, well founded wastewater management system with inherent multiple barriers of safety.

Cumulative risk from the development is extremely low. The risk of serious or irreversible damage is extremely low.

All requirements of *SEPP (Waters of Victoria)* have been met.

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LCA03072025 – JULY 2025

LAND CAPABILITY ASSESSMENT FOR ON-SITE WASTEWATER MANAGEMENT AT 106 WATTLETREE ROAD, BUNYIP VIC 3815

1. SECTION 1. SITE INVESTIGATION

1.1. INTRODUCTION

On instruction from the landowner, an investigation was undertaken to assess land capability for on-site effluent disposal for a 5-bedroom (equivalent) residence at 106 Wattletree Road, Bunyip VIC.

The site is located in the Low Density Residential Zone and is not in a Special Water Supply Catchment. It is proposed to subdivide the existing block into 2 lots. The Land Capability Assessment report has been completed to demonstrate the viability of on-site effluent disposal for a 5-bedroom (equivalent) residence for the new lot of 4000m^2.

The assessment has been made in the context of prioritising public and environmental health with a design compromise between rational wastewater reuse and sustainable wastewater disposal.

1.2. INVESTIGATION METHOD

The site investigation was carried out in accordance with *SEPPs (Waters of Victoria) and related documents. This report is in accordance with* current *SEPPs (Waters of Victoria), EPA Victoria - Guideline for onsite wastewater management (May 2024)* and *EPA Victoria - Guideline for onsite wastewater effluent dispersal and recycling systems (May 2024).* Guidance has been sought from *AS/NZS 1547:2012*, *Guidelines for Wastewater Irrigation*, E.P.A. Publication 168, April 1991, *Wastewater Subsurface Drip Distribution*, Tennessee Valley Authority, March, 2004, *AS 2223, AS 1726, AS 1289, AS 2870* and *Australian Laboratory Handbook of Soil and Water Chemical Methods*.

Our capability assessment involved the mapping of unique land-soil unit(s) which were defined in terms of significant attributes including; climate, slope, aspect, vegetation, soil profile characteristics (including soil reaction trend, electrical conductivity and colloid stability), depth to rock, proximity to surface waters and escarpments, transient soil moisture characteristics and hydraulic conductivity.

Exploratory auger drilling was undertaken to enable profile characterization and sampling. Onsite dispersion index testing revealed significant dispersion. Hence, *insitu* permeability testing was not considered rational.

Water balance analysis was based on the mean wet year calculated from the mean monthly rainfall data and mean annual rainfall for Longwarry and mean evaporation data for Noojee and was undertaken in accordance with *Guidelines for Wastewater Irrigation, E.P.A.* Publication 168, April 1991 (Part), *AS/NZS 1547:2012* and in-house methods.

The rainfall and evaporation data were obtained from the National Climate Centre, Bureau of Meteorology.

The data was subsequently analysed and applied to our water and nutrient balance analyses.

The results of the water- and nutrient balance analysis are given in Appendix B, to this report. The results of the investigation and *in situ* and laboratory testing are given in Section 1.3, below, and in Appendix A, to this report.

1.3. CAPABILITY ASSESSMENT

We have used the attributes determined by the investigation to define one (1) land-soil unit, as follows:-

1.3.1. Land-Soil Unit A.

This land-soil unit consists of gently sloping terrain, as shown in Drawing 2 and Figure 1.

The salient land-soil attributes and constraints are summarised in Appendix C.

1.3.1.1. Climate.

The general area receives a mean annual rainfall of 871mm and a mean annual evaporation of 1040mm. Mean evaporation exceeds the mean rainfall in October through March.

Rainfall and evaporation data are presented in Appendix B, to this report.

1.3.1.2. Slope and Aspect.

The natural ground surface over the proposed land application area slopes to the north between 5.5% and 6.5%, generally, as shown in Drawing 2 and Figure 1.

The proposed effluent area is exposed to the prevailing winds and exposed to full winter sunshine.

1.3.1.3. Vegetation and Land Use.

The unit is vegetated with dense pasture grasses as shown in Figure 1. The land is currently unused.

The land application area has been designed for pasture grass (rye/clover equivalent).

1.3.1.4. Slope Stability.

For the encountered subsurface conditions, slope degree and geometry and for the proposed range of hydraulic loadings, the stability of the ground slopes within the disposal areas are unlikely to be compromised.

1.3.1.5. Subsurface Profile.

The following interpretation of the general subsurface profile assumes conditions similar to those encountered in the boreholes are typical of the investigation area.

Note: If subsurface conditions substantially different from those encountered in the investigation are encountered during soil renovation works, all work should cease, and this office notified immediately.

The unit is underlain by residual materials of Late Devonian Age.

The general subsurface profile consists of:

- A topsoil (A_1-horizon) layer of dark greybrown, moist, medium dense loam, with a soil reaction trend of 7.1pH and electrical conductivity (EC_{SE}) of 0.10dS/m, containing a root zone, to a depth of 0.20m, overlying,
- A topsoil (A_{21}-horizon) layer of light greybrown, moist, medium dense silt, with a soil reaction trend of 6.8pH and electrical conductivity (EC_{SE}) of 0.10dS/m, to a depth of 0.30m, overlying,
- A topsoil (A_{22}-horizon) layer of light greybrown, moist, medium dense clayey silt (clayloam), with a soil reaction trend of 6.1pH and electrical conductivity (EC_{SE}) of 0.20dS/m and a free swell[a] of 0%, to a depth of 0.45m, overlying,
- A residual soil (B_1-horizon) layer of light greybrown with orange, moist, silty clay (light clay) of low plasticity, with a soil reaction trend of 5.9pH, electrical conductivity (EC_{SE}) of 0.99dS/m and a free swell of 10%, to a depth of 0.75m, overlying,

[a] After Holtz (measures swell potential of fraction passing 450 micron sieve).

- A residual soil (B_2-horizon) layer of greybrown with orange, moist, silty clay (light clay) of low plasticity, with a soil reaction trend of 5.9pH, electrical conductivity (EC_{SE}) of 2.43dS/m and a free swell of 10%, to a depth of 1.20m, overlying,

- A residual soil (B_3-horizon) layer of greybrown with red and orange, moist, silty clay (light clay) of low plasticity, with a soil reaction trend of 5.9pH, electrical conductivity (EC_{SE}) of 3.78dS/m and a free swell of 10%, to a depth of at least 1.45m.

Soil test results, soil profile photographs and logs of boreholes are presented in Appendix A, to this report. For location of boreholes refer Drawing 2.

1.3.1.6. Soil Permeability.

Where the soils are dispersive insitu permeability testing realises inaccurate, low or nil results.

The hydraulic conductivity can be estimated by using test waters containing calcium chloride or by laboratory assessment of colloid stability and determination of ameliorant quantities (e.g. gypsum/lime requirement) and swell potential.

A conservative estimate of permeability has been deduced as follows (from soil texture, structure and swell potential tests):-

Profile analysis in accordance with AS/NZS 1547:2012 and our laboratory determined dispersion and swell potential shows the residual clay soils to be moderately structured, dispersive, low-swelling (free swell up to 10%) silty light clays (Type 6 soils) with saturated hydraulic conductivity of less than 0.06m/day.

For the limiting silty light clay soils and after allowing for renovation to create and maintain stable colloids, we have adopted an estimated saturated hydraulic conductivity of 0.06m/day.

Peak deep seepage is conservatively estimated at 5.7mm/day. Average daily deep seepage is 1.3mm.

1.3.1.7. Basement Rock Permeability.

From the literature and from examination of rock profiles and rock mass defect character in the vicinity, the hydraulic conductivity of the basement rocks would be in excess of 0.05m/day (adopt 1m/day for buffer design).

1.3.1.8. Colloid Stability.

The results of the Emerson Crumb and Dispersion Index Tests indicate that the residual materials are dispersive. The residual clay soils have Emerson Class of 2 and Dispersion Indexes of 10 to 14.

Sodicity has been assessed by inspection of the ground surface for salt tolerant and/or salt affected vegetation, the electrical conductivity has been determined for the A and B horizons using a 1:5 soil/water extract and converted to EC (saturation extract), and also soil reaction trend and shrink-swell potential has been determined.

The determined electrical conductivity (EC_{SE}) ranged from 0.10dS/m to 3.78dS/m for all materials, soil reaction trend ranged from 5.9pH to 7.1pH, while free swell potential was 0% and 10%.

We recommend amelioration in the form of gypsum application to create and maintain stable peds under saline disposal.

1.3.1.9. AS1547:2012 Soil Classification.

In accordance with *AS/NZS1547:2012* the residual clay materials can be classified as Type 6 soils (moderately structured, dispersive silty light clays).

After allocating proportional vertical and lateral flows and allowing for the potential for perched water mounding, we have adopted a daily peak water balance seepage rate of 5.7mm for septic standard effluent. The theoretical average daily seepage rate is 1.3mm.

The peak water balance seepage loss rate is based on being <10% of the estimated hydraulic conductivity (of the limiting horizon) plus a lateral flow component, effluent type and the effects of soil characteristics including profile thickness (flow paths and storage), shrink-swell, dispersivity and soil reaction trend and assumes renovation.

1.3.1.10. Surface Drainage.

The proposed effluent area slopes to the north (as shown in Drawing 2). The nearest watercourse is located at least 430m distant (measured normal to contours).

1.3.1.11. Groundwater.

No seepage was encountered in any of the boreholes. Subsurface flow direction will generally reflect natural surface flow direction (i.e. a northerly direction).

There are no groundwater bores within a significant distance of the site (in more than 1km distance).

The Visualising Victoria's Groundwater database indicates that there is no groundwater within 5 metres of the surface.

The groundwater is of low yield and poor quality (3500-7000mg/litre TDS) with beneficial use including some stock.

1.3.1.12. Nutrient Attenuation.

Clayey soils (as found on this site) can fix large amounts of phosphorous. Phosphate-rich effluent seeping through these soils will lose most of the phosphorous within a few metres.

The limiting nutrient for this site is nitrogen. No phosphorous balance is required.

Several processes affect nitrogen levels within soil after effluent disposal. Alternate periods of wetting and drying with the presence of organic matter promote reduction to nitrogen gas (denitrification). Plant roots absorb nitrates at varying rates depending on the plant species (see Appendix B), however nitrate is highly mobile, readily leached, and can enter groundwater via deep seepage and surface waters via overland flow and near-surface lateral flow.

Based on the water and nutrient balance (see Appendix B), and assuming 30mg/litre N in the effluent (general case) and 20mg/litre P, a denitrification rate of 20%, with N uptake of 220 kg/ha/year for an appropriate grass cover equivalent to a rye/clover mix, a conservative estimate can be made of the nitrogen content in the deep seepage and lateral flow.

For the general case, and without taking into account further expected denitrification below the root zone and in the groundwater (reported to be in the vicinity of 80%), denitrification in the lateral flow (external to the trenches) and plant uptake in the lateral flow, the effluent loading rate should not exceed 5mm/day.

On-site effluent disposal systems designed, constructed, operated and maintained in accordance with the following recommendations cannot adversely impact on the beneficial use of surface waters and groundwater in the area.

1.4. RISK MANAGEMENT & MITIGATION

SEPP (Waters of Victoria) requires that the proposal be assessed on a risk-weighted basis and that cumulative effects be considered.

A multiple barrier approach is used in assessing this development, with components listed below:

1.4.1. Water Usage.

Current best practice allows for a (continuous) daily effluent flow of 900 litres/day (5-bedroom (equivalent) residence with WELS scheme fixtures and fittings) as per *EPA Victoria - Guideline for onsite wastewater management (May 2024) Table 4-1*.

1.4.2. Primary Treatment.

The LCA recommends a primary treatment system and absorption trenches.

1.4.3. Block Size.

Many under-performing effluent fields are placed on blocks where area is limited. Limited area can lead to inadequately sized or inappropriately placed effluent fields and a lack of options should the daily effluent volumes increase.

In the subject site, size is not a constraining factor for the proposed 5-bedroom (equivalent) residence.

1.4.4. Management Plan.

Historically, inadequate maintenance has played a major part in the failure of onsite effluent disposal systems. There is a management plan within the LCA (see Appendix D). This plan gives guidance on the implementation of mandatory operation, maintenance and inspection procedures.

1.4.5. Sizing of Treatment Systems.

No specific treatment system is recommended, however the primary treatment system must have current JAS/ANZ accreditation, which match effluent volumes with plant capacity.

1.4.6. Load Balancing.

Load balancing capacity (temporary storage) is achieved within the trench system.

1.4.7. Oversized Effluent Areas.

Design effluent areas are based on conservative estimates of renovation and complete attenuation of nitrogen. The deep seepage rate is lower than the hydraulic conductivity of the limiting layer (<12%).

1.4.8. Reserve Areas.

There is sufficient area available for a reserve area and/or expansion of the area should design flow increase. The reserve area is a spare effluent field, which is left undeveloped, but can be commissioned in the case of increase in daily effluent production due to contingencies through the chain of ownership or should the effluent field fail.

1.4.9. Buffer Distances.

Buffer distances are set out in the *EPA Victoria - Guideline for onsite wastewater management (May 2024) Table 4-10* to allow for attenuation of pathogens and nutrients, should an effluent surcharge occur, either overland or subsurface.

The effluent area is located at least 430m from surface waters.

The time taken for groundwater to reach the nearest potable surface waters can be estimated by using the Darcy equation (which states that velocity is the product of the hydraulic conductivity and the hydraulic gradient). From the literature, the regional gradient is about 0.004.

Flow times can be estimated for groundwater to flow the 430m (minimum) to the nearest surface waters at this site.

For a conservative basement hydraulic conductivity of 1m/day[b] with a hydraulic gradient of 0.004, the time taken for groundwater to flow a distance of 430m is almost 300 years.

[b] This is a conservatively high figure to demonstrate maximum possible flow rates. A conservatively low figure was used for calculation of effluent application rates (see recommendations) to demonstrate disposal sustainability.

1.4.10. System Failure.

A properly designed and constructed onsite effluent system consisting of the septic tank and absorption trenches can suffer degrees of failure.

Failure can take the form of mechanical (plant), accidental (toilet blockages, damaged trench lines, high BOD influent), operational (overloading) and maintenance (failure to check filters, failure to participate in maintenance programme).

1.4.10.1. Mechanical Breakdown.

This system is designed to use gravity. There are no mechanical components that can fail.

1.4.10.2. Accidents.

Toilet blockages and accidentally damaged trenches could allow localised surface surcharge of treated effluent. This is why minimum buffers to surface waters have been maintained.

1.4.10.3. Operational Breakdown.

Operational failures and transient hydraulic overloading are accommodated by the load balancing facility, as described in Section 1.4.6, above.

1.4.10.4. Maintenance Breakdown.

Maintenance breakdowns such as failure to maintain the “fencing”, trench profile and vegetation can cause malfunction.

It is important that a suitable inspection, maintenance and pump-out regime is adhered to.

1.4.11. Risk Summary.

With regard to density of development and cumulative risk the assessment has considered risk associated with subsurface flows and surface flows.

In regard to subsurface flows, it is clear that provided the on-site system is adequately designed, constructed, operated and maintained (see items 1.4.1 through 1.4.10.4), the risk to surface and ground waters is negligible. Once the effluent is placed underground, the extraordinary long travel times via ground water to surface waters ensures adequate nutrient attenuation.

In regard to surface flows, it is clear that provided the on-site system is adequately designed, constructed, operated and maintained (see items 1.4.1 through 1.4.10.4), the risk to surface and ground waters is no greater than for a sewered development. Indeed, it could be considered that the risk is less than for a sewered development because there can be no mains failure (because there is no mains).

The LCA recommends a conservative, scientifically based, well founded wastewater management system with inherent multiple barriers of safety.

Cumulative risk from the development is extremely low. The risk of serious or irreversible damage is extremely low.

All requirements of *SEPP (Waters of Victoria)* have been met.

Figure 1:. Land-soil unit A (proposed effluent area) viewed from north to south.

2. SECTION 2. RECOMMENDATIONS

2.1. APPLICATION

The following recommendations are based on the results of our assessment, and are made in accordance with *SEPPs (Waters of Victoria), EPA Victoria - Guideline for onsite wastewater management (May 2024), EPA Victoria - Guideline for onsite wastewater effluent dispersal and recycling systems (May 2024)*, *AS 1726*, and *AS/NZS 1547:2012*.

They are based on the estimated hydraulic conductivity of the limiting clay materials and are designed to demonstrate the viability of on-site effluent disposal for a 5-bedroom (equivalent) residence and a daily effluent production of up to 900 litres/day and are considered to be conservative.

2.2. ABSORPTION

2.2.1. Disposal Strategy.

Based on the results of the water balance analysis and considering the prevailing surficial and subsurface conditions including soil profile thickness and slope and on condition that adequate site drainage is provided (as described in Section 2.4, below), absorption systems are appropriate for effluent disposal for land-soil unit A.

2.2.2. Effluent.

Effluent will be generated from a 5-bedroom (equivalent) residence and will include black and grey water (all wastes).

2.2.2.1. Effluent Quality.

Effluent shall be treated to a standard that meets or exceeds the water quality requirements of the septic standard.

2.2.2.2. Effluent Quantity.

The daily effluent volume of 900 litres has been calculated from *EPA Victoria - Guideline for onsite wastewater management (May 2024) Table 4-1* and assumes a 5-bedroom (equivalent) residence with mains water (equivalent) and WELS-rated water-reduction fixtures and fittings – minimum 4 Stars for dual-flush toilets, shower-flow restrictors, aerator taps, flow/pressure control valves and minimum 3 Stars for all appliances.

2.2.3. Trench Bottom Area and Trench Length.

Trench bottom areas have been determined from the results of the water and nutrient balance analyses, the *EPA Victoria - Guideline for onsite wastewater management (May 2024) Tables 4-8 and 4-9* and *AS/NZS 1547:2012, Appendix L.*

Trenches are to be designed and constructed in accordance with *AS/NZS 1547:2012, Appendix L.* Critical dimensions include a width of 1.0m and a pond depth of 0.25m.

2.2.3.1. Hydraulic Loading.

To satisfy the requirement for no surface discharge in the mean wet year, a wetted area of 180m^2 is required. This translates into a trench length of 180m x 1.0m wide trench.

The water balance analysis uses a peak deep seepage of 5.7mm/day (average deep seepage of 1.3mm/day, DLR of 5mm/day).

2.2.3.2. Nutrient Loading.

The requirements of *SEPPs (Waters of Victoria)* would be satisfied with a wetted area, as given above.

2.2.3.3. Design Loading.

To satisfy the requirement for no surface discharge in the mean wet year and on-site attenuation of nutrients, the effluent should be applied to a trench length of 180m (1.0m wide). Trenches shall be placed coincident with contours and shall not exceed 20m in length and are to be spaced 2m apart, as required.

In case of an increase in effluent production through the chain of ownership, there is sufficient area available for duplicating/extending the absorption trenches.

2.2.4. Inspections.

We recommend that the mandatory inspection and reporting as described in the *EPA Victoria - Guideline for onsite wastewater management (May 2024) Section 6* include an annual (post spring and post episodic event) report on the functioning and integrity of the distribution system and on the functioning and integrity of the cut-off drains, outfall areas and soil media.

2.2.5. Soil Renovation.

Soils are dispersive and require amelioration. To create and maintain water-stable peds (under disposal with saline effluent), soil renovation in the form of gypsum application is required at the rate of 1.5kg/m^2. Initially, prior to the installation and operation of the effluent disposal system gypsum is to be broadcast over the land application area at the rate of 0.5kg/m^2. Following that gypsum shall be broadcast again over the effluent area at the rate of 0.25 kg/m^2 in every two winter months and 0.25kg/m^2 in every 3 summer months until the determined gypsum application of 1.5kg/m^2 is reached.

If the determined gypsum application of 1.5kg/m^2 is not reached by the time of the installation and operation of the effluent disposal system gypsum shall be broadcast again over the effluent area at the rate of 0.25 kg/m^2 in every winter month and 0.25kg/m^2 in every 1.5 summer months.

After reaching the determined gypsum application of 1.5kg/m^2 we recommend sampling and testing to assess the effectiveness of the gypsum application. This testing will determine future application rate and frequency of application.

Gypsum requirement assumes the gypsum contains 19% Calcium and 15% Sulphur. Gypsum is to be fine ground “Grade 1” agricultural quality and shall be reapplied every 3 years at the rate of 0.5kg/m^2.

2.3. RESERVE AREA

The expected design life of fifteen years may vary due to construction and maintenance vagaries and possible effluent volume increases through the chain of ownership.

There is sufficient available area for extension/duplication of the effluent area.

2.4. SITE DRAINAGE.

Our recommendations for on-site effluent disposal have allowed for incident rainfall only (not surface flow or lateral subsurface flow) and are conditional on the installation of a shallow cut-off drain, which shall be placed upslope of the disposal area.

Care shall be taken to ensure that the intercepted and diverted surface waters are discharged well away and down slope of the disposal field.

Locations of the cut-off drains and a drain detail are shown in Drawings 2 and MP1.

The owner shall also ensure that any upslope site works do not divert and/or concentrate surface water flows onto the disposal area.

2.5. BUFFER DISTANCES

The water balance analysis has shown that potential surface (rain water) flows from the effluent area would be restricted to episodic events.

The estimated hydraulic properties of the upper soil materials and hydraulic gradient have been used to evaluate (via Darcy's Law) the buffer distances with respect to subsurface flows.

Our analysis and evaluation has shown that the default setback distances given in *EPA Victoria - Guideline for onsite wastewater management (May 2024), Table 4-10* are conservative and can be applied without amendment.

For a building located downslope of an effluent field, your engineer shall evaluate the integrity of building foundations with respect to the assigned buffer distance.

2.6. SUMMARY OF RECOMMENDATIONS

Our capability assessment has shown that at least one rational and sustainable on-site effluent disposal method (primary treatment system and absorption trenches) is appropriate for the proposed development.

A management plan is presented in Appendix D, to this report.

PRINCIPAL SOIL SCIENTIST
LAND CAPABILITY ASSESSMENT VICTORIA

APPENDIX A1

SOIL PERMEABILITY

Where the soils are dispersive and/or have high shrink-swell potential insitu permeability testing realises inaccurate, low or nil results.

The hydraulic conductivity can be estimated by using test waters containing calcium chloride and/or by laboratory assessment of colloid stability and determination of ameliorant quantities (e.g. gypsum/lime requirement) and swell potential.

A conservative estimate of permeability has been deduced as follows (from soil texture, structure and swell potential tests):-

Profile analysis in accordance with AS/NZS 1547:2012 and our laboratory determined dispersion and swell potential shows the residual soils to be dispersive silty light clays (i.e. Type 6 soils) with saturated hydraulic conductivity of less than 0.06m/day.

Similar dispersive soils have responded positively (with sufficiently improved hydraulic capability) following applications of gypsum.

The limiting moderately structured silty light clay soils require amelioration in the form of gypsum application at the rate of 1.5kg/m^2. For soil renovation see Section 4.3.3.

The application of gypsum creates water-stable peds (by replacing Sodium and Magnesium ions with Calcium ions) with a consequent higher hydraulic conductivity controlled by macro pores.

Peak deep seepage is conservatively estimated at 5.7mm/day. Average daily deep seepage is 1.3mm.

SOIL TEST RESULTS

Project: Bunyip			Date of sampling: 19/06/25			Date of Lab test:				BH: 1
horizon (cm)	pH	$EC_{1:5}$	EC_{SE}	disp 10 min	disp 2 hours	disp total	Emers 2 hours	Emers 20 hours	free swell %	texture
0-20				0	0	0	8	8		loam
20-55				2	2	12	2	2		clayey silt
55-85				1	2	11	2	2		silty light clay
85-110				1	2	11	2	2		silty light clay
110-145				0	2	10	2	2		silty light clay

Project: Bunyip			Date of sampling: 19/06/25			Date of Lab test:				BH: 2
horizon (cm)	pH	$EC_{1:5}$	EC_{SE}	disp 10 min	disp 2 hours	disp total	Emers 2 hours	Emers 20 hours	free swell %	texture
0-20	7.1	0.01	0.10	0	0	0	8	8		loam
20-30	6.8	0.01	0.10	0	0	0	8	4,5,6		silt
30-45	6.1	0.02	0.2	3	3	14	2	2	0	clayey silt
45-75	5.9	0.11	0.99	2	3	13	2	2	10	silty light clay
75-120	5.9	0.27	2.43	0	0	0	4,5,6	4,5,6	10	silty light clay
120-145	5.9	0.42	3.78	0	0	0	4,5,6	4,5,6	10	silty light clay

APPENDIX A2

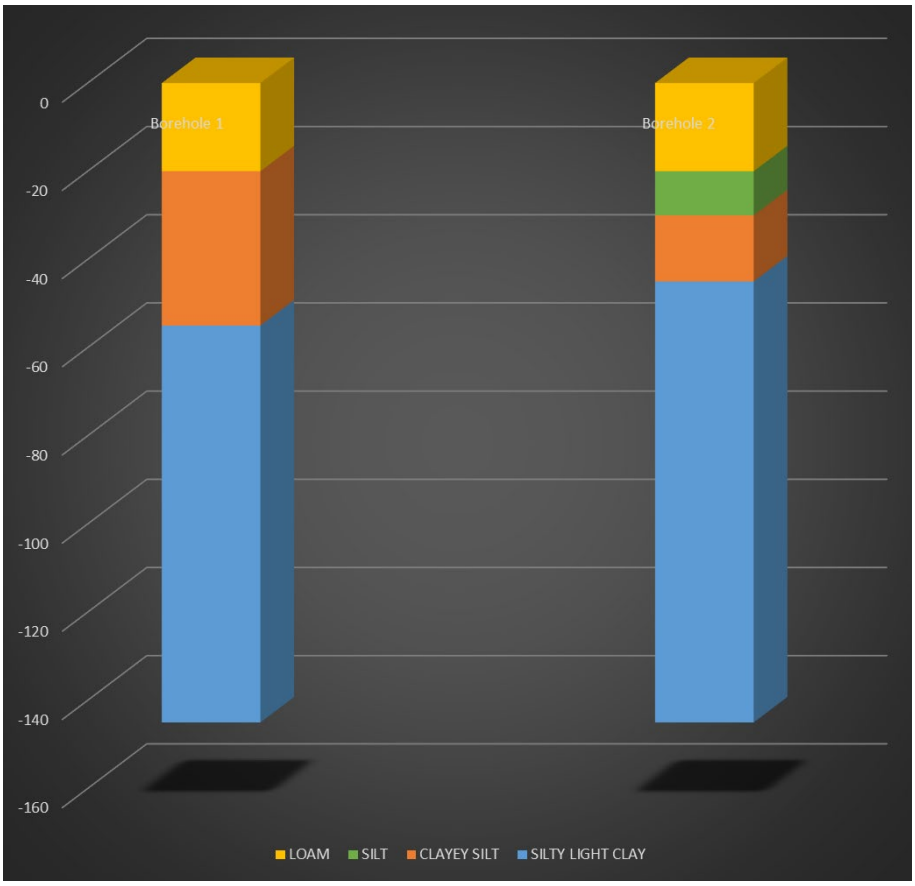
SOIL PROFILE PHOTOGRAPHS

BOREHOLE 1

BOREHOLE 2

APPENDIX A3

LOGS OF BOREHOLES



For location of boreholes refer Drawing 2.

APPENDIX B

WATER- AND NUTRIENT BALANCE

Land Capability Assessment Victoria Spreadsheet used with permission LCA03072025

WATER BALANCE (Absorption): With storage depth less than 250mm.

Rainfall Station: Longwarry / Evaporation Station: Noojee

Location: Bunyip
Date: July, 2025
Client: Earthcut Constructions

ITEM	UNIT	#	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
Evaporation (Mean)	mm	A	152	126	102	63	43	36	40	56	75	99	114	133	1040
Rainfall (mean)	mm	B1	60	50	59	68	75	70	71	83	91	88	84	72	871.2
Effective rainfall	mm	B2	51	50	50	58	64	59	61	71	77	74	71	62	748
Peak Seepage Loss[1]	mm	B3	177	160	177	171	177	171	177	177	171	177	171	177	2081
Evapotranspiration(IXA)	mm	C1	106	88	72	38	22	16	16	25	41	64	80	93	662
Waste Loading(C1+B3-B2)	mm	C2	232	198	198	151	134	128	132	131	135	167	179	208	1994
Net evaporation from lagoons (10(0.8A-B1xlagoon area(ha)))	L	D	0	0	0	0	0	0	0	0	0	0	0	0	0
Volume of Wastewater	L	E	27900	25200	27900	27000	27900	27000	27900	27900	27000	27900	27000	27900	328500
Total Irrigation Water(E-D)/G	mm	F	155	140	155	150	155	150	155	155	150	155	150	155	1825
Wetted Area(E/C2)	m^2	G	120	127	141	179	208	211	211	213	200	167	150	134	180
Storage	mm	H	-77	-58	-43	-1	21	22	23	24	15	-12	-29	-53	
Increase in depth of stored effluent(H/0.7)	mm	K	-258	-192	-144	-3	69	74	76	80	49	-39	-98	-178	
Depth of effluent for month	mm	L	0	0	0	0	0	69	74	76	80	49	0	0	
Increase in depth of effluent	mm	M	-258	-192	-144	-3	69	143	150	156	129	10	-98	-178	
Computed depth of effluent	mm	N	0	0	0	0	69	211	**224**	232	208	59	0	0	
Actual seepage loss:	mm	SL	29	31	28	37	42	38	39	49	56	53	50	40	492
Direct Crop Coefficient		I	0.7	0.7	0.7	0.6	0.5	0.45	0.4	0.45	0.55	0.65	0.7	0.7	Pasture:

1. Seepage loss equals deep seepage plus lateral flow , equals DLR of 5.7mm/day

				CROP FACTOR:											
Rainfall retention:	85 %	J													
Lagoon Area:	0 ha	O	0.7	0.7	0.7	0.6	0.5	0.45	0.4	0.45	0.55	0.65	0.7	0.7	Pasture:
Wastewater(daily):	900 L	P	0.45	0.45	0.45	0.45	0.4	0.4	0.4	0.4	0.45	0.45	0.45	0.45	Shade:
Peak deep seepage:	5.7 mm	Y	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	Fescue:
Wetted Area:	180 m^2	Z	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	Buffalo:
Length (1m wide) trench:	180 m	NE													
Average daily seepage loss:	1.3 mm	X													
Design Loading Rate:	5.0 mm	R													

RAINFALL DATA

Station: Longwarry (Gooneparoo) **Number:** 85208 **Opened:** 1969 **Now:** Open
Lat: 38.07° S **Lon:** 145.77° E **Elevation:** 50 m

Statistic	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Mean	59.5	50.3	59.0	68.2	75.3	69.9	71.4	83.2	90.5	87.6	83.9	72.4	898.3
Lowest	5.0	2.2	15.7	15.5	17.4	10.6	17.4	19.0	28.2	19.7	23.6	4.5	614.4
5th %ile	8.1	5.7	24.3	26.9	27.7	22.8	33.9	32.3	42.4	39.5	26.7	21.2	676.9
10th %ile	23.7	8.8	25.7	31.0	40.0	40.5	37.4	44.3	48.3	50.4	38.8	32.6	703.3
Median	58.6	39.7	52.1	63.8	79.6	61.3	64.9	74.4	85.1	82.6	82.2	67.4	888.8
90th %ile	92.2	114.9	100.6	114.9	98.3	115.3	112.0	132.7	141.9	142.3	130.2	128.1	1081.0
95th %ile	114.4	152.6	113.7	133.1	132.1	119.9	129.0	143.2	155.7	146.8	145.4	140.5	1084.7
Highest	138.4	190.2	186.4	165.8	158.0	137.0	140.8	202.2	179.6	200.0	180.2	152.4	1102.0

APPENDIX C1

LAND CAPABILITY ASSESSMENT TABLE
(Non-Potable water supply catchments)

LAND	LAND CAPABILITY RISK RATING				AMELIORATIVE MEASURES
FEATURE	LOW	MEDIUM	HIGH	LIMITING	& RISK REDUCTION
Available land for LAA	Exceeds LAA and duplicate LAA requirements	Meets LAA and duplicate LAA requirements	Meets LAA and partial duplicate LAA requirements	Insufficient LAA area	Non limiting for trenches & beds: Full reserve area available.
Aspect	North, north-east and north-west	East, west, south-east, south-west	South	South, full shade	Northern aspect.
Exposure	Full sun and/or high wind or minimal shading	Dappled light (partial shade)	Limited light, little wind to heavily shaded all day	Perpetual shade	Full winter sunshine.
Slope Form	Convex or divergent side slopes	Straight sided slopes	Concave or convergent side slopes	Locally depressed	Free draining, however finished LAA surface requires smoothing and redistribution of topsoil.
Slope gradient:					
Trenches and beds	<5%	5% to 10%	10% to 15%	>15%	5.5%-6.5%: Non-limiting for trenches.
Site drainage: runoff/run-on	LAA backs onto crest or ridge	Moderate likelihood	High likelihood	Cut-off drain not possible	Unremarkable. Cut-off drain required upslope.
Landslip[1]	Potential	Potential	Potential	Existing	Unremarkable
Erosion potential	Low	Moderate	High	No practical amelioration	All runoff to be dispersed without concentrating flows. LAA stabilised with gypsum.
Flood/inundation	Never		<1%AEP	>5% AEP	Unremarkable
Distance to surface waters (m)	Buffer distance complies with Guideline requirements		Buffer distance does not comply with Guideline requirements	Reduced buffer distance not acceptable	LAA located at least 430m from a seasonal waterway.
Distance to groundwater bores (m)	No bores on site or within a significant distance	Buffer distances comply with Guideline	Buffer distances do not comply with Guideline	No suitable treatment method	No bores within a significant distance (more than 1km from LAA)
Vegetation	Plentiful/healthy vegetation	Moderate vegetation	Sparse or no vegetation	Propagation not possible	LAA to be over-sown with rye/clover mix in new topsoil.
Depth to water table (potentiometric) (m)	>2	2 to 1.5	<1.5	Surface	Water table deeper than 5m.
Depth to water table (seasonal perched) (m)	>1.5	<0.5	0.5 to 1.5	Surface	Perching unlikely.
Rainfall[2] (mean) (mm)	<500	500-750	750-1000	>1000	871mm/year. Non-limiting for trench systems. Design by water balance.
Pan evaporation (mean) (mm)	1250 to 1500	1000 to 1250	750 to 1000	<750	1040mm/year. Design by water balance.
SOIL PROFILE CHARACTERISTICS					
Structure	High or moderately structured	Weakly structured	Structureless, massive or hardpan		Maintain structure by gypsum application (at the rate of 1.5kg/m^2).
Fill materials	Nil or mapped good quality topsoil	Mapped variable depth and quality materials	Variable quality and/or uncontrolled filling	Uncontrolled poor quality/unsuitable filling	No fill encountered.
Thickness: (m)					
Trenches and beds	>1.4		<1.4	<1.2	Non-limiting for trench systems.
Permeability[3] (limiting horizon) (m/day)	0.15-0.3	0.03-0.15 0.3-0.6	0.01-0.03 0.6-3.0	>3.0 <0.03	Design by water balance
Permeability[4] (buffer evaluation) (m/day)	<0.3	0.3-3	3 to 5	>5.0	Evaluate flow times via Darcy's Law (assume 1m/day for residual clays)
Stoniness (%)	<10	10 to 20	>20		Unremarkable
Emerson number	4, 5, 6, 8	7	2, 3	1	Dispersive soils. Apply gypsum (at the rate of 1.5kg/m^2) to create and maintain stable peds and to increase Ksat.
Dispersion Index	0	1-8	8-15	>15	Dispersive soils. Apply gypsum (at the rate of 1.5kg/m^2) to create and maintain stable peds and to increase Ksat.
Reaction trend (pH)	5.5 to 8	4.5 to 5.5	<4.5>8		6.8-7.1pH in topsoil. Ideal range for grasses
E.C. (dS/m)	<0.8	0.8 to 2	2-4	>4.0	Non-limiting for trench systems.
Sodicity (ESP) (%)	<6	6 to 8	>8	>14	Sodic (inferred from Emerson, Dispersion Index, Free swell)
Free swell (%)	<30	30-80	80-120	>120	0%-10%. Low-swelling clay fraction.

There are high risk factors for primary effluent trench systems (rainfall, colloid stability). Apply gypsum at the rate of 1.5kg/m^2 to create and maintain stable peds and to increase Ksat.

Evaluation of buffer distances via Darcy's Law shows EPA default buffer distances to be adequate.

Hence, in terms of the design, engineering and management inputs required for sustainable on-site effluent disposal are rational and easily achieved without significant impost on the landowner.

[1] Landslip assessment based on proposed hydraulic loading, slope, profile characteristics and past and present land use.
[2] Mean monthly rainfalls used in water balance analyses.
[3] Saturated hydraulic conductivity estimated from data base and laboratory tests.
[4] Saturated hydraulic conductivity estimated from AS/NZS1547:2012 and data base.

APPENDIX D

MANAGEMENT PLAN

Land Capability Assessment Victoria

[redacted]

CONSULTANTS IN THE AGRICULTURAL SCIENCES

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LCA03072025-JULY 2025

MANAGEMENT PLAN
FOR
ON-SITE EFFLUENT DISPOSAL VIA ABSORPTION TRENCHES
AT
106 WATTLETREE ROAD, BUNYIP VIC 3815

1. INTRODUCTION

This document identifies the significant land-soil unit constraints (as identified in LCA03072025) and their management and day-to-day operation and management of the on-site effluent system.

This management plan is to be read in conjunction with our land capability assessment for this land-soil unit (LCA03072025).

2. SIGNIFICANT LAND-SOIL UNIT CONSTRAINTS

2.1 Allotment Size. The day-to-day operation and management of on-site effluent systems, as described below, is not constrained by lot size or geometry.

Although all requirements of *SEPPs* have been met or exceeded through conservative design, prudence dictates that property owners assiduously follow the management programme given in Section 4, below.

2.2 Nitrogen Attenuation. Provided the trench areas are at least as large as those required to satisfy the nitrogen loading, as described in LCA03072025 Sections 1.3.1.12 and 2.2.3.2, and that the (specified) vegetation is maintained and grass is cut and periodically harvested, nitrogen will be attenuated on-site.

2.3 Hydraulic Conductivity. The soils of this site are dispersive silty light clays with a low swelling potential and a low hydraulic conductivity. The hydraulic conductivity is significantly influenced by soil structure, soil colloid stability and swell characteristics. Breakdown or reduction of these soil parameters over time may manifest as reduced performance of the disposal system. The monitoring and inspection regime detailed in Section 4.7.2, below, should be adhered to.

2.4 Site Drainage. Our recommendations for on-site effluent disposal have allowed for incident rainfall only (not surface flow or lateral subsurface flow) and are conditional on the installation of a cut-off drain, which should be placed upslope of the disposal area. Care should be taken to ensure that the intercepted and diverted surface waters and any perched groundwater are discharged well away and down slope of the disposal field (see Drawings 2 and MP1).

This diverted water should also be discharged in a manner to avoid scouring and/or erosion. It may be appropriate to discharge the water onto a stone/rubble dissipation area.

The owner should also ensure that any upslope land-soil unit works do not divert and/or concentrate surface water flows onto the disposal area.

2.5 Vegetation. Existing vegetation is suitable however requires over-sowing with a rye/clover mix. The effluent disposal area has been sized via water and nutrient balance analyses utilising crop factors for pasture (rye/clover mix) under conditions of full winter sunshine.

3. THE ONSITE EFFLUENT SYSTEM

The onsite effluent system consists of the influent (black and greywater from a 5-bedroom (equivalent) residence), a primary treatment system, distribution pipes, the absorption trenches, prescribed vegetation, associated infrastructure (cut-off drains, outfall areas, fencing), a service and maintenance programme and on-going management.

4. MANAGEMENT

The owner is required to understand (and ensure that tenants understand) that sustainable operation of the onsite effluent system is not automatic. Sustainable operation requires on-going management, as outlined below.

4.1 Effluent. Effluent will be generated from a 5-bedroom (equivalent) residence and will include black and grey water (all wastes).

4.1.2 Effluent Quality. Effluent should be treated to a standard that meets or exceeds the water quality requirements of the septic standard.

4.1.3 Effluent Quantity. The daily effluent volume of 900 litres has been calculated from *EPA Victoria - Guideline for onsite wastewater management (May 2024)*, *Table 4-1* and assumes a 5-bedroom (equivalent) residence with mains water (equivalent) and WELS-rated water-reduction fixtures and fittings – minimum 4 Stars for dual-flush toilets, shower-flow restrictors, aerator taps, flow/pressure control valves and minimum 3 Stars for all appliances.

4.2 Primary Treatment system . No specific treatment system is recommended, however the primary treatment system must have current JAS/ANZ accreditation, which match effluent volumes with plant capacity.

4.3 Trench Lengths. The trench length has been determined from the *EPA Victoria - Guideline for onsite wastewater management (May 2024), Table 4-8 and 4-9* and *AS/NZS 1547:2012*. For absorption, it is assumed that the design, construction, operation and maintenance are carried out in accordance with *AS/NZS1547:2012* and a “system specific” JAS/ANZ certification, as appropriate.

4.3.1 Effluent Area Requirement. For the estimated daily effluent flows and to satisfy the requirement for no surface discharge in the mean wet year and on-site attenuation of nutrients, the effluent should be applied to 180 lineal metres of 1.0m wide absorption trenches.

Effluent distribution is as detailed in Section 4.3.2, below.

In case of an increase in effluent production through the chain of ownership, there is sufficient area available for duplicating/extending the absorption trenches.

Any landscaping and/or planting proposals require endorsement from the Cardinia Shire Council.

4.3.2 Distribution System. The absorption trenches are to be designed and constructed in accordance with *AS/NZS1547:2012* and LCA03072025.

4.3.3. Soil Renovation: Soils are dispersive and require amelioration. To create and maintain water-stable peds (under disposal of saline effluent), soil renovation in the form of gypsum application is required at the rate of 1.5kg/m^2. Initially, prior to the installation and operation of the effluent disposal system gypsum is to be broadcast over the land application area at the rate of 0.5kg/m^2. Following that gypsum shall be broadcast again over the effluent area at the rate of 0.25 kg/m^2 in every two winter months and 0.25kg/m^2 in every 3 summer months until the determined gypsum application of 1.5kg/m^2 is reached.

If the determined gypsum application of 1.5kg/m^2 is not reached by the time of the installation and operation of the effluent disposal system gypsum shall be broadcast again over the effluent area at the rate of 0.25 kg/m^2 in every winter month and 0.25kg/m^2 in every 1.5 summer months.

After reaching the determined gypsum application of 1.5kg/m^2 we recommend sampling and testing to assess the effectiveness of the gypsum application. This testing will determine future application rate and frequency of application.

Gypsum requirement assumes the gypsum contains 19% Calcium and 15% Sulphur. Gypsum is to be fine ground “Grade 1” agricultural quality and shall be reapplied every 3 years at the rate of 0.5kg/m^2.

4.3.4 Buffer Distances. The water balance analysis has shown that potential surface rainwater flows from the effluent area would be restricted to episodic events.

The estimated hydraulic properties of the upper soil materials and hydraulic gradient (equivalent to the ground slope and regional gradients) have been used to evaluate (via Darcy's Law) the buffer distances with respect to subsurface flows.

Our analysis and evaluation have shown that the default setback distances given in *EPA Victoria - Guideline for onsite wastewater management (May 2024)*, *Table 4-10* are conservative and can be applied without amendment.

For a building located downslope of an effluent field, your engineer should evaluate the integrity of building foundations with respect to the assigned buffer distance.

Buffer distances are to be applied exclusive of the disposal area.

4.3.5 Buffer Planting. All downslope (Title inclusive) buffers may be required to filter and renovate abnormal surface discharges. Hence, they are to be maintained with existing or equivalent groundcover vegetation.

4.3.6 Buffer Trafficking. Buffer trafficking should be minimised to avoid damage to vegetation and/or rutting of the surface soils.

Traffic should be restricted to 'turf' wheeled mowing equipment and to maintenance, monitoring and inspections by pedestrians, where possible.

4.4 Vegetation. The system design for on-site disposal includes the planting and maintenance of suitable vegetation, as specified in LCA03072025 and/or similar documents.

Specifically, this disposal area has been sized (in part) utilising crop factors and annual nitrogen uptake for a rye/clover eq mix.

The grass needs to be harvested (mown and periodically removed from the disposal area).

Where a variation to recommended grass species is proposed, it must be demonstrated that the nitrogen uptake and crop factors (as specified in LCA03072025 Appendix B – water and nutrient balance) are met or exceeded.

4.5 Verification. The Council is to be satisfied that the effluent system has been constructed as designed.

4.6 Associated Infrastructure. The following items are an integral part of the onsite effluent system.

4.6.1 Cut-off drains. Cut-off drains are designed to prevent surface water flows from entering the effluent area. They should be constructed and placed around the effluent area, as shown in Drawings 2 and MP1.

4.6.2 Outfall areas. All pipe outfalls should be at grade and designed to eliminate scour and erosion.

A grassed outfall would normally be adequate. However, should monitoring and inspections reveal rill or scour formation, the outfall will need to be constructed so that energy is satisfactorily dissipated.

Should this situation occur, professional advice is to be sought.

4.6.3 Fencing. The disposal area is to be a dedicated area. Adequate fencing must be provided to prevent stock, excessive pedestrian and vehicular movements (if any) over the area.

Fencing may take any of the traditional forms or can be incorporated into landscape features or be dense planting, as appropriate.

4.7 Service and Maintenance Programme. The minimum requirements for servicing and maintenance are set out in the relevant JAS/ANZ accreditation and the manufacturer's recommendations.

4.7.1 Septic Tank. Septic Tanks should be inspected at least one time per year (or as recommended in the JAS/ANZ certification) and pumped out at least every two years.

The local authority is to ensure compliance.

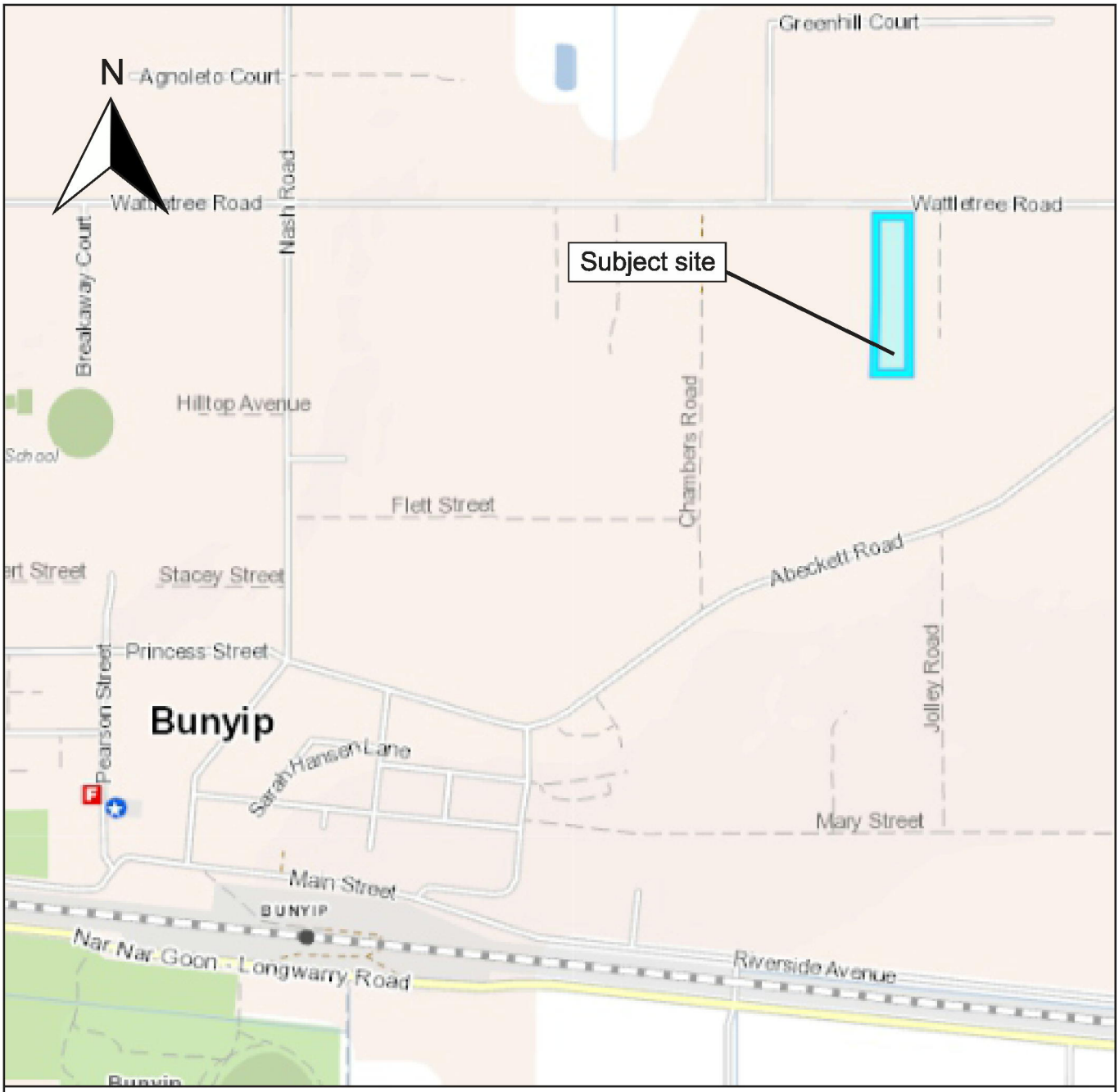
The manufacturer's recommendations are to be followed. Generally, low phosphorous and low sodium (liquid) detergents should be used. Plastics and other non-degradable items should not be placed into the tanks. Paints, hydrocarbons, poisons etc should not be disposed of in sinks or toilets. Advice from a plumber should be obtained prior to using drain cleaners, chemicals and conditioners. It is important to ensure that grease does not accumulate in the tanks or pipes. Grease and similar products should be disposed of by methods other than via the on-site effluent system.

4.7.2 Monitoring and Inspections. We recommend that the mandatory testing and reporting as described in the *EPA Victoria - Guideline for onsite wastewater management (May 2024) Section 6*, include an annual (post spring) and post periods of heavy and/or prolonged rainfall report on the functioning and integrity of the distribution system and on the functioning and integrity of the cut-off drains, outfall areas and soil media.

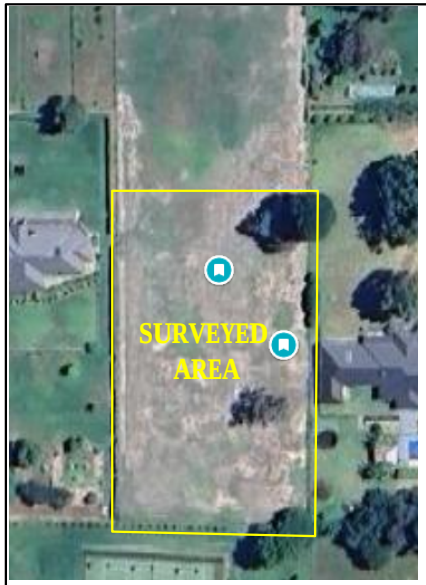
The effluent area should be regularly inspected for excessively wet areas and vegetation integrity.

The inspection regime described in LCA03072025, Section 2.2.4, should be strictly adhered to.

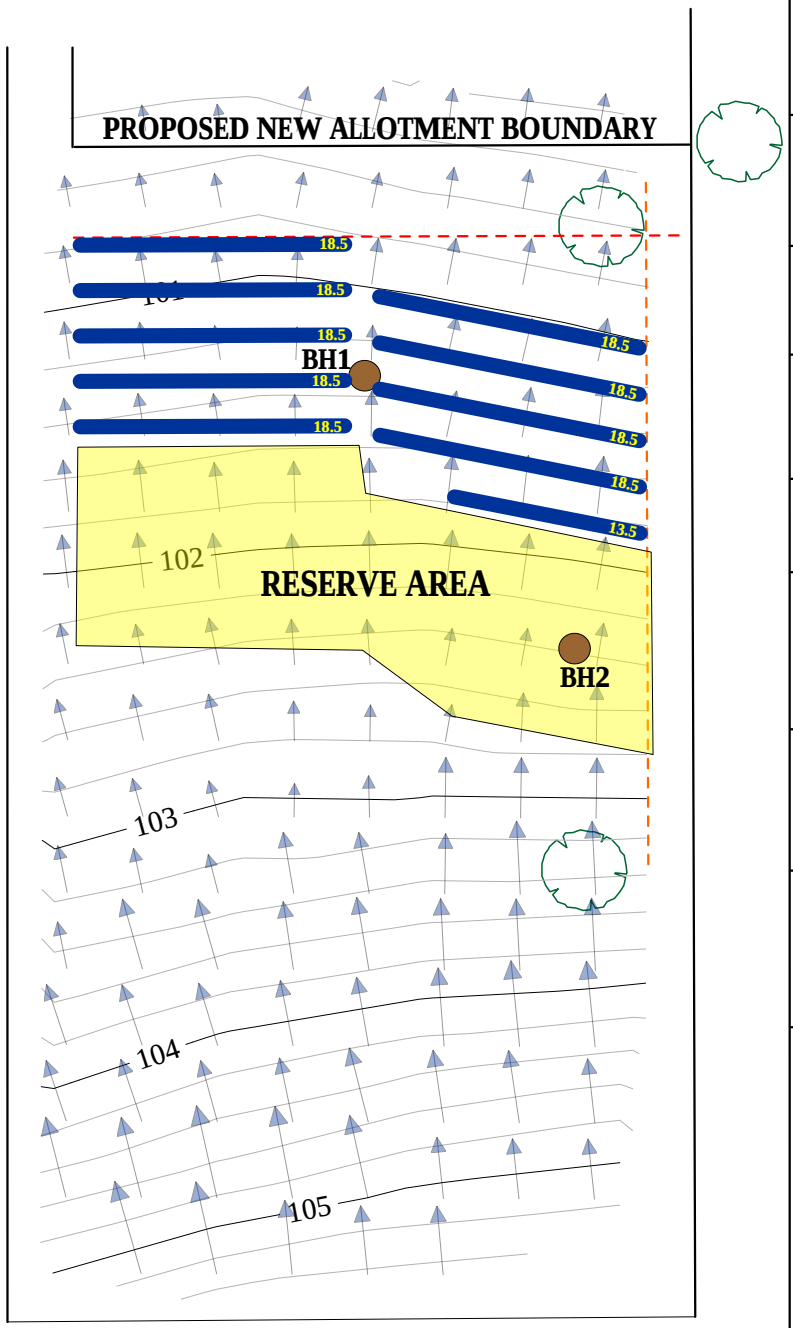
PRINCIPAL SOIL SCIENTIST
LAND CAPABILITY ASSESSMENT VICTORIA



LOCATION OF SUBJECT SITE	
106 WATTLETREE ROAD, BUNYIP VIC 3815	
EARTHCUT CONSTRUCTIONS	
Drawn [redacted]	Report number: LCA03072025
Date: July 2025.	Drawing number: 1



18.5 TRENCH LENGTH (m)



SLOPE, SURFACE AND SUBSURFACE FLOW DIRECTIONS

BOREHOLE

180m ABSORPTION TRENCHES, 1m WIDE, AT LEAST 2m APART, PARALLEL WITH CONTOURS

6m BUFFER FROM ALLOTMENT BOUNDARY

3m BUFFER FROM ALLOTMENT BOUNDARY

0 10 20 30 40

SUFFICIENT AREA EXISTS FOR DUPLICATION OF EFFLUENT DISPOSAL AREA DUE TO CONTINGENCIES THROUGH THE CHAIN OF OWNERSHIP

NOTE: THIS IS NOT A RE-ESTABLISHMENT SURVEY. TITLE BOUNDARIES ARE ASSUMED TO BE COINCIDENT WITH EXISTING FENCES.

CONTOURS ARE TO LOCAL DATUM (NOT TO AHD)

LOCATION OF PROPOSED DEVELOPMENT SHOWING CONTOURS

106 WATTLETREE ROAD, BUNYIP VIC 3815

EARTHCUT CONSTRUCTIONS

DRAWN: LAND CAPABILITY ASSESSMENT VICTORIA

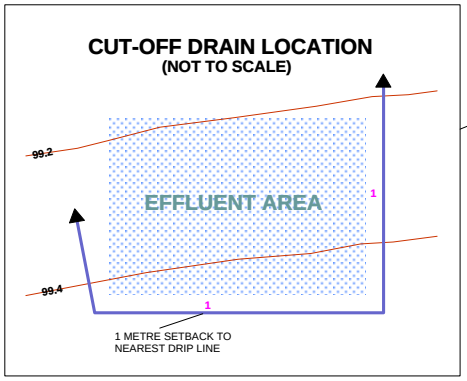
DATE: JULY 2025

REPORT NUMBER: LCA03072025

DRAWING NUMBER: 2

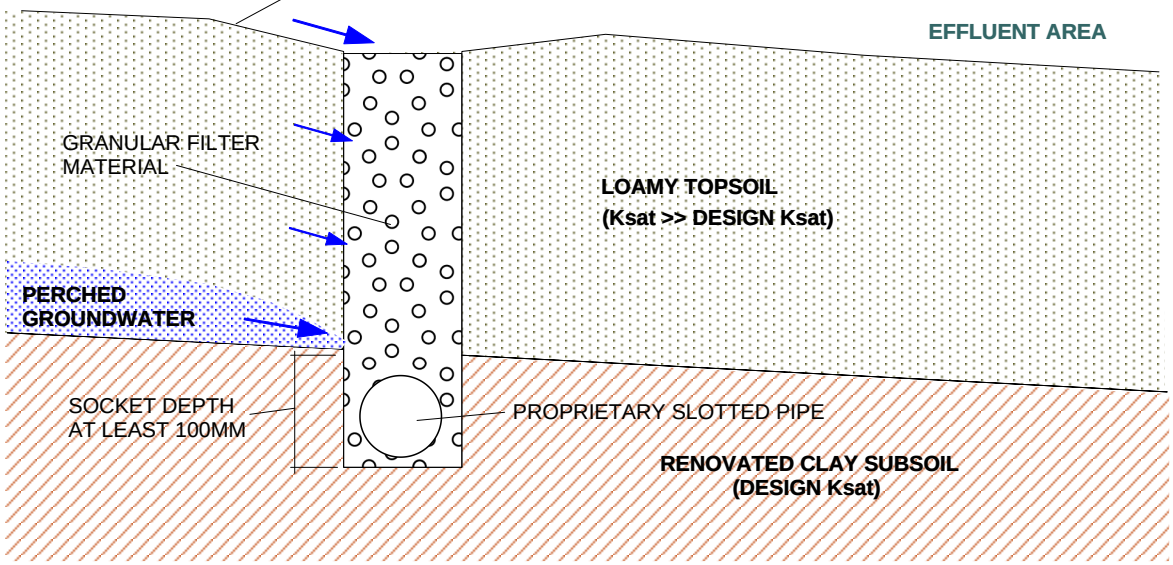
SCALE: 1:500

N



NOTE: CUT-OFF DRAIN LOCATION IS SCHEMATIC ONLY. FINAL LOCATION TO BE DETERMINED BY DESIGN ENGINEER AS PART OF SITE DRAINAGE DESIGN.

SURFACE REGRADED BY CUTTING TO FACILITATE COLLECTION OF SURFACE FLOWS - DEGREE OF CUT SLOPE LIMITED BY REQUIREMENTS FOR SAFE & EFFICIENT MOWING/MAINTENANCE



NOTES:
1. DRAIN TO BE DESIGNED, CONSTRUCTED & MAINTAINED TO ENSURE THAT NO SURFACE & PERCHED GROUNDWATER FLOWS ENTER THE IRRIGATION AREA.
2. DRAIN TO BE LOCATED ON ALL UPSLOPE SIDES OF IRRIGATION AREA (NO CLOSER THAN 1M FROM NEAREST SUBSURFACE DISTRIBUTION LINE).
3. DRAIN TO HAVE UNSPECIFIED FALL.
4. MINIMUM SOCKET DEPTH OF 100MM INTO CLAY SUBSOIL (WHERE ENCOUNTERED) OR AT LEAST 200MM DEEP.
5. DRAIN CROSS SECTIONAL AREA RELATED TO DESIGN FLOWS AS DETERMINED BY A SUITABLY QUALIFIED AND EXPERIENCED ENGINEER.
6. OFF-SITE DRAIN OUTFALL TO LEGAL POINT OF DISCHARGE SUBJECT TO LOCAL AUTHORITY REQUIREMENTS.
7. ON-SITE DRAIN OUTFALL TO INCLUDE APPROPRIATE ENERGY DISSIPATION TO AVOID EROSION.
8. ALL DRAINS AND OUTFALL AREAS SUBJECT TO POST-SPRING INSPECTION.

NOTE: DRAWING NOT TO BE USED FOR SET-OUT PURPOSES

CUT-OFF DRAIN DETAIL FOR EFFLUENT DISPOSAL FIELDS

106 WATTLETREE ROAD, BUNYIP VIC 3815

EARTHCUT CONSTRUCTIONS

Scale: 1:10 (Approximately)	Drawn: P.R.W.	Report Number: LCA03072025
Contour Interval: N/A	Date: JULY 2025	Drawing Number: MP1

PLAN OF SUBDIVISION

EDITION

PS 930752N

LOCATION OF LAND

PARISH: BUNYIP

TOWNSHIP: BUNYIP

SECTION: 6

CROWN ALLOTMENT: 6

CROWN PORTION:

TITLE REFERENCES: VOL 9611 FOL 718

LAST PLAN REFERENCE/S: LOT 2 ON LP 149239W

POSTAL ADDRESS: (At time of subdivision) 106 WATTLETREE ROAD BUNYIP 3815

MGA2020 CO-ORDINATES (of approx centre of land in plan) E 388 605 N 5 783 300 ZONE: 55

VESTING OF ROADS AND/OR RESERVES

IDENTIFIER	COUNCIL/BODY/PERSON
NIL	NIL

NOTATIONS

DEPTH LIMITATION: 15.24 metres applies to all of the land.

WARNING
TOWN PLANNING PLAN ONLY
NOT FOR DETAILED DESIGN
SEE IMPORTANT NOTICES

NOTATIONS

SURVEY:
This plan is/~~is not~~ based on survey.

STAGING:
This ~~is~~/is not a staged subdivision

Planning Permit No. –

This survey has been connected to permanent marks No (s). –

In Proclaimed Survey Area No. –

EASEMENT INFORMATION

LEGEND A–Appurtenant Easement E–Encumbering Easement R–Encumbering Easement (Road)

Section 12(2) of the Subdivision Act 1988 applies to the whole of this plan

Easement Reference	Purpose	Width (Metres)	Origin	Land Benefited/In Favour Of
X X				

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1 Horner Street, Beaconsfield. 3807
P.O. Box 268, Berwick. 3806
Phone (03) 9707 4117 Fax (03) 9707 4428

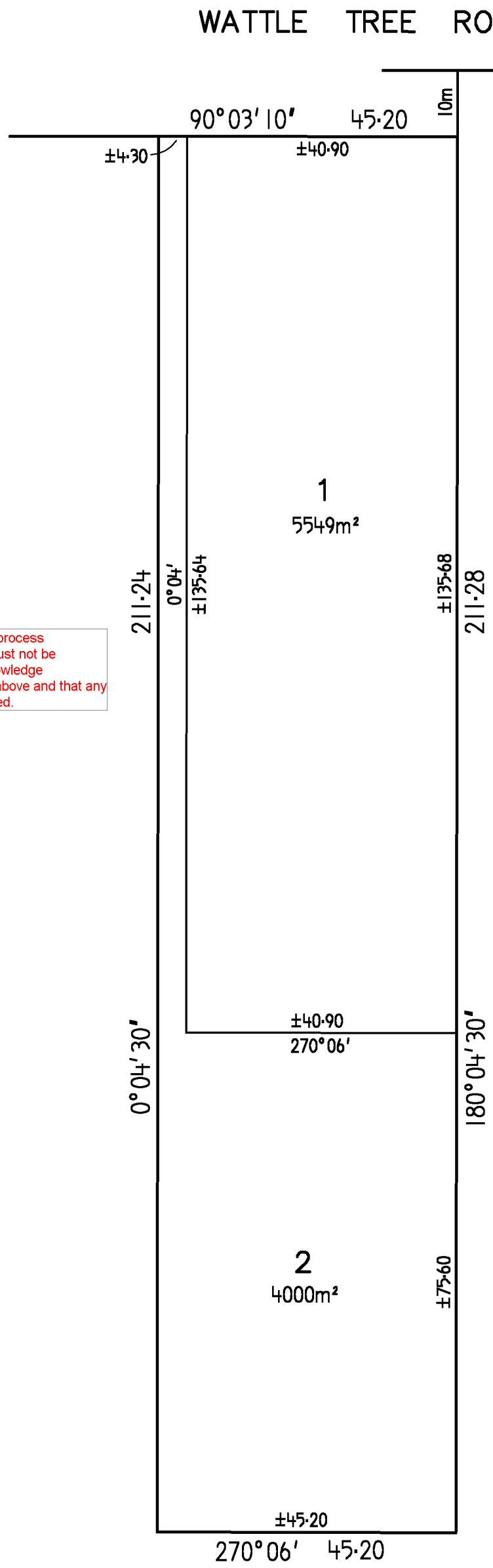
REF: 25–03–438 FILE: KMH941

ORIGINAL SHEET SIZE: A3

SHEET 1 OF 2

[redacted] / VERSION 1

PS 930752N



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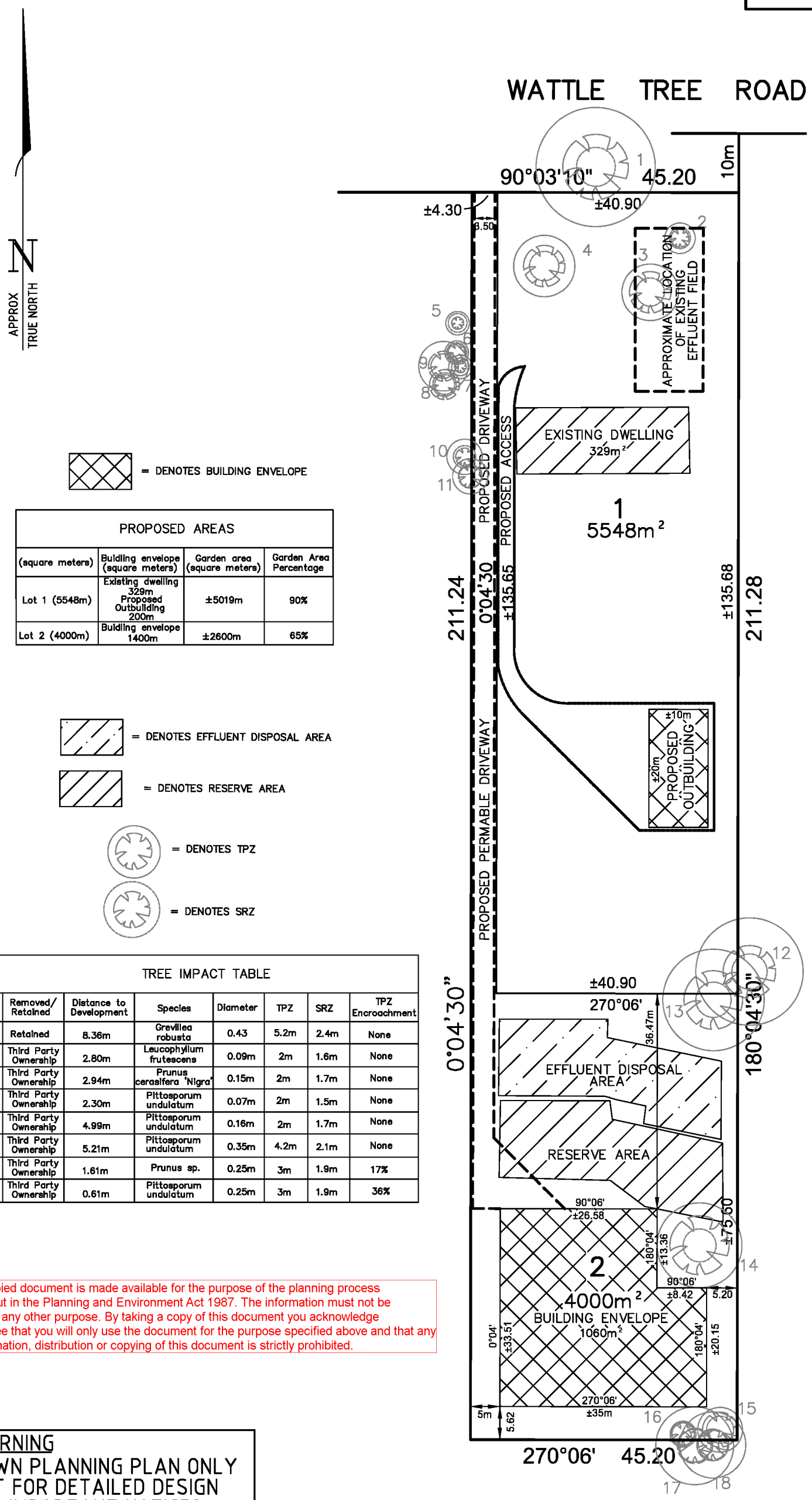

= DENOTES BUILDING ENVELOPE

PROPOSED AREAS			
(square meters)	Building envelope (square meters)	Garden area (square meters)	Garden Area Percentage
Lot 1 (5548m)	Existing dwelling 329m Proposed Outbuilding 200m	±5019m	90%
Lot 2 (4000m)	Building envelope 1400m	±2600m	65%

= DENOTES EFFLUENT DISPOSAL AREA

= DENOTES RESERVE AREA

= DENOTES TPZ

= DENOTES SRZ

TREE IMPACT TABLE							
Tree ID	Removed/ Retained	Distance to Development	Species	Diameter	TPZ	SRZ	TPZ Encroachment
4	Retained	8.36m	Grevillea robusta	0.43	5.2m	2.4m	None
5	Third Party Ownership	2.80m	Leucophyllum frutescens	0.09m	2m	1.6m	None
6	Third Party Ownership	2.94m	Prunus cerasifera 'Nigra'	0.15m	2m	1.7m	None
7	Third Party Ownership	2.30m	Pittosporum undulatum	0.07m	2m	1.5m	None
8	Third Party Ownership	4.99m	Pittosporum undulatum	0.16m	2m	1.7m	None
9	Third Party Ownership	5.21m	Pittosporum undulatum	0.35m	4.2m	2.1m	None
10	Third Party Ownership	1.61m	Prunus sp.	0.25m	3m	1.9m	17%
11	Third Party Ownership	0.61m	Pittosporum undulatum	0.25m	3m	1.9m	36%

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SCALE 1:750

0 7.5 15 30 45
LENGTHS ARE IN METRES

ORIGINAL SHEET SIZE : A3

SHEET 1

[redacted] / VERSION 2